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SHOWNEWS

DEFEXPO INDIA 2012

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[inside]

A330 MRTT

ASIA'S BIGGEST LAND AND MARITIME SHOW IS HERE

BAE SYSTEMS' M777 155MM LIGHTWEIGHT HOWITZER

DEFEXPO INDIA 2012 OPENS TODAY

BY **SP'S SPECIAL CORRESPONDENT**

It's official. With an economy that is growing steadily even within a global slowdown and an ever intensifying spectrum of threats, India is now by far the world's most attractive market for military equipment and advanced systems. Two recent events have ensured that India's place at the pinnacle of the global market for armed forces and paramilitary hardware is safe. Earlier this month, amid speculation that the country's national defence budget might actually be slashed, it saw a healthy 17 per cent jump to over $38 billion, with a formidable $15.5 billion war chest for fresh and ongoing acquisitions. Second, India is now the world's largest importer of weapons, a status that will now see a country that has traditionally imported hardware, enter a realm of dynamic partnerships, cross-investment and synergies with global technology houses. The India of yore, a buyer rather than a partner, is now a brave new nation with compelling indigenous capabilities and the will to perform on a competitive global stage. In many ways, the seventh Defexpo India 2012 comes at profound time for Indian security.

The seventh international exhibition on land, naval and internal security systems that begins today is the largest ever defence exposition in Asia allowing companies from across the world to once again come together in what is, without a doubt, every defence firm's priority dream market. It is a chance, once again, to showcase India's emergence as an attractive destination for investment in defence and provides the best possible platform for alliances and joint ventures in the industry. In fact, things kick off right from the start. To engage industry in a discussion to review existing policies related to defence procurement, the Ministry of Defence and FICCI are organising a half-day seminar on "Enhancing Defence Production

Capability through DPP" today.

Nobody says no to Defexpo. An impressive 567 companies from 32 countries will be here for the next four days to showcase weapons, munitions, specialty vehicles and advanced maritime systems for the Army, Navy and paramilitary. The major exhibiting countries participating in the seventh edition of the expo include Russia, the United States, France, United Kingdom Israel, Belgium, Germany, Italy, Japan and the Republic of Korea. Israel is the biggest participating country in terms of indoor space occupied (1,293 sq metres) while Russia is represented with the maximum number of 37 companies. In the year 2010, there were 412 exhibitors from 35 countries. The exhibition area has increased from 27,309 sq metres in 2010 to 30,760 sq metres this year. Defexpo is dedicated to global land, naval and internal security business activity, providing a seamless platform for suppliers, manufacturers, technology providers to service providers. The expo is also a brilliant oasis of global capabilities in the region—a fact reflected in the 60 official foreign delegations (14 of those headed by Defence Ministers) that will attend the four-day exhibition in an effort to assess systems and make enquiries. So if India wasn't an attractive enough market, the region is coming calling.

In an evolution of sorts, Defexpo 2012 will be a proving ground for India's burgeoning private sector that has received its calling to pitch in for national security. With gradually evolving policies that will, hopefully in the near future, provide a competitive playing field for healthy competition, India's robust private sector is looking actively for investments and technology partnerships with proven firms. India's expansive state-owned military industrial complex, which holds most keys to self-reliance, have now been imbued with the freedom to improvise, invite foreign technology and make full use of the capabilities on offer to India, a responsible and peaceful democracy. The public-private partnership model, while still in evolution, could reasonably be joined by dynamic public-private-foreign business models, harnessing the indispensable strengths of each. Each passing Defexpo has proven when it comes down to the empirical post-show bean count, that businesses big and small profit from being here.


DAKSH ROV

With great attention being paid to India's aerospace contracting (Defexpo, inevitably, has its own aerospace component, and a significant one at that), almost wholly represented in recent years by the monumental multi-billion medium multi-role combat aircraft (MMRCA) competition, India's land and maritime systems needs are no less dramatic. The Indian Army, in the midst of a deep doctrinal transformation that could change the very core of how it fights its wars, is a tough customer looking to overhaul many of its legacy systems—from specialty vehicles to infantry weapons, and from battlefield electronics to unmanned systems. The Army's future infantry soldier as a system (F-INSAS) alone provides an evolving opportunity for firms worldwide to partner with Indian industry to kit up one of the world's largest and most potent land forces.

The Indian Navy, a vanguard for indigenisation, is in the process of floating its next big procurement effort—the Project 75 India submarine project, that looks to build six conventional attack submarines within the country in tandem with the six DCNS Scorpenes currently being built in Mumbai. With Indian state-owned shipyards spilling over with warship orders, and the Indian private sector pitching in admirably, there are substantial opportunities for new surface combatants, support and specialty vessels. The Navy, which inspires several other regional maritime forces and the way they contract in turn, is also looking to overhaul its backbone communications infrastructure, network-centric systems, shore-based and ship-borne sensors and weapons.

India's nascent offsets regime is now in full force, with ambitious guidelines that will see billions of dollars worth of contracting money diverted back into the country in the form of direct (defence) offsets and indirect (civil aerospace, internal security, and training) offsets. The offsets policy is evolving quickly. For instance, in November 2011, Tier-I sub-vendors were allowed to discharge offset obligations to the extent of their work share (by value) on behalf of the main/prime vendor. This and other course corrections will ensure that offsets don't seem like the monumental challenge they appeared to be about two years ago. As the Defence Minister said in the Parliament this month, "These amendments provide greater flexibility and a wider range of offset opportunities to vendors participating in defence procurements and will encourage building up of indigenous manufacturing capability in crucial areas." Apart from high profile business activity, Defexpo 2012 provides a timely and valuable platform for Indian and foreign firms to hammer out partnerships that help fulfil offset requirements. Several companies have already begun the process. Several more will engage.

In the bustle of national defence, it is easy to gloss over internal security and the enormous opportunities for synergies that exist there. From tactical unmanned systems and deep penetration sensors, to side-shot weapons and traditional small arms, the Indian police forces and paramilitary continue to require multiple modern capabilities to take on newer and more challenging tasks. With profiles changing and the commitment of internal security forces towards internal insurgencies in Central India, requirements specific to the new profile have emerged. Special protective gear, humanitarian relief equipment and survival aids will be required in substantial quantities across the armed forces and paramilitary. Those requirements will be enunciated over the four days of Defexpo 2012.

Enjoy the show! •

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Owned, published and printed by Jayant Baranwal on behalf of SP Guide Publications Pvt Ltd.

Printed at Kala Jyothi Process Pvt Ltd., Hyderabad

www.spguidepublications.com

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BAE SYSTEMS' M??? 155MM LIGHTWEIGHT HOWITZER

BY **SP'S SPECIAL CORRESPONDENT**

The seventh international exhibition on land, naval and internal security in line with India's expanding requirements, and continuing with their hugely successful push into the Indian defence market, the United States and Israel are back at Defexpo in full strength. While Israel has the largest pavilion presence this year—an affirmation of a relationship that has gone well beyond the buyer-seller—the United States has once again brought the single largest industry delegation to the show this year. The US executive mission led by General Paul J. Kern (Retd), Senior Counselor, The Cohen Group and Vice Admiral (Retd) Kevin J. Cosgriff, Senior Vice President, International Business and Government, Textron Systems, lead this impressive delegation comprising America's premier aerospace and defence companies.


TEXTRON SYSTEMS' NAVAL COMMON UNMANNED VESSEL

"This remarkable growth in defence sales also translates to thousands of high-skill jobs being created both in India and the United States, making it a win-win for both countries. We are here once again to reaffirm our commitment to a long-term partnership with India by offering the best capabilities that are mission-ready and operationally proven, robust industrial partnership, and state-of-the-art technologies offered at the best value when measured over the lifetime of the product," the mission leaders said.

Senior executives representing America's top defence companies, including ATK, BAE Systems Inc, the Boeing Company, the Cohen Group, DuPont, General Dynamics, Harris, Honeywell, ITT Exelis, L-3 Communications, Lockheed Martin, Navistar Defense, Northrop Grumman, Oshkosh, Pillsbury Winthrop Shaw Pittman LLP, PwC, Raytheon, Rockwell Collins, SAS, Sikorsky, Telephonics Corporation, Textron Systems, Tyco, and many others, will be present at Defexpo 2012.

On display will be current offerings such as Textron Systems' ground-based smart weapons and naval common unmanned surface vessel, BAE Systems' M777 155mm lightweight howitzer, and other best-in-class offerings from the US industry, such as armoured security and light combat vehicles, tactical communications equipment, integrated weapons systems, thermal imaging technologies, and network munitions systems.

"There is a tremendous opportunity for the United States to meet India's defence and homeland security needs—as exhibited by recent big-ticket procurements such as the Boeing C-17 heavy lift transport aircraft, VVIP aircraft for the PM, Lockheed Martin C-130J, Textron sensor fused weapon—all of which indicate a high level of trust and cooperation between the United States and India," said USIBC President Ron Somers.

Israel, apart from fielding the largest pavilion presence, is also taking its participation to the next level this year by bringing in three major new products for the first time: the Barak-8 long-range surface-to-air missile currently being developed jointly by Israel Aerospace Industries (IAI) and India's DRDL; the Heron I MALE UAV, EL/I-3360—maritime patrol aircraft; the ImiLite, a cost-effective intelligence system designed to receive process and exploit multiple stand-alone imagery video and other intelligence data in a centralised and unified way, the highly visible Iron Dome anti-rocket system recently deployed by Israel and the SpyDer low-level quick reaction surface-to-air missile system that India is in the process of acquiring.

The UK is also represented in strength, mostly through BAE Systems. Mobility will be the dominant theme among the company's displays at Defexpo, with the debut of its family of CV90 light tanks and BvS10 go-anywhere all-terrain vehicle family, along with the ultra-light M777 howitzer. •

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To find out more visit General Dynamics UK on stand 14.24 at DefExpo 2012

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Project 75 India, the next big boat buy


SCORPENE

BY **SP'S SPECIAL CORRESPONDENT**

With several orders for warships on course and the Scorpene submarine production programme to launch its first in 2013, the Indian Navy's next big boat buy will be the highly anticipated Project 75 India—for six new diesel-electric attack submarines. India announced P75I in 2008 to procure six air-independent propulsion equipped submarines with a high degree of stealth and land-attack capability. The effort is expected to get off the mark this year with the floating of a tender. Apart from DCNS and the Scorpene, potential contenders for the $11-billion deal include Russia's Rubin for the Amur 1650, Navantia for the S-80 and HDW for the Class-214. DCNS, which is already steeped in the Indian licence build programme will be hoping it is a lead contender for the contract. At the centre of the focus, the Indian P75 Scorpene submarine will be displayed, together with its SUBTICS combat system and its optional MESMA air-independent propulsion section.

"Defexpo is a very important platform for DCNS to showcase the services we can provide to our customers through genuine transfer of technology. We have a deep industrial expertise, from the design to the in-service support," says Bernard Buisson, Managing Director of DCNS India. "We remain fully committed to bring to the Indian Government and our partners our innovative and proven technologies."

The final configuration of manufacture includes two at the OEM shipyard and four split between two shipyards in India, one private. The Navy has stipulated that it is looking for a complete modern conventional submarine which is currently in service/undergoing sea trials. The submarine should be capable of operating in open ocean and littoral/shallow waters in dense ASW and EW environments and capable of undertaking the following missions: anti-surface and anti-submarine warfare, supporting operations ashore, intelligence surveillance and reconnaissance (ISR) missions and special operations and mining operations. •

T-90S to debut at Defexpo 2012


T-90

A highly anticipated modernised version of Russia's T-90S main battle tank makes its debut at Defexpo 2012 and is expected to draw a good amount of attention. The new tank, which Rosoboronexport has announced is a substantial improvement over the current T-90S in service with the Indian Army (and built under licence at the Heavy Vehicles Factory outside Chennai), is reported to have improved crew protection, a new fire control system, better ride and handling and increased engine power. The presence of the improved T-90S is also being seen as Russia's move to re-commit itself to the licence build programme, considering that late last year reports had emerged of certain delays in the effort. India ordered 310 T-90S in 2001. Later, a contract was concluded for the licensed production of 1,000 T-90S by the Ordnance Factory Board (OFB). The T-90S presence at Defexpo may also be a response to reports that the Indian Arjun main battle tank (MBT), which has recently matured as a combat platform, performed better than the Russian tank during comparative trials in the deserts of western India recently. •

—**SP'S SPECIAL CORRESPONDENT**

Massive **military vehicle requirement** in India

As the Indian land forces expand their scope of operations and profile, there is a steep increase in the requirement of armoured and specialty vehicles across the board. Vehicles for the Army and paramilitary forces cover the entire gamut of offensive, patrolling, intelligence gathering, battlefield reconnaissance and weapon deployment missions. Defexpo 2012 will see the rolling on of several new vehicles, both Indian and foreign, all competing on a common stage.

Consider the requirements of just the Indian Army. It is actively in the market for a slew of specialty vehicles including mine protection vehicles, light strike vehicles, specialist vehicles (for movement of medium machine gun and anti-tank guided missiles detachments, reconnaissance and observation parties), telescopic boom type 5/7.5-tonne chassis light recovery vehicles (capable of operating in all terrain conditions in the country such as high altitude, shore establishment, off shore establishment, desert area, jungle areas), 6x6 and 8x8 high mobility vehicles (to operate in the forbidding terrain of Eastern Ladakh and Plateau area of North Sikkim), all terrain vehicles (ATVs) with an approximate capacity of 10 persons for use in varied terrains to include snow bound areas, marshes, creeks, beaches, deserts, and the list goes on.

The massive requirements are routinely manifested in the huge presence of military land vehicles at Defexpo, which has progressively become one of the best expos for advanced land warfare capabilities.

For instance, General Dynamics Land Systems will be showing the futuristic light armoured vehicle, and newly acquired General Dynamics Land

GDLS MANUFACTURED STRYKER EIGHT-WHEEL DRIVE ARMOURED COMBAT VEHICLE

Systems-Force Protection's light mine protected ocelot vehicle, which enters UK service as "Foxhound" later this year. Textron Systems' family of tactical wheeled armoured security vehicles, which incorporate advanced ballistic protection with battle-proven firepower and rugged, all-terrain operation at speeds up to 65 miles (104 kilometres) per hour will also be on display. Mobility and land systems will be the dominant theme among BAE Systems' displays where the company will debut its family of CV90 light tanks and BvS10 go-anywhere all-terrain vehicle family. Companies like Cobham and Raytheon, among a large number of other small and medium enterprises, will showcase subsystems, electronics and upgrade packages for Indian ground vehicles.

Defexpo has been a proving ground for Indian military vehicles developed and custom-built by private industry within the country. Like the 2010 iteration of the show, this year's Defexpo holds great promise, with a slew of new products poised to enter the mainstream and become available to Indian and regional customers. For instance, Ashok Leyland, currently the largest supplier of logistics vehicles to the Indian Army, will unfold its next chapter of growth with the development of armoured vehicles in partnership with global leaders on two fresh platforms that will be on display for the first time at Defexpo 2012. Tata and Mahindra are also expected to showcase new vehicles. •

–SP'S SPECIAL CORRESPONDENT

UAVs big and small on show

IAI SEARCHER MK.2

BY **SP'S SPECIAL CORRESPONDENT**

Even with the robust indigenous unmanned aerial vehicle programme currently on, the market for unmanned aerial vehicles (UAVs) is huge in India. The three Indian armed forces and the paramilitary forces are all scouting for different classes of UAVs. While the Army, which is in the process of inducting the Indian Nishant RPV for surveillance operations, needs more drones to augments its fleet of IAI Searcher Mk.2s, the Navy needs specialty craft including ship-borne rotary-wing UAVs and long range armed medium altitude UAVs to expand its surveillance footprint along India's massive coastline and for deterrence. The Air Force, which is looking with increasing interest at unmanned combat aerial vehicles (UCAVs) has thrown its weight behind an Indian project, codenamed AURA, to build a stealthy flying wing UCAV that will be able to deploy smart munitions when ready. The only operational surveillance UAVs in Indian service right now are IAI Searcher Mk.2s, IAI Herons, Harop UCAVs and a small number of Indian-built Nishant surveillance drones.

RUSTOM UAV

The Indian Navy is actively scouting high performance UAVs. In 2010, it invited information to support a potential acquisition of an unspecified number of high-altitude long endurance (HALE) UAVs, specifying that it wants a platform with at least 25 hours mission endurance, an all up weight of no more than 15 tonnes, service ceiling of 40,000 feet and cruise speed of 100 knots. The Navy is also in the process of finalising its plans to acquire deck-based rotorcraft UAVs. The Navy decided to go in for an import option after the IAI-HAL NR-UAV remains in development trials and won't be ready for the next couple of years at least (Northrop has in fact told the Navy that the NR-UAV won't be a mature product, and therefore doesn't make sense). As it expands its footprint in the Indian Ocean region (IOR), the Navy requires a ship-based unmanned aerial capability for beyond the horizon surveillance, fleet intelligence gathering, targeting and reconnaissance.

India also has a huge requirement for micro air vehicles. Alongside a robust MAV programme within the country (the SLYBIRD MAV was unveiled for the first time at Aero India last year), the Indian Air Force in 2010 invited information from global vendors towards a potential purchase of (an unspecified number of) micro air vehicles (MAVs). According to the RFI, the MAV needs to weigh no more than 2 kgs with an endurance of anything over 30 minutes. The IAF has stipulated that the MAV needs to be a vertical takeoff and landing (VTOL) type, with payload requirements including day CCD camera and FLIR.

It may be noted that the Army is looking to induct the indigenous DRDO-ideaForge Netra MAV. Also, the Honeywell RQ-16 T-Hawk has been demonstrated to the Indian forces in the forests of Bastar, Central India, for potential use in anti-naxal operations. India's NAL is known to be developing a series of MAVS, but none are known to be VTOL platforms, opening up the market for these specialty systems. The Indian paramilitary forces, administered by the Ministry of Home Affairs, are also in the market for UAVs that will be committed towards internal security duties.

Interestingly, a tri-service requirement of high altitude long endurance (HALE) UAVs has been in the works since 2009 in India for an unspecified number of such systems for the Army, Navy and Air Force. The request for information (RFI) specifies that the companies interested in bidding for the contract should field UAVs with a minimum baseline capability configuration of 35,000 feet ceiling altitude, 24-hour endurance, 250-km direct line-of-sight data link, 350-km relay line-of-sight data link and with a satellite communication (SATCOM) capability. The RFI's system overview specifies that the package should contain day and night sensor payloads; ground/aerial data relay terminals, mobile receiving stations and intra-communication systems. The RFI specifies that the fielded UAVs must demonstrate profiles including (but not limited to) all-weather day/night reconnaissance of area, axis or point, transmission of radar/IR charge couple device imagery pictures of a benchmark (to be decided) resolution, real-time engagement of targets by directing artillery fire, and as a communication relay platform to facilitate multi-mode and multi-band communication over a wide area. •

DRS Technologies, DVE Wide gets five-star rating

DRS Technologies, Inc., a Finmeccanica Company, announced the Army Test and Evaluation Command identified DRS' Driver's Vision Enhancer Wide (DVE Wide) as one of only 12 technologies out of a field of 47, to earn its highest designation of "Promising Solution."

The DVE Wide, developed and manufactured by the Reconnaissance, Surveillance and Target Acquisition (RSTA) Group of DRS, was also awarded a five-star rating from *Army Times*.

RSTA's DVE Wide thermal camera creates a sharp thermal image to provide a 107º x 30º field of view and lets the driver pan through the full 107º to see both sides of the road ahead. The DVE Wide also adds wheel width indicators to the video image to help identify any potential obstacles and to allow the driver to see where the vehicle is in relation to the road.

Troops that drive MRAPs, Bradleys, Strykers and other armoured fighting vehicles may navigate these vehicles along the edges of steep cliffs and other hazards while using a thermal imager with only a field of view of 40º wide x 30º vertically. The DVE Wide which offers a 107º x 30º field of view is a "drop-in" replacement for the standard DVE systems, and can utilise existing cabling and displays making it a cost-effective solution that requires minimal training for troops to use the system effectively.

Developed and manufactured by the RSTA Group, the DVE Wide was tested by soldiers from Alpha Company, 1st Battalion, 29th Infantry Regiment over a four-week period during the rugged Army Expeditionary Warrior Experiment (AEWE) Spiral G exercises at Fort Benning, Georgia.

AEWE is designed to examine new technologies in real-world situations to help provide the Army with the best technology available. During hours of darkness, troops participating in AEWE executed 16 missions with two Mine Resistant Ambush Protected All-Terrain Vehicles (MATVs). The DVE Wide provided additional integrated vehicle capability, increasing situational awareness to allow safer vehicle operation in virtually all light and weather conditions.

RSTA personnel who trained soldiers on the DVE Wide during AEWE, reported the visual indicators showing the vehicle width on the forward and reversing cameras was the biggest benefit. This feature greatly improved the driver's ability to independently manoeuvre the vehicle in confined spaces,

mitigating the need to dismount a ground guide during tactical operations. The indicators also allowed drivers to scan beyond the road for possible threats and helped identify road edges when dust would have otherwise blocked a clear vision.

"While gaining the Army's top rating during realistic operations is gratifying, we are equally thankful for the significant feedback our new system has received from the soldiers who evaluated it," said RSTA President Terry Murphy. "These troops had extensive in-theatre combat experience with our current fielded DVE sensor on various vehicle platforms. Their feedback is essential and will help RSTA ensure our DVE Wide meets the needs of the Warfighter and mission." •

UK looking for business in India

UK companies involved in some of the most cutting edge technologies in the global land and maritime sectors are exhibiting at Defexpo 2012, some visiting for the first time and others returning after a successful Defexpo 2010. The UK theme is "partnership" as UK companies look to strengthen the existing partnerships and building new industrial partnerships with companies in India.

The UK delegation is led by Gerald Howarth, Minister for International Security Strategy. In February, Minister Howarth led the largest ever defence trade delegation of 25 companies to India. Its primary aim was to forge long-term joint ventures with Indian industry and many of the UK businessmen have returned to Defexpo to do just that.

Collaboration between Indian and UK defence science and technology experts has been enhanced following the signing last September of a memorandum of understanding (MoU) between the heads of DRDO and the UK's Defence Science and Technology Laboratory. This arrangement will facilitate joint defence research projects in the near- and medium-term of mutual interest.

The UK pavilion in Hall 11 at Defexpo will feature a range of significant land and maritime capabilities which are in tune with current Indian requirements. The UK delegation will include experts from the British Army and Royal Navy.

The land capabilities include: very short-range air defence missile systems; future infantry soldier equipment; a range of state-of-the-art chemical, biological, radiological and nuclear (CBRN) systems and force protection and explosive ordnance disposal (EOD) technologies. Many of these have been designed taking into account lessons learned from recent combat operations.

The maritime capabilities include: future frigate designs and development; latest destroyer major systems and sub-systems; integrated full electric propulsion solutions; submarine rescue; swimmer delivery systems and protection of ports, anchorages and offshore platforms.

UK companies exhibiting at Defexpo 2012 include: Babcock, Bruker, Caterpillar, Emerson, Goodrich, ISTEC Services Ltd, MS Instruments, Pearson Engineering, Strongfield Technologies, Techtest Ltd, and Ultra Electronics. •

Atlas Elektronik's products and innovations

SEAFOX

ATLAS ASW SONAR ACTAS I

Atlas Elektronik, the world's leading systems supplier for maritime high technology, is showcasing its wide spectrum of products, innovations and capabilities at the Defexpo 2012. On exhibition are a SeaSpider and a SeaHake torpedo. In addition, Atlas displays the mine disposal system SeaFox. Besides that, Atlas Elektronik will show a presentation of their "integrated sensor underwater system" (ISUS) including a surface performance. Furthermore Atlas Elektronik is exhibiting its 'low frequency active towed array sonar' for surface ships ACTAS. The Atlas subsidiaries Hagenuk Marinekommunikation and Atlas Elektronik UK will also present their skills and expertise.

Atlas Elektronik, a joint subsidiary of ThyssenKrupp and EADS, stands for maritime security. For decades now, Atlas, as a leading systems supplier for naval electronics, has been helping navies around the globe make the sea a safer place.

Atlas has a broad offering of sonars and sensors, command and control systems for submarines and surface combatants, mine countermeasures systems, unmanned underwater vehicles, radio and communications equipment, naval weapons as well as coastal surveillance and traffic guidance systems. To round off its broad palette, Atlas offers comprehensive support services, both before and after delivery of the products.

Atlas is able to equip submarines, ships and systems with its own and external sensors, effectors and sub-systems and to integrate them in creating network-centric systems.

Atlas Elektronik is located at the German Pavilion, Stand 12.1.g. •

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FLIR Systems introduces **new radar technologies to Ranger family**

FLIR Systems, Inc. recently introduced two new long-range radar technologies to the Ranger product line of ground surveillance radars. The Ranger R20SS is a solid state, electronic scanning ground surveillance radar with next generation "track while scan" performance. Capable of detecting personnel and vehicles at distances up to 20 km, the Ranger R20SS enables class-leading target detection and acquisition performance coupled with a low-weight, compact design for portability and easy implementation, ideal for vehicle and man-portable operations.

The Ranger R5D is a dual-mode, perimeter surveillance radar that is designed specifically for the environmental conditions in the Middle East. Unique to the industry, FLIR's dual-mode functionality boasts all the benefits of FMCW radar with the long range capabilities of Doppler radar. In either mode, the Ranger R5D is able to detect tangential movement, with a range of up to 5,600 m in Fast Scan mode and up to 10,500 m in Doppler mode. This is possible through the use of the same antenna, while maintaining low false alarm rates.

"We understand the importance of needing reliable radar to secure critical infrastructure," said Bill Sundermeier, President of FLIR Government Systems. "With the addition of the Ranger R5D and R20SS to our line of Ranger ground surveillance, we continue to find solutions for wide area detection, within and beyond the fence." •

Honeywell tests green diesel on USS Ford

The frigate sailed from Everett, Washington, to San Diego, California, recently powered by a 50/50 blend of green diesel made from algae and petroleum-based diesel fuel. The algae, supplied by Solazyme, Inc., was converted to the drop-in replacement biofuel using process technology by Honeywell's UOP.

The US Navy began its biofuel testing and certification programme in April 2010 with the use of Honeywell Green Jet Fuel on the supersonic biofuel flight of the F/A-18 "Green Hornet." Since then it has successfully completed biofuel demonstration flights on a range of aircraft in its fleet, including the MH-60S Seahawk, the MV-22 Osprey, the T-45 Goshawk, AV-8B Harrier and the Fire Scout unmanned vehicle. Green fuels made from Honeywell UOP process technology have also been successfully tested on the Riverine Command Boat (RCB-X) and the USS Paul F. Foster destroyer. Fuel for testing was supplied as part of a joint programme for the US Defense Logistics Agency–Energy (DLA-E) for alternative fuels testing and certification. •

CAE's culture and experience with partnerships serve India well

Ananth Ramaswami, Managing Director, CAE India

***SP's ShowNews* (SP's): What are your views on public-private sector partnership? What initiatives has CAE taken in India to forge partnerships with various entities to design, develop and market products for domestic and/or international markets?**

Ananth Ramaswami (Ramaswami): CAE has always had a culture of partnership and in our military programmes we often have partnership with either original equipment manufacturers (OEMs) or local companies to develop a solution that meets the training requirements of military customers we are working for. In India, we are actively involved in various partnerships and collaborations, such as our Helicopter Academy to Training by Simulation of Flying (HATSOFF) joint venture with HAL or our joint venture with InterGlobe to create an aviation training centre in New Delhi. We believe these types of relationships are extremely successful in delivering world-class simulation and training solutions while expanding local capabilities and technologies in India. We are always open to the idea of collaborating with suitable partners when the need arises to design and develop a solution to meet the needs of the customer.

SP's: Offset policies in India are designed to generate greater business opportunities in the country and assist in technology transfer from abroad. Has CAE in India initiated any steps to capture the business generated by offsets?

Ramaswami: In fact, CAE has recently entered into a strategic partnership with Rossell India Limited in order to address the needs of the market generated by offsets. This special purpose company will be owned 74 per cent by Rossell and 26 per cent by CAE, and it recently received approval from the Indian Foreign Investment Promotion Board (FIPB). The special purpose company will be operational this year. We have also initiated steps towards having a rotary wing academy on the approved offsets list. We do wish to maximise business opportunities by leveraging CAE's breadth of simulation technologies in line with the offset policy.

SP's: HATSOFF is the first facility of its kind in India for providing training to rotary wing pilots. Please tell us about your experience so far. Considering the rising demand for helicopter pilots, do you foresee proliferation of similar facilities in the country?

Ramaswami: HATSOFF is the first and only facility of its kind in the country for rotary wing training. It is a state-of-the-art Greenfield project in collaboration with HAL. This unique facility currently provides training for three types of helicopters—the Bell 412, civil/conventional Dhruv and Eurocopter AS365 Dauphin. Later this year, HATSOFF will add training for the military variant of the Dhruv. Utilisation of the facility is below the designed capacity right now, but we are continuing to promote the many advantages of helicopter simulator training. The fact is that until HATSOFF, India has lacked adequate helicopter simulation training, so most operators have had to rely on training in the actual aircraft and the authorities haven't enforced the regulation that every commercial pilot—fixed or rotary wing—must fly a minimum of 10 hours annually on a simulator. CAE is a strong proponent of global efforts by the International Helicopter Safety Team (IHST) to reduce helicopter accident rates by 80 per cent by 2016, and the IHST says that one of the most effective ways of doing so is the increased adoption of simulation-based training. Considering the planned acquisitions and the growing demand for helicopters in the military and civil domains in India, there will certainly be a need to augment the existing capacity of helicopter simulators in the country. CAE is very open to expanding HATSOFF as well as establishing additional facilities in India.

SP's: As the Managing Director of CAE India, how do you visualise the market for synthetic training shaping up in both the civil and military domains in India?

Ramaswami: India's defence forces are increasingly cognizant to the compelling benefits of modelling and simulation. A simulation-based synthetic environment can provide efficient, low cost, accident free, yet highly realistic training and mission preparation. However, the military still lags their civil counterparts in the use of high-fidelity simulation. Synthetic training is well-structured and defined in the civil sector. CAE has invested a considerable amount of resources in terms of infrastructure, equipment and human resources in India to meet the requirement. In addition to two ab-initio flying academies in Gondia and Rae Bareli, CAE is running a state-of-the-art simulator centre in Bangalore at our new aerospace and defence complex. We are continuing to promote and showcase the benefits of CAE's world-class simulation technologies to India's defence community.

HATSOFF SIMULATOR (ABOVE); CAE GLOBAL ACADEMY GONDIA

SP's: Do you see an increasing reliance on modelling and simulation for cost-effective and realistic training in India? As the world leader in this domain, how is CAE gearing up to meet the growing demand?

Ramaswami: Here in India, synthetic training is at a nascent stage in the defence services. There is, however, increasing awareness about the numerous benefits that accrue from synthetic training and the demand for modelling and simulation seems to be growing at a rapid rate. Simulation improves the realism of training, lowers costs, reduces operational demands on weapon system platforms, lowers risk, is safe and environmental friendly, and allows for training that is too dangerous or not possible in the actual weapon system platform. The defence forces in India are acquiring some of the most advanced and capable platforms available in the market. However, there will always be finite defence budgets and resources, and more importantly, defence forces need to be able to "train as they fight", and this is where simulation is invaluable. Mechanised forces appear to have stolen a march over the others as they are in the process of acquiring simulators for most of the vehicles in their inventory. New request for information (RFIs) and request for proposals (RFPs) are indicative of a definite upward trend in the need for synthetic training in the three services, and CAE certainly welcomes the prospect of India's military extending their use of simulation. •

Boeing to showcase defence portfolio for Indian market

CHINOOK

At Defexpo 2012, Boeing is showcasing a comprehensive portfolio of products and services, including C-17 Globemaster III, P-8I, AH-64D Apache, CH-47F Chinook, V-22 Osprey, ScanEagle and 737 airborne early warning and control.

"India is a significant market for Boeing and we are committed to working closely with the Defence Ministry, armed forces and indigenous industry to meet India's defence and security needs," said Dennis Swanson, Vice President, International Business Development, Boeing Defense, Space & Security in India. "In 2012, we will continue to strengthen our relationships in India through delivering on our promises on our existing P-8I and C-17 contracts; expanding our partnerships with the Indian aerospace industry; and demonstrating how the CH-47 and AH-64 are the right choices to meet India's heavy-lift and attack helicopter requirements."

Stakeholders visiting the Boeing exhibit in Hall 14 will be invited to experience demonstrations. •

Rear Admiral Shrawat is CMD of MDL

Rear Admiral (Retd) R.K. Shrawat has taken over as Chairman & Managing Director of the state-owned Mazagon Dock Limited from February 29, 2012.

An Electronics and Communications Engineer from IIT, he brings to MDL a new perspective with over 36 years of experience in the Indian Navy. Among the various prestigious postings he held in the Navy were those of Admiral Superintendent, Naval Dockyard, Mumbai and as Project Director of the Arihant submarine. His last posting was as Director General, Weapons & Electronic Systems Engineering Establishment.

Rear Admiral Shrawat takes over from Vice Admiral (Retd) H. S. Malhi, who retired as CMD, MDL on January 31, 2012. Rear Admiral (Retd) Vineet Bakhshi, CMD, Goa Shipyard, held additional charge as CMD, MDL in the interim period. He is a recipient of AVSM. •

Mobility to dominate
BAE Systems at Defexpo

The company will debut its future-proof CV90 and the go-anywhere BvS10 vehicles and also unveil the advanced technology innovations for soldiers

BVS10 ARMOURED ALL-TERRAIN VEHICLE

Mobility will be the dominant theme among BAE Systems' displays at the seventh Defexpo India being held in New Delhi from March 29 to April 1, this year. The company will debut its family of CV90 light tanks and BvS10 go-anywhere all-terrain vehicle family in India at the exhibition, along with the ultra-light M777 howitzer. In recognition of the company's commitment to offer the full span of its capabilities across the defence, aerospace and security domains in India; BAE Systems' pavilion at this signature event spans products and solutions in air and defence information, maritime, intelligence and security, and electronics systems.

Initially created for the Swedish Army and sold to six nations, the CV90 light tank provides high tactical and strategic mobility, and survivability in any terrain or tactical environment. Designed to provide maximum availability and cost-efficiency throughout its operational lifespan, the CV90's systems require only straightforward, low-cost maintenance. The platform's future-proof design, the result of continuous improvement from operational feedback, allows for new upgrades and variants. A proven workhorse in battle situations, the BvS10 armoured all-terrain vehicle provides an unbeatable combination of mobility, payload and protection. The world's first 155mm Howitzer weighing under 10,000 lbs (4,218 kg), the highly mobile M777, on display at Defexpo this year is the subject of ongoing discussions between the Indian and US Governments in relation to a possible sale, in support of the Indian Army's modernisation programme.

Reinforcing its commitment to supporting indigenous capability through investment, technology sharing and co-development, BAE Systems is located in Hall 9 alongside Defence Land Systems India, its joint venture with Mahindra & Mahindra.

In the Electronic Systems sector, the company will have a variety of future soldier technologies on display, including handheld thermal monoculars. These technologies will be displayed in conjunction with other components of BAE Systems equipment developed to maximise the capabilities of dismounted personnel in military and security operations. Among the BAE Systems products on display is a lightweight thermal weapon sight featuring a 28-micron focal plane array which requires less power and reduces weight. Two other innovative BAE Systems' products for dismounted personnel on display include the SkeetIR and RED-I. The size of a credit card, the weapon-mountable SkeetIR is not only one of smallest thermal monoculars available today; it is also one of the most versatile thermal imagers in the world. With its hotkey functionality, a modular weapon, helmet, and accessory interface, SkeetIR adapts in seconds to virtually any weapon. The remote eyepiece display imager (RED-I), is a head mounted display compatible with military night sensors such as thermal weapon sights and the SkeetIR.

Further, Geospatial eXploitation Products (GXP) software specialists will show how to use GXP Xplorer data management software to connect to and crawl various disparate data repositories to find information in GIS feature databases, product and national libraries, map and chart libraries, tactical data stores, and other intelligence data sources.

Dean McCumiskey, Managing Director & CEO-India, BAE Systems said, "Defexpo is an extremely important platform for us in the continuing development of our business and the last two years have marked very good progress. Partnering with the industry in achieving self-reliance in the design, development, and production of equipment, systems and platforms, is the cornerstone of our business in India. We take pride in the milestones: our joint ventures with Mahindra & Mahindra and the Hindustan Aeronautics Limited have marked in their journeys since the last Defexpo. As we build our footprint, we are committed to creating key intellectual property indigenously working closely with partners and customers to deliver best of breed solutions."

BAE Systems is located in Hall 9 of the Pragati Maidan Exhibition Centre, New Delhi. •

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Customer Success Is Our Mission

Rockwell Collins' growing operations in India

T.C. Chan, Vice President and Managing Director-Asia Pacific, Rockwell Collins

***SP's ShowNews* (SP's): What has been your experience with the Indian defence market? What difficulties do you face in marketing your products to them?**
T.C. Chan (Chan): No difficulties, just differences. For example, we have been doing business with the US Department of Defense since long. Its procurement process focuses on "best value". This means that even though a solution may be a bit more costly, if it brings more capability that can make the offer a 'better value' than the competition, the Department of Defense might still select it at a higher cost.

In contrast, the Indian Ministry of Defence process selects the "lowest cost, technically compliant" solution. There is no extra credit given for bringing more capability than is required by the request for proposal (RFP). We've also noticed that some RFPs appear to be tailored around specific point solutions, which can present new challenges.

We plan to leverage our experience in developing best-in-class solutions, as well as our in-country workforce, to address Indian needs.

SP's: What is the extent of your local presence in India?
Chan: We're pleased and proud to have an established local presence with our India Design Centre (IDC), which we opened in Hyderabad in 2008. The centre offers engineering expertise in a wide range of areas, including software and hardware engineering design, systems engineering and software quality engineering. This local presence gives us a greater opportunity to recruit top talent from India's outstanding engineering pool.

With the IDC, we're able to support local and international customers with round the clock engineering services. Given the IDC's lower operating costs, this also helps our customers achieve lower programme life-cycle costs.

More recently, we opened a facility in New Delhi that focuses on sales and marketing, and programme management related activities. We currently have about 450 employees in India, with plans to grow to around 600 over the next few years.

SP's: What objectives and targets has Rockwell Collins set for India and what joint ventures are under way within the public sector and with private Indian industries?
Chan: We've been pursuing a number of opportunities in India. In the public sector, we have contracts in place with the Electronics Corporation of India Limited and the Hindustan Aeronautics Limited. We've also been exploring ways to work with Bharat Electronics Limited.

We are always open to opportunities to do business with private Indian industries and are actively seeking partnerships with in-country Indian companies to further develop the Indian technology base. •

MS Instruments' Flight Follower updated

MS Instruments PLC has recently made a revolutionary update to its highly successful Flight Follower system. Flight Follower has been developed to meet the high speed imaging needs of modern ammunition designers and manufacturers and films a projectile in flight. The Flight Follower can now be specified with a fully motorised and remote controlled head unit. This enables the user to adjust the position of the head unit in three dimensions during the trial, without the need to return to the Flight Follower once it is in position.

The user-friendly control software allows complex 3-D adjustments to be made easily. A video of the new design, and videos produced by the Flight Follower are available at: www.msinstruments.net/anon/aff

MS Instruments is a worldwide provider of highly accurate ballistic measurement instrumentation and live-fire training systems. The company's automatic training systems are in service with police, security and armed forces worldwide, and its air-to-ground strafing and bomb scoring systems are in-service with the Royal Air Force. At Defexpo, MS Instruments will be located at Stand 11-14K. •

Lockheed Martin F-35A completes first night refuelling

The first night refuelling in the history of the Lockheed Martin F-35 programme was completed recently at Edwards Air Force Base, California. Piloted by US Air Force Lt Colonel Peter Vitt, AF-4, an F-35A conventional takeoff and landing variant, rendezvoused with an Air Force KC-135 tanker and successfully received fuel through the F-35's boom receptacle. Vitt's sortie lasted more than three hours. In addition to qualifying with the KC-135, the F-35 Integrated Test Force at Edwards Air Force Base will also conduct night refuelling tests with the KC-10. •

The violence had been raging for months and taken their homes and many of their families. They were among the 27 million people around the world threatened by conflicts by the end of 2009.* At times like this the A330 MRTT can help international security forces protect a civilian population day in, day out.

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AIRBUS MILITARY

*Internal Displacement Monitoring Centre figures.

Pilatus delivers the 1,100th PC-12


PC-12

In a ceremony recently at Pilatus Business Aircraft Ltd's facility in Broomfield, Colorado, the Swiss aircraft manufacturer delivered the 1,100th unit of its flagship single engine turboprop PC-12.

Thomas Bosshard, CEO of Pilatus Business Aircraft Ltd, stated, "We are extremely pleased to have the honour of delivering this milestone aircraft to Frontline Aviation. Since its introduction to the market in 1994, the PC-12 programme has greatly exceeded all expectations originally set for it by Pilatus, and we anticipate continued popularity of the PC-12 NG for many years to come."

The versatile PC-12 NG performs many roles worldwide, including executive transport, commuter, medevac, police and border surveillance, cargo transport, military liaison, and regional airliner. The PC-12 fleet has amassed 3.3 million flight hours of operating experience, including thousands of hours in some of the world's harshest environments. For the 10th consecutive year, PC-12 operators have ranked Pilatus customer support as the best in the industry in an annual survey conducted by *Professional Pilot* magazine. •

Thales equipment for land, naval and air force

Thales is exhibiting a wide range of equipment for land, naval and air forces at Defexpo India, in various fields such as air defence, optronics and communications.

The group will demonstrate its capabilities in the field of global air defence solutions, force protection, missile systems and rocket systems by showcasing Shikra 60: the tactical C2 to ensure a complete airspace surveillance of up to a range of 80 km and heterogeneous weapon systems coordination; ADES: the ultimate all-in-one mobile short-range air defence system; gun system: the latest generation air defence gun to defeat emerging low-cost targets; SAMP/T: the European, in-service, medium-range air and missile defence solution; LMM: the new family of lightweight multi-role missiles; laser guided rocket in 70mm calibre.

Thales develops a comprehensive range of optronic equipment aimed at evaluating critical situations at a tactical and strategic level. Thales is the European leader in night vision systems, whose equipment are used by tactical units, Special Forces and aircraft and helicopter pilots. The company will exhibit the Catherine XP, a compact high-performance thermal imager Sophie XF, a multifunction hand-held thermal imager with continuous optical zoom; Helie, helicopter light intensified equipment; Damocles, a third generation multifunction targeting pod. Thales will be located at French Pavilion, Stand 12.2L. •


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'Going by the current order book of ₹26,000 crore, we are expecting significant turnover for the next financial year'

Anil Kumar, Chairman & Managing Director, Bharat Electronics Limited

***SP's ShowNews* (SP's): What is your vision for BEL?**

Anil Kumar (Kumar): I would like to see BEL as a ₹25,000-crore company by 2020. But at the end of the day, we should make profits even as our turnover increases. Focus on research and development (R&D) is definitely the way forward as with our own R&D, we stand a better chance of adding more value to our products. We have 2,000-odd engineers working in R&D. To give a boost to the R&D set-up in BEL, we will make more investments in infrastructure so that our engineers are better equipped. We will look at technology transfer for acquiring advanced technologies wherever they are not available within our country.

We, however, want to reduce the dependence on foreign companies and build up skills in-house. We will explore joint ventures (JV) if it's advantageous to us. I want a lean workforce, which is adequately skilled. Quality of products and marketing will be the other two key areas of focus.

Missiles, radars, C4I or network-centric systems (NCS), electronic warfare and homeland security are some of businesses we want to get into in a big way. We have identified nuclear power, homeland security and railways as our future growth areas. We have already entered two of these areas already—nuclear power instrumentation and homeland security. Work related to the railways — signaling and anti-collision devices— has just started. Our Panchkula unit is getting an order from the Coal India Ltd to develop an anti-collision device for dumpers at mines.

We will also focus on night vision devices like thermal imaging devices, both cooled and uncooled, and may manufacture detectors as these are not available in the country now. We will give a push to homeland security. As for another nuclear power, we are participating in a tender floated by the Nuclear Power Corporation of India Ltd and hope to get some order for electronic instrumentation for atomic power plants. It will be an additional business for our Kotdwara unit.

We are pursuing the C4I or NCS business in all the three armed forces. We have invested quite a bit of our resources in it. Tactical communication system, battlefield management system and battlefield surveillance system will all turn out into huge moneys-spinners.

AKASH MISSILES

SP's: What is your sales target this year? How is the order book?

Kumar: We have some major projects lined up for Q4 and we are confident of surpassing last year's turnover of ₹5,530 crore. The order book at the end of January 2012 is around ₹26,000 crore as compared to ₹23,600 crore in the beginning of FY 2012. Having received orders worth ₹6,000 crore in the first three quarters, we are expecting inflow of another ₹4,000 crore orders in the last quarter.

SP's: Can you name some of your recent projects that you are proud of?

Kumar: Weapon locating radar (WLR) is one such project which we are quite satisfied about.

This project was proactively taken up by BEL with Electronics and Radar Development Establishment (LRDE), a DRDO lab. The indigenously developed WLR has met all the user requirements. We are also looking at a smaller and more compact version of this radar for mountainous terrains.

A major project we have taken up is the software defined radio (SDR) with which all three Services' requirements are being simultaneously addressed with variants. By June this year we should have the first model and by December, we should be able to offer it for user trials. The SDR has been designed in such a way that it can work with the legacy systems of the armed forces. Over the years, as the old ones are phased out, the SDRs will take their place.

The Ministry of Rural Development placed an order for six lakh Tablet PCs to carry out the socio-economic caste census and I am happy to note here that BEL rose to the challenge by supplying the required numbers in record time.

SP's: What is your projection for the next fiscal?

Kumar: Going by the current order book of ₹26,000 crore, we are expecting significant turnover for the next financial year. A major share of the turnover will come from weapon systems, radars, fire control systems, network-centric systems, communication systems, electronic warfare, surveillance systems, tank electronics and smart cards.

Ever since the company's inception, R&D has predominantly been the driving force behind BEL. Some of the key products which are currently under development are likely to make rich contributions to BEL's business in the coming years. The company has also initiated diversification activities in the areas of nuclear instrumentation, solar energy, airborne radars, etc.

A major share of our turnover in the next two years will come from weapon systems, radars, fire control systems, network-centric systems, communication systems, electronic warfare, surveillance systems, tank electronics and smart cards. The company has also initiated diversification activities in the areas of nuclear power instrumentation, solar energy, airborne radars, etc.

SP's: How is BEL doing on the export front?

Kumar: The company is targeting $42 million of exports this year. The total order book for exports is about $63 million.

Countries in Africa, Latin America, South East Asia, SAARC, Middle East and CIS countries are the markets for export of BEL products. The identified products are HF & VHF communication equipment, battlefield surveillance radar-short range, opto-electronic products like eye safe laser range finders, night vision devices, and solar products and components. Apart from products, contract manufacturing business from USA and Europe is also being addressed.

BEL is also closely working with various foreign aerospace and defence companies to secure business under the mandatory offset clause in the RFPs for Indian Defence Procurement. These companies have visited BEL's facilities and based on their feedback, necessary action has been taken. Seven of our SBUs/Units have got AS 9100 Certification to address the aerospace business. Further, efforts are being made to establish long-term supply chain relationships with global players. •

—To be continued

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'Punj Lloyd is excellently placed to cater to the Indian defence requirements and be a partner of choice for global OEMs'

R.K. Sharma, President Defence, Punj Lloyd Group

***SP's ShowNews* (SP's): What are Punj Lloyd's plans for defence?**
R.K. Sharma (Sharma): Defence is going to be a key area of growth for Punj Lloyd and we aim to be a major player in this sector. We have made an assessment of the Indian defence requirements and accordingly made strategic investments which are ideally suited to address them.

SP's: Please tell us about the investments that Punj Lloyd has made in defence?
Sharma: We have set up a world-class manufacturing facility to manufacture products as per the requirements of the Indian defence forces. This will be achieved in collaboration with our technology partners. Additionally, we would be in a position to offer cost-effective solutions to the global defence original equipment manufacturers (OEMs) as well.

SP's: How do you plan to support the offsets requirements of defence OEMs?
Sharma: A successful offset programme should be a by-product of an industrial cooperation which makes a good business sense on its own.

While setting up our manufacturing facility at Malanpur, we have kept our global clients in mind. The facility exceeds the specifications required to meet defence industry norms. Consequently, we are hoping to be a partner of choice for global OEMs. This cooperation is also expected to meet offsets commitments of our global partners.

SP's: Please tell us about some of the programmes that Punj Lloyd is currently pursuing in defence?
Sharma: We submitted our first bid as prime contractor for upgrade of Zu 23 2B air defence guns last year and are ready to field the gun for NCNC trials with the Indian Army. We have also submitted detailed project proposal to the Ministry of Defence (MoD) for upgrade of 130mm artillery guns and are awaiting the request for proposal (RFP).

ARTILLERY SYSTEMS

Additionally, we have established technology partnerships with global defence OEMs to meet anticipated future requirements.

SP's: Where do you see Punj Lloyd five-ten years from now?
Sharma: We are confident that we will be one of the major players in the Indian defence industry in the years to come. •

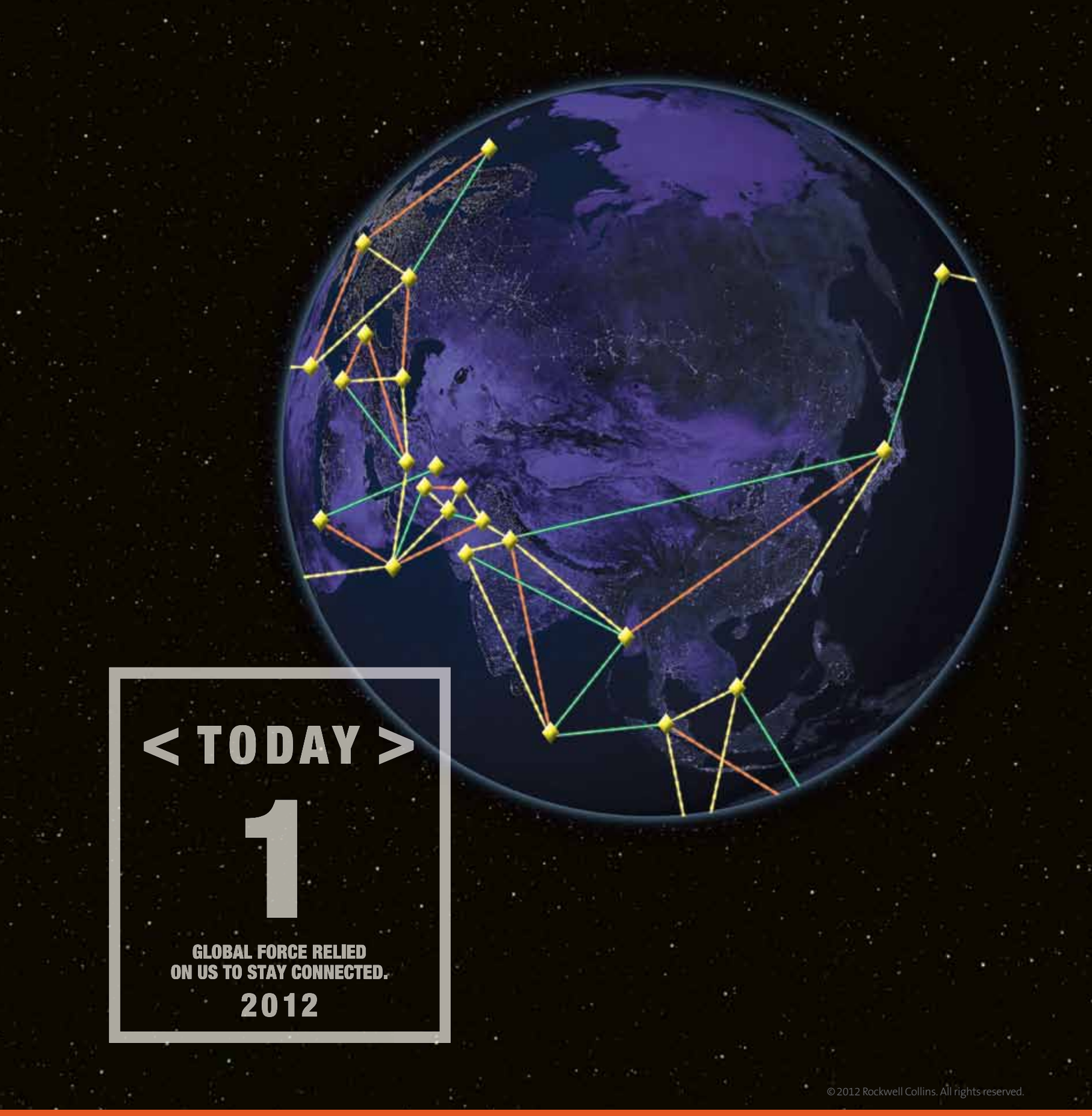
SELEX Galileo bags major contracts in export markets

Selex Galileo, a Finmeccanica company, has recently been awarded contracts worth approximately 15 million Euros for support and service solution activities in the export marketplace.

"The orders that Selex Galileo has secured since the beginning of the year 2012, shows a clear diversification both in terms of products and end user," said Fabrizio Giulianini, CEO of Selex Galileo adding, "we are extremely pleased with the more-than-positive feedback that our clients have provided us with. Selex Galileo's support and service solutions are a key component of our business and we expect these to continue to grow."

The recent orders include support arrangements for the FLIR111 navigation system, support for the Grifo radar and contracts for the logistic support of unmanned aerial systems (MIRACH 100/5 and FALCO). •

FALCO



Every day, coalition forces rely on Rockwell Collins to connect users to a secure global communications network. From voice and data communications that bridge the gap between legacy and next-generation radios to fixed-site and mobile systems, we provide the critical solutions military forces need to successfully complete their missions. To see where we're headed, visit rockwellcollins.com.

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Rheinmetall Air Defence refutes allegations


OERLIKON SKYSHIELD

In a press release issued recently, Rheinmetall Air Defence AG of Switzerland (RAD) has objected the decision of the Indian Ministry of Defence (MoD) to exclude it from doing business with India's Ordnance Factory Board (OFB). "The MoD's decision was based on allegations against RAD which the company claims is false and without merit."

According to the company, the Indian authorities are yet to inform RAD of the details of these allegations. "Transparency with regard to investigations would enable RAD to put forward conclusive evidence that will refute all claims made against it. RAD is keen to cooperate with Indian authorities and to assist in any investigation related to the company."

RAD insists that its employees have invariably behaved in a correct, law-abiding manner. The company has made this clear to the Indian authorities in meetings, in which RAD underpinned its position with comprehensive documentation. "Just as they are in every other country in the world, RAD employees in India are subject to the company's stringent compliance regulations and have adhered to them.

"A mutually beneficial, trustful relationship with the Indian Government authorities and armed forces continues to be very important for the company. RAD will therefore do everything in its power to prove the allegations wrong. RAD remains committed to a close dialogue with the Indian authorities," stated the release. •

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A330 MRTT: The 21st century benchmark for new generation tanker/transport aircraft

A330MRTT FORMATION

The A330 MRTT is the only new-generation multi-role tanker transport aircraft flying, and fully certified. Having demonstrated its capability during an extensive flight test campaign and following a first delivery in early June 2011, it made its first flight in RAAF service in September 2011. The A330 MRTT uniquely offers simultaneous military strategic air transport and air-to-air refuelling capabilities.

The A330 MRTT is the most capable tanker/ transporter currently available. It is the only aircraft able to perform simultaneously three different types of missions: Aerial Refuelling (tanker role), passenger and/or freight transport, and/or medical evacuation (MEDEVAC) – making it exceptionally productive. Additionally, its fuel capacity is sufficient to supply the required quantities without the need for any additional tanks, or major structural modifications and it is able to carry more passengers and more freight than any competing type.

The A330 MRTT is based on the advanced medium- to long-range, twin-aisle, twin-engine commercial aircraft of the Airbus fly-by-wire family, the A330. More than 1,100 of these have been sold to some 90 customers and over 800 are operated all around the globe, ensuring easy support and many years of commercial life ahead.

Derived from the successful A330-200 series which has a wing large enough to hold all the fuel needed to make it the highest performing tanker, the A330 MRTT is able to carry up to 111 tonnes/245,000 lb of fuel in its wings alone. This enables it to excel in air-to-air refuelling missions. Without the need for any additional fuel tanks, it retains its full and simultaneous passenger and cargo carrying capability. The A330-200 has a range of up to 8,000 nm/14,800 km, with a maximum speed of Mach 0.86. •

A330 MRTT REFUELLING F-18

A330 MRTT REFUELLING F-16

Airbus Military A400M commences second serial production

A400M & A330 MRTT

A400M

The Airbus Military A400M final assembly line (FAL) in Seville, Spain, has begun working on the second serial production A400M. The integration of the wings and central wing-box for this aircraft, known as MSN8, began in February.

The rest of the main components of the second A400M destined for delivery to a customer–the French Air Force–arrived at Seville last week: the vertical tailplane (VTP) from Stade (Germany); the nose from Saint Nazaire (France), the horizontal tailplane (HTP) from the nearby Tablada site (Seville), and the fuselage from Bremen (Germany). France will receive this second A400M military airlifter in 2013.

KING OF SPAIN FLIES IN A400

Recently, King Juan Carlos I of Spain became first head of state to fly in Airbus Military A400. With Airbus Chief Test Pilot Military, Edward "Ed" Strongman, and Experimental Test Pilot, Ignacio "Nacho" Lombo, the King of Spain made a local flight of some 40 minutes from the Torrejón base near Madrid.

During the flight the King, who qualified as a military pilot, took control of the aircraft for 20 minutes at around 10,000 feet altitude and performed a series of manoeuvres including turns and a simulated delivery of humanitarian supplies.

The A400M is an all-new military airlifter designed to meet the needs of the world's armed forces in the 21st century. Thanks to its most advanced technologies, it is able to fly higher, faster and further, while retaining high manoeuvrability, low speed, and short, soft and rough airfield capabilities. It combines both tactical and strategic/logistic missions. With its cargo hold specifically designed to carry the outsize equipment needed for both military and humanitarian disaster relief missions, it can bring this material quickly and directly to where it is most needed. Conceived to be highly reliable, dependable, and with a great survivability, the multipurpose A400M can do more with less, implying smaller fleets and less investment from the operator. The A400M is the most cost-efficient and versatile airlifter ever conceived and absolutely unique in its capabilities. •

'We see the coming five years as being particularly focused on industrial partnerships that support licensed manufacturing and ToT'

Kevin J. Cosgriff , Senior Vice President,
International Business and Government, Textron Systems Corporation

***SP's ShowNews* (SP's): Could you give brief details of Textron Systems' profile and its activities in India?**

Kevin J. Cosgriff (Cosgriff): Tex tron Systems is uniquely positioned to support the Indian Government and its armed forces with systems critical to India's defence and homeland security. These include:

- Our landing craft, air cushion (LCAC) has brought a range of mission capabilities to the US Navy since 1984.
- Our armoured security vehicle (ASV), with an operational readiness rate over 90 per cent, is heavily relied upon in Afghanistan and Iraq by the US Army as well as the Afghanistan National Army.
- Our shadow tactical unmanned aircraft systems coupled with our One System Ground Control Station has flown more than 7,00,000 hours, mostly in combat missions, with the US Army and Marine Corps.
- Our sensor fuzed weapon (SFW), of which 5,000 are in the US Air Force's inventory, provides a solution to the unexploded ordnance (UXO) problem.
- Our cutting-edge Overwatch intelligence software that is the backbone of integrated ISR capabilities and is currently used by more than 37,000 analysts across the US intelligence agencies, military branches and unified commands.

Since 2007, Textron Systems' activities in India are primarily focused on the development of the sensor fuzed weapon (SFW) programme in support of the Indian Air Force.

Sensor fuzed weapon is a combat proven and extensively tested air-delivered area weapon that provides a highly effective and reliable anti-vehicle weapon to the IAF. The SFW programme is a government-to-government transaction between India and the US, and was formally announced on December 8, 2010. We remain actively involved in the delivery of the system to the IAF.

Additionally, we have extended our support to the Indian Navy as it explores its requirements for hovercrafts. Textron Marine & Land Systems, an operating unit of Textron Systems, is the original manufacturer of the landing craft air cushion (LCAC), currently employed by the US and Japanese Navies.

Further, we are working with the Indian armed forces and important agencies, such as the Ministry of Home Affairs, the Defence Research and Development Organisation (DRDO) and the National Intelligence Grid, who have counter terrorism needs in the areas of tactical and geospatial intelligence solutions and unmanned aircraft systems (UAS)—both areas of expertise for Textron Systems. With extensive multi-source intelligence software solutions and a family of UAS, including ground control stations, we are able to bring a broad set of proven capabilities in support of their critical missions.

SP's: Textron India Private Limited (TIPL) was reportedly established in Bangalore to carry out collaborative work on a wide range of engineering and design services. Could you give details of the work carried out by the TIPL in developing and creating innovative products and solutions for Textron Systems' worldwide customers since its establishment in 2007?

Cosgriff: Textron India Private Limited was incorporated in 2004 as a strategic investment by Textron in India to support Textron's businesses in the fields of engineering, business development and sourcing. Today, in our state-of-the-art facility within Bangalore's Global Village which includes electronics labs and space for a vehicle and mechanical engineering workshop, several hundred qualified engineers and professionals are working on complex engineering, aeronautical, industrial design, product and product management projects in support of our businesses.

SP's: It is believed that the IAF has opted for the acquisition of substantial numbers of the Textron highly lethal sensor fused weapon—the CBU-105 cluster bomb? Could you give details of the weapon system including safety factors which help eliminate/minimise the chances of 'unexploded ordnance'? Did TIPL have a role in the development of the said weapon system?

Cosgriff: The Indian Air Force is acquiring 512 sensor fuzed weapons from the US Government. SFW is an air-delivered area weapon that provides a highly effective and reliable anti-vehicle weapon to the IAF. Based on extensive testing and use in combat by the US Air Force, SFW is proven to leave less than one half a per cent unexploded ordnance (UXO). Additionally, the rare UXO left by SFW is safe to handle, as it cannot be detonated once it reaches the ground. At a 99.6 per cent proven reliability rate, SFW is one of the world's most reliable and safest weapons. We see it as our responsibility to ensure our weapons complete their intended mission without leaving dangerous effects after a conflict, and have succeeded in doing so with SFW.

SENSOR FUZED WEAPON

SFW achieves this by not using contact fuzing—the key feature that makes legacy cluster weapons dangerous and unsafe. Instead, SFW employs both active and passive sensors that search for and detect targets during flight, that precisely deliver munitions to intended armoured targets day or night and in all weather conditions. SFW also contains redundant self-destruction mechanisms. If SFW does not sense a target (a) within eight seconds or (b) upon reaching 50 feet (15.24 metres), its warheads self-destruct. Further, SFW contains a fail-safe self-neutralisation mechanism. SFW's batteries carry only enough power to carry out its intended mission. Without this power, the SFW and its submunitions are rendered neutral in two minutes or less.

The Textron Systems India team is actively working with the Indian Air Force on the delivery of SFW and the integration of the system onto the Jaguar. •

—To be continued

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Come visit CAE's booth (Hall 10, Booth #2) at Defexpo 2012 to see our comprehensive UAS mission training solution.

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MOTOR SICH: RELIABLE PARTNER IN AERO ENGINE MANUFACTURE

Vyacheslav Boguslaev
Chairman of Board of Directors Motor Sich JSC

Motor Sich JSC is one of the leading manufacturing facilities in aviation industry of Ukraine, and it is among the world's veteran companies that manufacture aero engines, with engine manufacture launched at the time of the First World War.

Currently, Motor Sich JSC is represented by several tens of thousands of gas-turbine aero engines operated on aircraft in more than 120 countries worldwide, which have been developed by the world-known aircraft- and helicopter-design agencies, such as Antonov, Beriev, Iliushini, Tupolev, Yakovlev, Mil

AI-222-25

and Kamov. Moreover, engines manufactured by Motor Sich JSC are installed on the trainers and combat trainers manufactured by Aero Vodochody a.s. (the Czech Republic) and HAIG Co. Ltd. (People's Republic of China).

In 1961, the first Motor Sich gas-turbine engines were supplied to India within the first supplies of An-12 military cargo aircraft for Indian AF. Nowadays, about 1,000 Motor Sich-labeled engines are successfully operated in the Indian Armed Force on more than 100 An-32 military-cargo aircraft developed purposefully upon request of the MoD of India at the 1960s; on several Il-38 aircraft; on almost 200 combat and cargo Mi and Ka helicopters (with the world-biggest Mi-26 helicopter among them); and on URAN missile systems. Assisted by Motor Sich JSC, the repair depot has been built in Chandigarh to overhaul AI-20, TV3-117 and AI-9V engines operated in India.

Commercially produced Motor Sich JSC engines and those under development for passenger, cargo and military-cargo aircraft include turboprop and turbo-prop-fan engines of 400 to 14,000 hp, as well as bypass engines of 1,500 to 23,400 kgf.

Currently, one of the priority vectors of Motor Sich JSC activity is manufacture of D-436-148 engine for An-148 family passenger planes. The engine meets ICAO applicable requirements in terms of emission, with the An-148 noise level being lower than the standards set.

TV3-117VMA-SBM1V

AI-450-MS two-shaft auxiliary gas-turbine power unit has been developed by Motor Sich JSC for various versions of An-148 and other passenger airplanes and freighters powered by D-436 family propulsion engines. The APU starts the propulsion engines and supplies compressed air and electricity to onboard systems, with the propulsion engines inoperative.

High efficiency of using AI-450-MS APU is achieved by means of low specific fuel consumption consequent to high parameters of thermodynamic cycle; high efficiency of assembly units and selected arrangement of air bleed from the auxiliary compressor; and low operating costs.

Manufactured in various versions, An-148-100 airplane can carry 80 passengers to a distance of 2 to 5.2 thousand kilometers, with a high comfort level provided. It ranks second to none in terms of cost/quality ratio. The following are the airplane features that catch airlines' interest all over the world:

high airplane performance;

possibility to use the airplane at the sub-standard airfields due to the high location of engines over the runway;

low cost of life cycle.

Commercial production of An-158 passenger airplane, the 100-seat An-148 configuration, has been launched this year, with An-158 type certified on 28 February 2012. Currently, work on developing An-168 VIP configuration and An-178 cargo configuration is underway. Designed by GP Antonov engineers, the two airplane configurations will be powered by D-436-148 engine and its versions.

The ever-increasing role of combat aviation poses high requirements both to training new pilots and maintaining flight skills of Air Force pilots in using airborne weapons. Thus, the trainers and combat trainers hold a prominent place in the Air Force worldwide.

Our company has specialized in developing and manufacturing engines for trainers and combat trainers for 80 years, with engines for trainers successfully supplied since 1927. Powered by gas-turbine Motor Sich JSC engines, more than 3,000 trainers and combat trainers are operated currently in 41 countries worldwide.

Following this tradition, currently Motor Sich JSC is participating in the development of AI-222 engine family in cooperation with SE Ivchenko-Progress design agency. The engine in question can provide the maximum thrust of 2,500 to 3,000 kgf, and even 5,000 kgf in its augmented version.

Commercial production of AI-222-25 engine of at least 2,500 kgf for Yak-130 trainer has been launched. Currently, the trainer is supplied to flight training centres in Russia's and

D-436-148

Algeria's Air Forces. The non-augmented AI-222-25 engine version and augmented AI-222-25F engine version serve the purpose of the development of L-15 twin-jet combat trainer manufactured by Hongdu Aviation Industrial Group Corporation (HIC). AI-222-25F engine is the first augmented engine designed and developed in Ukraine. Currently, the engine is being flight-tested on L-15 LIFT (Lead-In Fighter Trainer) aircraft. The engine also can power Yak-130 combat configurations.

On 23 June 2011, MS-14 turboprop engine of 1,500 h.p. was started at Motor Sich JSC for the first time. It serves the purpose of An-2 aircraft remotorization and can power other similar class aircraft. MS-14 has been developed around its precursor, TV3-117VMA-SBM1 turboprop engine intended for An-140 regional passenger airplanes that service national and international routs. TV3-117VMA-SBM1 engine is operated extensively in the severe climate of the Republic of Sakha (traditionally known as Yakutia) of the Russian Federation.

In 2007, Motor Sich JSC obtained the Type Certificate for TV3-117VMA-SBM1V new helicopter engine designed by its engineers. The engine is intended to improve helicopter performance and combat effectiveness, especially, when operated in highland regions of the counties that have hot climate. The engine performance meets contemporary technical requirements, with its total service life being 12,000 hours/cycles and TBO being 4,000 hours/cycles. The engine operation power settings are appropriately adapted to operation conditions at various helicopter types. The engine automatic control system makes it possible to adjust its takeoff power to one of the following

An-158

values when testing the engine at the company test bench: 2,500: 2,400; 2,200 or 2,000 h.p. The automatic control system enables the engine to have its rated power flat up to higher environment temperatures and flight altitudes in comparison with other TV3-117V engine versions available, including VK-2500 engine that powers Mi and Ka helicopters.

Other power settings have been introduced for further flight safety with one engine inoperative (OEI), such as 2.5-min power setting of 2,800 h.p. and 30-min power setting equal to takeoff power. The possibility to make use of continuous power setting of 2,800 h.p. with OEI for 2.5 min and for 60 min has been confirmed. Installing TV3-117VMA-SBM1V engine on the helicopter makes it possible to increase the rate of climb and the operational ceiling, as well as to maintain high helicopter performance when anti-sand devices and exhaust infra-red suppression systems are installed on the helicopters.

TV3-117VMA-SBM1V engine showed the record rate of climb when flight-tested on Mi-24 helicopter: it took 9 min to the helicopter to climb to an altitude of 5 km. Powered by this engine, Mi-8MTV helicopter has managed to climb to an altitude of 8.1 km!

In June 2011, TV3-117VMA-SBM1V engine state rig tests were successfully completed in Gatchina, the Russian Federation. The tests were carried out in accordance with the Program approved by the Commander-In-Chief of the Air Force of the Russian Federation and coordinated with Mil MVZ JSC and Kamov JSC.

Various TV3-117VMA-SBM1V engine versions are developed to be used in new helicopter projects, such as TV3-117-VMA-SBM1V series 1 engine that has digital automatic control system of FADEC type, and TV3-117VMA-SBM1V series 2 engine that has an advanced electronic governor. Using innovative automatic control systems will result in further enhancement of engine and helicopter performances.

TV3-117VMA-SBM1V series 4 and 4E engine versions (with pneumatic or electric starting systems respectively) serve the purpose of remotorizing earlier Mi-8T helicopter versions to improve their performances, especially, when operated in the countries that have hot climate and highland take-off grounds. The engines have their rated power flat up to higher environment temperatures and altitudes of helicopter flight and basing in comparison with other TV2-117 engines that power Mi-8T helicopters currently. The engines possess the best design solutions that ensure higher parameters and time limits, with those parameters streamlined on TV3-117VMA-SBM1V basic engine version. It has made it possible to establish the total life of 15,000 hours/cycles for both TV3-117VMA-SBM1V series 4 and 4E engines, as well as to introduce 2.5-min and 30-min power settings with OEI.

Motor Sich JSC has accumulated great experience in cooperation with CIS and overseas countries, and it is ready to offer the widest range of promising engines for fixed- and rotary-wing aircraft.

Manufacturing durable and reliable customer-oriented and user-friendly products is our goal. We aspire to strengthen the Motor Sich JSC existing positive image that distinguishes the company as a dependable and substantial business partner.

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AgustaWestland exhibiting its range of modern high performance helicopters

NH90

AgustaWestland is exhibiting its range of modern high performance helicopters at Defexpo India 2012. Helicopters to be showcased include the AW101, 12 of which were ordered by the Indian Air Force in 2010 for government transport. Other helicopters to be featured include the military variant of the AW119, the AW109LUH, coast guard variant of the AW139 and the NH90 naval helicopter.

AgustaWestland is offering the naval variant of the NH90 to the Indian Navy for its new anti-submarine and anti-surface warfare multi-role helicopter (MRH) requirement. The NH90 is the biggest helicopter programme ever launched in Europe, with firm orders now reaching 529 units to equip and modernise 19 services in 14 countries including the Armed Forces of France, Germany, Italy, the Netherlands, Portugal, Finland, Norway, Sweden, Greece, Oman, Australia, New Zealand, Spain and Belgium. Of those 529 firm orders over 100 are for the NFH naval variant for the navies of Italy, France, Norway and The Netherlands.

For coast guard applications, AgustaWestland is the world's leading supplier of helicopters with a complete range from the three-tonne AW109 Power up to the 16-tonne AW101. In the six-tonne class, the AW139 has achieved significant success in Asia with sales to the coast guards of Malaysia, South Korea and Japan.

In 2005, AgustaWestland sold its first AW109 Power helicopter to the Government of Rajasthan and since then sales of its civil product range have taken-off with orders being placed for over 50 aircraft including additional AW109 Powers, the Grand light twin-engine helicopter, the AW119 Ke and the AW139 medium-twin engine helicopter. AgustaWestland is a worldwide leader in the supply of corporate and VIP helicopters and in the last five years has been the market leader in India.

Earlier this month, Indian Rotorcraft Limited, a joint venture between AgustaWestland and Tata Sons, started construction of a new helicopter production facility in Hyderabad which will be completed in mid-2013, marking a new development in the Indian aerospace industry.

AgustaWestland is proud to have been doing business in India for over 40 years with the delivery, in 1971, of an initial batch of Sea King helicopters to the Indian Navy for anti-submarine warfare. Further batches of Sea Kings were delivered in the 1970s and 1980s and many remain in service today in the anti-submarine warfare, anti-surface warfare and amphibious support roles. AgustaWestland continues to provide support, training and upgradation services to the Indian Navy for its fleet of Sea King helicopters. •

General Dynamics UK offers a range of surveillance solutions for border protection

ISOPS


BORDER SURVEILLANCE EQUIPMENT

At this year's Defexpo, General Dynamics UK is showcasing how its range of imaging solutions can play a key role in helping India solve numerous security challenges, whether military or civil security, and resilience.

Thanks to the company's systems integration approach, its wide range of cameras and sensors can be networked to allow commanders monitor large swathes of frontier from one control room; thereby, responding to an incursion more rapidly and effectively. Those control rooms can be anything from a purpose built facility to the General Dynamics UK's own deployable infrastructure solutions more suited to positioning such capability in the most inaccessible locations along India's borders.

General Dynamics UK's family of imaging solutions, many of which are currently used on operations, ranges from a handheld camera that can be used by dismounted soldiers up to its ISO persistent surveillance (ISOPS) 'solution in a box'—a containerised control room with a full array of cameras and sensors attached to its mast. These imaging systems don't only offer surveillance capability but also targeting and target acquisition.

BORDER AND COASTAL SECURITY

An enduring challenge for India's security is the level of threat of incursion over its northern borders or sea coast. A means of monitoring these frontiers on a continuous basis and receiving automatic alerts of any incursion, especially in the most vulnerable and remote locations, would help Indian security forces respond more quickly and more efficiently to any threat.

General Dynamics UK's ISOPS capability answers this need. ISOPS is a cost-effective, persistent surveillance asset housed in a 20-foot ISO container that provides high performance surveillance, target acquisition and communications capabilities in a 'box', and can be simply and effectively deployed to any location from flat-bed truck, freight train, Chinook helicopter, C-130 Hercules or A400M transport plane.

ISOPS provides a fixed infrastructure that can be deployed within to provide wide-ranging protection capability using the Kylmar long-range camera (BRC3K-TI) and any number of centrally controlled passive and active sensors. ISOPS can be deployed for long periods for permanent and semi-permanent installations.

It features a 20 m climbable lattice tower that travels in sections within the ISO containers profile, and is easily assembled and attached to the ISO container by a crew of two in only two hours. Individual cameras and sensors are fitted before or during the tower assembly, allowing full deployment without the need to climb the structure. There is no need for fixed or pre-prepared infrastructure as outriggers offer the necessary stability to allow the unit to operate in rough, remote terrain such as some of India's frontier areas.

Each sensor package is combined with a high performance sensor positioning system to ensure the highest possible directional accuracy. When integrated with a command and control system, ISOPS provides a highly flexible command and control, intelligence, surveillance and reconnaissance (C2ISR) suite that can be tailored to suit specific mission objectives. The ISOPS command centre, located inside the unit, contains a number of sensor control systems, visual aids and integral location software along with communication devices to create a link with the central command post. A network of systems using a number of ISOPS containers and smaller modules can be strategically sited to provide a surveillance solution for a wider geographical area.

OTHER OPTICAL SOLUTIONS

Providing more flexible deployment, the ISAS system is designed to provide a more short-term deployable surveillance and targeting system for border surveillance and other persistent observation tasks that require a smaller deployment team. The ISAS is a portable 15-metre mast system that can be mounted on the ground, trailer or other transportable mechanism and installed within an hour. It provides a similar capability to ISOPS but is designed to occupy and smaller footprint and as such addresses applications with shorter periods of deployment. Like ISOPS, ISAS is modifiable to suit the specific applications to include radars or other passive sensors and longer range variants.

P-SAS offers a smaller capability that can be used by dismounted soldiers. With an all integrated self-contained control and operational mechanism, P-SAS can be used to protect dismounted soldiers and provide surveillance capabilities for border patrols, etc. Custom designed systems are possible along with options such as P-SAS/Blighter Explorer. This is a fully-integrated GIS-based portable ground-based radar and camera system that uses the radar to detect targets then brings the camera onto the target to give visual information and target ID.

SR-SAS provides short-range surveillance capabilities for quick to use, hurry-up systems for above the line observation and perimeter surveillance. Simple day and night operation are possible using off-the-shelf components.

To know more about General Dynamics UK's imaging solutions; visit Stand 14-24 at Defexpo 2012 at the Pragati Maidan, New Delhi or log on to www.generaldynamics.uk.com. •

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Goa Shipyard - Youngest defence yard sails ahead

Goa Shipyard Limited (GSL) is India's youngest defence shipyard, but has made significant strides. Here in an interview with *SP's ShowNews*, Rear Admiral (Retd) Vineet Bakhshi, Chairman and Managing Director, speaks on the driving spirit behind the creditable growth trajectory of the company.

AERIAL VIEW OD GSL

***SP's ShowNews* (SP's): From a modest ship repair yard to an award-winning defence hipyard - how did GSL accomplish this successful transition?**

Vineet Bakhshi (Bakhshi): Originally established by the Portuguese as a repair yard, GSL was a division of Mazagon Dock Limited post Goa's liberation in 1961. Thereafter, in 1967 it was incorporated as Goa Shipyard Limited, with its own Board of Directors. It has been the vision of past leadership, who made long-term investments in expansion, technology induction and infrastructure, and the commitment of the executives and employees that was primarily responsible for the growth of the company.

SP's: What are the ingredients of this growth?

Bakhshi: It is a combination of a host of factors principal being the faith of the customer, induction of modern technology, setting up an ERP and paperless office system and the development of a quality design office. This has also been aided by continuous upgradation of employee skills, good HR practices, and healthy relationship with the unions and associations.

SP's: As the only shipyard in India equipped with a proven design capability, how does GSL ensure quality products that meet with the customers' satisfaction?

Bakhshi: Continuous research & development in ship design is integral to GSL's customer orientation. GSL's (ERP)-IT system ensures that designs are verified by internationally accredited facilities. The in-house design system involves a virtual ship construction wherein the design of the ship is evaluated for spatial layout. The shipyard's designs provide for efficient hull forms as well as to the specific needs and requirements of users. In fact, as you have mentioned, it is the only shipyard in India having a proven capability to design and build ships to a customer's specific requirements with a focus on patrol vessels.

The shipyard's quality assurance programme has been carefully developed over the years to meet with rigorous defence and commercial quality standards. The Quality Assurance Division is involved at every stage of the production and acceptance process.

SP's: What is the business model followed by GSL?

Bakhshi: GSL seeks to ensure optimum utilisation of its resources and looks at sustainable development, ensuring that the future generations are better advantaged. While building its core competencies in shipbuilding, it has also utilised its technical and managerial capabilities to successfully diversify into new areas of products that include the design and construction of training simulators for the Indian Navy and ONGC and setting up of shore-based test facility for light combat aircraft (N) for Aeronautical Development Agency Bengaluru. Recently it has ventured into construction of glass reinforced plastic (GRP) boats for the Ministry of Home Affairs.

GSL has also arranged for licence production of "amphibious roll-on roll-off system" with 80 per cent of it being indigenously produced. The system, once introduced in the country, would considerably improve the amphibious capability of our forces. GSL is now looking to export its products overseas.

SP's: What is GSL's track record in terms of products designed and built?

Bakhshi: To date, GSL has built 189 ships including offshore patrol vessels (OPVs), missile craft, survey vessels, sail training ships, fast patrol vessels (FPVs), extra fast attack craft, offshore supply vessels and 116 glass reinforced plastic interceptor boats. Indeed, there are 21 FPVs and OPVs designed and built by GSL in services with the Indian Coast Guard. One 90 M OPV for the Coast Guard is under construction and will be delivered later this year.

In addition, four GSL designed Naval OPVs with state of the art features are under construction. At present, efforts are ongoing to develop design for a 75-metre multi-role patrol vessel with stealth features. In addition, work has started for the design of a shallow water anti-submarine warfare craft.

SP's: GSL's modernisation plans have been in the news recently. In view of this major infrastructural expansion, how does GSL envisage its future growth and expansion?

Bakhshi: World trends, it has clearly understood the importance of timely deliveries in the national and international arena. GSL has embarked on a planned modernisation project aimed at creating new facilities and infrastructure even while augmenting existing facilities to achieve the qualitative and quantitative objectives to build and deliver quality ships at competitive cost with shorter construction periods.

The modernisation will provide for virtually new facilities for the construction on steel, aluminium and GRP ships. It will include new wharfs, land berth, cranes and a ship-lift system.

Once fully completed, it will result in substantial augmentation of the shipyard's capacity to fabricate steel, aluminium and GRP hull vessels to nearly three times its present capacity. In addition there will be a quantum increase in the ship repair segment. The modernised yard, expected to be ready in about three years, will be a contemporary yard, ready for the 21st century. •

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Samtel leads the indigenisation wave in India

Samtel Display Systems (SDS) – a key Indian player in high-technology products for avionics and military applications – has a strong presence at Defexpo 2012.

Puneet Kaura, Executive Director, Samtel Display Systems, said, "As high-profile big-ticket defence purchases turn the focus of the entire world towards India, the Indian defence industry gets ready to cater to the offset and technology transfer requirements as an outcome of these purchases. We are glad that Samtel is at a stage that it can offer a repertoire of state-of-the-art avionics displays and advanced systems to meet the customised requirements of the worldwide aerospace industry."

At its stall LH.30, Samtel Display Systems is showcasing a wide range of military and cockpit displays and modern avionics systems; technical competence in defence and commercial avionics; and its international experience and the strength of its partnerships.

Rugged displays: To cater to the vast and growing requirement for indigenous rugged displays for land, naval and airborne requirements for our defence forces, Samtel is ready with its vast range of Rugged displays. RSD series of ruggedised AMLCD displays specifically crafted to cope with adverse and demanding environmental conditions at the same time maintaining extremely high levels of performance.

Following sizes of Rugged displays are being showcased: 20.1" Airborne and 20.1" ground/landbased applications, 19.0", 17.0", 15.0", 10.4" with Bezel keys and 10.4" with touchscreen.

Multifunction displays and smart MFDs: With the productionisation of color MFDs for Su-30 MKI Block-III and Block-IV production aircraft at Samtel's DGAQA qualified manufacturing facilities, the Samtel HAL JV has achieved the unique distinction of being the first public-private partnership in defence avionics space in India to have a primary cockpit display qualified and productionised for induction on a fighter aircraft. These MFDs were developed under the aegis of DARE programme, with qualification and flight testing done under aegis of HAL and CEMILAC, and IAF.

Samtel booth has these 5"x5" and 6"x6" MFDs on showcase, along with MFDs and next-generation large-size Smart MFDs for some future star platforms.

Multifunction Indicators: 3ATI & 4ATI: The 3ATI and 4ATI display unit features a high-resolution AMLCD and ARINC 429 and discrete interface. The unit is designed to replace existing electromechanical instruments, allowing a single part no. to display attitude, airspeed, and altitude. The 3ATI & 4ATI display unit consumes less power, is low in weight and high in reliability. The unit is designed for commercial or military installations and an NVIS compatible version is available. The 3ATI & 4ATI display unit is ideal for new build or retrofit applications.

EL (Electro luminescent displays), cockpit panel flood light (CPFL) and integrally lit cockpit panel (ILCP) provide the pilot the visibility of the various legends on cockpit instruments, LH & RH consoles in the cockpit while flying at night, while the ILCP helps the various legends and symbols on instrumentation and control panels on the cockpit consoles to be visible to the pilot with flying at night.

IRST and helmet mounted displays: The booth also features demo films on Samtel's product range through its JV with Thales – Samtel Thales Avionics Ltd. The Indian helmet mounted sight and display for fighter aircraft is based on Thales' advanced and proven technologies; and is already flying on Indian Navy MiG-29K and qualified on M2000.

The Samtel-Thales JV aims to locally develop, customise, manufacture, sell and maintain indigenous helmet-mounted sight and display systems, infrared search and track (IRST), and modern avionics systems. A demo film on IRST showcases the capabilities of this passive long-range tracking and imaging device, which is used for automatic tracking and detection of multiple targets. •

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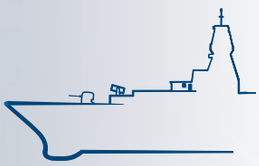

Surface Combatant Systems

Mine Warfare Systems

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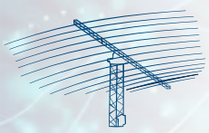

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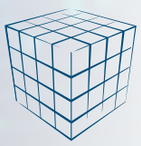

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GRSE expanding in horizon and capacity

The history of Garden Reach Shipbuilders & Engineers (GRSE) Ltd dates back to 1884 when a small factory on the eastern bank of river Hooghly was established. It was named as Garden Reach Workshop (GRW) in 1916. On April 19, 1960, it was taken over by the Government of India and placed under the administrative control of the Ministry of Defence. The name was subsequently changed to Garden Reach Shipbuilders & Engineers Limited on January 1, 1977.

India's first indigenously built warship, INS Ajay, a seaward defence boat (SDB) for Indian Navy, was built by GRSE in 1961, which was a landmark that paved the way for smaller patrol crafts and new-generation SDBs, high speed patrol vessels, survey vessels, and the marine acoustic research ship. Resulting from very high design and construction capabilities and a vast talent pool of skilled human resources, GRSE has successfully constructed a series of missile corvettes, landing ship tanks, the highly advanced Brahmaputra class frigates, fleet replenishment tankers and fast attack craft for the Indian Navy and offshore and inshore patrol vessels and hovercrafts for the Coast Guard.

GRSE has traversed a long way steadily, expanding in horizon and capacity and of course keeping pace with changing time. It has triumphantly fulfilled the country's increasing maritime demands, especially those of the Navy and Coast Guard. Today, it has emerged as one of the leading shipyards of India and a premier in the Eastern India, building a wide array of vessels, from world-class frigates to fast intercept boats.


KAMORTA , FIRST ANTI SUBMARINE WARFARE CORVETTE BUILT AT GRSE

GRSE acquired Raja Bagan Dockyard (RBD) on July 1, 2006 from CIWTC Ltd and on September 5, 2006, GRSE got the status of Mini Ratna Category-I. GRSE has embarked upon modernisation of its infrastructural facilities at a cost of over ₹600 crore.

GRSE has won the Raksha Mantri's award for design efforts towards optimum hull form and basic structural design for the water jet fast attack crafts, for import substitution in developing a "common helicopter traversing system" for handling both ALH and Seaking Helicopter and innovation in "design and manufacture of double lane bailey bridge for a vehicular load up to IRC Class 70R" in 2006-07. GRSE also won the Raksha Mantri's award for import substitution in "indigenisation of centrifugal pumps of Russian origin for warships and submarines of Indian Navy" in 2007-08. •

HDT Global's GPADS technology

HDT Global is exhibiting its guided precision aerial delivery systems (GPADS). The GPADS solution, developed by the HDT Airborne Systems Group, has the greatest GPADS capability, providing systems with the best glide ratio worldwide.

HDT Global provides the defence community with the largest array of GPADS, with glide ratios between 3.75:1 and 4:1 and impressive payload-carrying capabilities. GPADS use GPS guidance to autonomously deliver payloads to specific locations and are particularly useful for missions to remote areas where re-supplying troops on the ground is a dangerous undertaking. HDT Global's array of GPADS include the MicroFly, FireFly, DragonFly and MegaFly, with the ability to carry payloads from 100 lbs. to 42,000 lbs.


FIREFLY

"As the only company able to provide a complete aerial delivery solution across such a great weight range, HDT Global is excited to showcase our superior GPADS capabilities at Defexpo," said J.C. Berland, Chief Technology Officer of HDT Airborne Systems.

Both the FireFly and DragonFly have been selected by the US Army for the 2K and 10K joint precision aerial delivery system (JPADS) programmes of record. The MicroFly and the FireFly are currently in use with international military allies and now offer high altitude low opening (HALO) capabilities to enhance special operations missions. More than 2,000 FireFly have been fielded under the 2K JPADS programme. •

ITT- Exelis to highlight defence and aerospace technologies

The Defexpo India is the company's first event in India as Exelis, following its spin-off from ITT Corporation in October 2011. As a new stand-alone company, Exelis claims to be more agile in anticipating customers' evolving needs and in providing affordable capabilities and ready-now high technology solutions to military, government and commercial customers around the world.

"The Defexpo India is the leading land, naval and international security systems show in this important region, and we are excited to demonstrate our innovative and ready-now technologies to customers and potential partners here," said Bob Durbin, Vice President of Exelis Government Relations. "As Exelis continues to expand our presence in the Asia-Pacific region, our ability to provide affordable, mission-critical solutions will remain a top priority. We look forward to strengthening and building our customer and partner relationships."


GNOMAD

Exelis is a leader in networked communications, sensors, air and ground electronic warfare, composites, air traffic solutions, information and cyber solutions, space and C4ISR (command, control, communications, computers, intelligence, surveillance and reconnaissance).

Exelis will also highlight the following technologies: software defined radios; mobile ad hoc networking; global network on the move active distribution (GNOMAD); high capacity data radio (HCDR); SpearNet; SINCGARS airborne radio-export (for helicopters) and night vision technology.

Exelis is actively engaged in dialogue with the US Government and trade associations on export control policy and is currently seeking industry and government partners in India. •

Raytheon Missiles Systems to be on Jaguar

India is flexing its economic muscle and is being an aggressive buyer for defence industry products. The Indian Government is also smart enough to know that it can stretch its dollars even more and still give its legacy aircraft modern weapons capability through the use of Raytheon Company's proven, affordable and compact Munitions Control Unit (MCU), a cost-effective weapons integration system.

MCUs built by Raytheon Missiles Systems (RMS) will soon be on 126 of the Indian Air Force's Jaguar Darin II attack aircraft. Raytheon won a contract to build the MCU in 2011 and the funding to build MCUs was authorised for this year. RMS is currently obtaining the necessary components to build the MCUs for the Indian Air Force. Raytheon has had a trusted partnership with India for six decades.

"The MCU will bring savings across the Indian Air Force weapons inventory because of the commonality of equipment," said Bradley L. Watters, RMS Air Warfare Systems' International Programme Manager.

The MCU enables integration of modern weapons on legacy aircraft with minimal-to-no modifications to aircraft wiring and the flight or stores management software. An MCU, which is 34 cm by 14 cm by 9 cm and weighs only 2.75 kilograms, can be placed in a weapons pylon or avionics bay of a legacy aircraft and interfaces between smart weapons and the existing software of a legacy aircraft. That makes the MCU "the cost-effective integration solution for fourth-generation platforms," Watters said.

"The MCU can be used with Raytheon's joint stand-off weapon, Paveway, Enhanced Paveway, Maverick and AIM-9M Sidewinder," Watters said. "It can also be used to integrate other weapons on a case-by-case basis."

The integration of state-of-the-art weapons on legacy aircraft can often be a budget breaker because of the high cost of modifying the operational flight programmes software of the aircraft, but the MCU accommodates a variety of platform interface requirements. •

Eric Lenseigne new Country Director, Thales India

Eric Lenseigne has taken over as the Country Director & Managing Director of Thales India Private Ltd. He will be based in New Delhi.

Eric holds a Masters Degrees in Electronic & Signal Processing and in Business Administration as well. Eric has over 24 years' of experience in international business and market development in Northern Europe, Russia, Middle East and Asia. He started his career with the Alcatel Group and rose to become Vice President, Public and Regulatory Affairs at Alcatel-Lucent prior to joining the Thales Group in 2008.

Before moving to India, in October 2011, Eric was the Thales Group Country Director, Nordic and Baltic States and Managing Director of Thales Sverige based out of Stockholm, Sweden. His responsibilities included leading the business development activities for the Thales Group. •

USIBC signals interest in expanding global security partnerships

The US-India Business Council (USIBC) has launched its Executive Defence Mission to Defexpo 2012, signaling the deepened defence and security partnership between the United States and India. The Executive Mission, led by General Paul J. Kern (Retd), Senior Counselor, The Cohen Group and Vice Admiral (Retd) Kevin J. Cosgriff, Senior Vice President, International Business & Government, Textron Systems, brings the largest industry delegation to Defexpo 2012, and is comprised of America's premier aerospace and defence companies.

General Kern and Vice Admiral Cosgriff expressed optimism for this growing strategic partnership, and noted the active collaboration across virtually every realm in meeting India's complex and growing defence and internal security needs. "We are here once again to reaffirm our commitment to a long-term partnership with India by offering the best capabilities that are mission-ready and operationally proven, robust industrial partnership, and state-of-the-art technologies offered at the best value when measured over the lifetime of the product," the mission leaders said.

Senior executives representing America's top defence companies, including ATK, BAE Systems Inc, the Boeing Company, the Cohen Group, DuPont, General Dynamics, Harris, Honeywell, ITT Exelis, L-3 Communications, Lockheed Martin, Navistar Defence, Northrop Grumman, Oshkosh, Pillsbury Winthrop Shaw Pittman LLP, PwC, Raytheon, Rockwell Collins, SAS, Sikorsky, Telephonics Corporation, Textron Systems, Tyco, and many others, will be present at Defexpo 2012. The United States has once again brought the single largest industry delegation to the show.

US industry will showcase advanced capabilities geared towards India's land, naval, and internal security systems needs. On display will be current offerings such as Textron Systems' ground-based smart weapons and naval common unmanned surface vessel, BAE Systems' M777 155mm lightweight howitzer, and other best-in-class offerings from US industry, such as armoured security and light combat vehicles, tactical communications equipment, integrated weapons systems, thermal imaging technologies and network munitions systems.

"There is a tremendous opportunity for the United States to meet India's defence and homeland security needs – as exhibited by recent big-ticket procurements such as the Boeing C-17 heavy-lift transport aircraft, VVIP aircraft for the PM, Lockheed Martin C-130J, Textron Sensor Fused Weapon– all of which indicate a high level of trust and cooperation between the United States and India." said USIBC President Ron Somers.

Referring to the trust built between the United States and India, Somers also said, "The US is keen to offer India the best-in-class capabilities in all defence and security dimensions, broadening the areas in which our two governments, militaries and industries cooperate." Defence sales, which have risen from just over $200 million in 2001, have increased to over $12 billion today. "This remarkable growth in defence sales also translates to thousands of high-skill jobs being created both in India and the United States, making it a win-win for both countries."

The US-India Business Council was formed in 1975 at the request of the United States and Indian Governments to advance two-way trade and deepen commercial ties. Today, USIBC is the premier business advocacy association comprised of 350 of America's and India's top companies dedicated to enhancing the U.S.-India commercial relationship. Harold McGraw III, Chairman, President, and CEO of the McGraw-Hill Companies serves as chairman of USIBC. •

SIG SAUER introduces next generation SIG556xi


SIG556xi

A Swiss-folding stock and ambidextrous controls allow users to fit the rifle to their needs. SIG SAUER introduces the SIG556xi, the next generation of cutting edge tactical rifles from the leading manufacturer of military and law enforcement firearms.

Building on the innovation and reliability of the SIG556-series rifles, the SIG556xi offers greater adaptability to meet the needs of the end user.

"Gone are the days of forcing the rifleman to adapt to the rifle," said Jeff Creamer, SIG SAUER Director of Product Management. "With the next-gen SIG556xi, the rifle can be quickly and easily configured to fit each individual, large or small, right- or left-handed."

The SIG556xi features a completely ambidextrous magazine release, bolt release and safety selector. The charging handle can be installed on either side, giving the shooter the ability to set the rifle up to meet his or her preferences.

A new barrel design makes it easy for armuorers or gunsmiths to change barrels. The SIG556xi will first be available with a 16" cold-hammer forged barrel, 1:7 twist and an A2 flash hider.

Flip-up front and rear sights, a two-stage trigger and an original Swiss side-folding stock are all standard features on the SIG556xi. The tried-and-true short-stroke piston system features a two-position gas valve for reliability in even the most demanding of environments.

A redesigned lower-profile M1913 quad-rail handguard is slimmer and lighter. A 10" short-barrel version will be available as part of the factory SBR programme. The SIG556xi accepts any Mil-Spec AR15/M4/M16- style magazine. •

PHOTONIS announces new long-life, low-noise microchannel plates

PHOTONIS USA, a leading electro-optic manufacturer, announced the addition of a new long-life, low-noise (L3N) performance option, which is now available across its entire microchannel plate (MCP) line. The new L3N option offers up to a one hundred-fold reduction in background noise when compared to traditional MCPs. Any MCP made by PHOTONIS USA can now be ordered with this new low-noise performance option.

The new low-noise option is ideal for applications where the background noise of the specific application is currently lower than the detector noise. Recent tests confirmed that, at 0.01 counts/second/cm2, the L3N MCP dark count level approaches the background level of cosmic rays. L3N MCPs had previously been developed by PHOTONIS as a custom product, and has been deployed in a number of space exploration missions, including the Chandler X-Ray Telescope. Other applications include low-level imaging and high energy physics research.


MICROCHANNEL-PLATE PHOTONIS

The L3N option is also being made available on any currently manufactured product by PHOTONIS which contains MCPs, including items such as specialty stripline MCPs, advanced performance detectors and time-of-flight detectors. The long-life, low-noise performance option must be specified at time of order. •

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The continuing proliferation, sophisticated capabilities and increasing lethality of air and missile defence threats demand a national response that provides better protection of critical assets and a near-leak-proof defence. Resource constraints dictate an approach that integrates weapon system capabilities. An integrated air and missile defence (IAMD) approach is an affordable option that offers the promise of defence of national interests, protection of forces, and freedom of action. The Indian Air Force and Army have embarked upon significant modernisation efforts for their AMD forces—this modernisation should include IAMD as an overarching goal to be implemented from the national command authority down to fire unit level. This article talks about operational, organisational and functional elements to be taken into consideration for creating an effective IAMD structure.

Operationally, IAMD is based on the premise that no individual command, service or system is singularly capable of countering all air, cruise missile and ballistic missile threats, because a modern threat has the capability to defeat single defence solutions. Only a force that can fight as an integrated and interoperable family of systems (FoS), leveraging different service and system capabilities, will be successful.

An IAMD solution must provide: enhanced situational awareness/situational understanding (SA/SU)—ultimately a single integrated air picture (SIAP) at right level for rapid decision-making; easy-to-use "protect" function for friendly and neutral aircraft to eliminate fratricide; optimisation of sensor and weapon resources that leverage capabilities and increase efficiencies; expanded battlespace and operational flexibility for early engagement and best weapon/system usage; missiles to match the threat, to avoid overkill and missile wastage; open architecture that allows for integration of sensors and weapon systems at an affordable cost without constraining performance.

An IAMD solution must not waste valuable resources on duplication of existing capabilities or require discarding stovepipe solutions to implement an IAMD solution; reduce or constrain current performance or lethality; and isolate joint and multinational partners.

A FoS concept envisions an interdependent, interoperable, and integrated joint force employing layered capabilities, woven together by an effective command and control structure focusing on three basic tenets: prevent attacks, defeat adversary platforms, and minimise effects from an attack. These three tenets relate to the actions taken to detect, identify, engage, and negate, or minimise the threat as early and as completely as possible. For theatre level operations, effective integration of offensive counter air (OCA) and defensive counter air (DCA) is paramount. OCA attack operations are the preferred method for countering an enemy's air and missile threats by attacking enemy platforms in the air and assets on the ground prior to launch. DCA operations provide terminal defence against penetrating threat platforms through the application of engagement zones within a layered defence, offering the highest probability of negating adversary air and missile attacks. The theatre defensive engagement zone construct attempts to integrate sensors, weapons, shooters and operations to provide successful, efficient, dynamic, and integrated engagements of hostile targets out to the longest possible ranges.

Organisationally, to optimise IAMD operations, a coordinating authority is needed above IAMD level that facilitates collaborative, adaptive planning processes. The coordinating authority focuses across national agencies, multinational partners, multiple services, and coordinates OCA and DCA operations. The coordinating authority can require consultation between affected agencies, but does not have the authority to compel. The coordinating authority develops inputs, recommendations, and assessments for senior leaders, enhancing the ability to employ forces and capabilities within the theatre in support of the mission.

Functionally, IAMD will have the highest payoff from investments in netcentric capabilities that can support critical battlefield capabilities: intelligence, surveillance, reconnaissance (ISR); identification and classification; planning; operations; and battle management of participating components and systems for countering air and missile threats.

Effective Command and Control (C2): The increasing complexity of the adversary's attack options requires that information presented to the warfighter be timely, accurate and relevant. Any IAMD solution must provide a SIAP and sufficient SA/SU of events occurring in the three dimensional, dynamic battlespace in order to ensure proper classification, identification, engagement decision and weapon assignment to hostile threats while maximising the protection of friendly and neutral aircraft. The C2 node must have the ability to seamlessly integrate with AMD sensors and weapon systems while simultaneously performing

Continued on page 56

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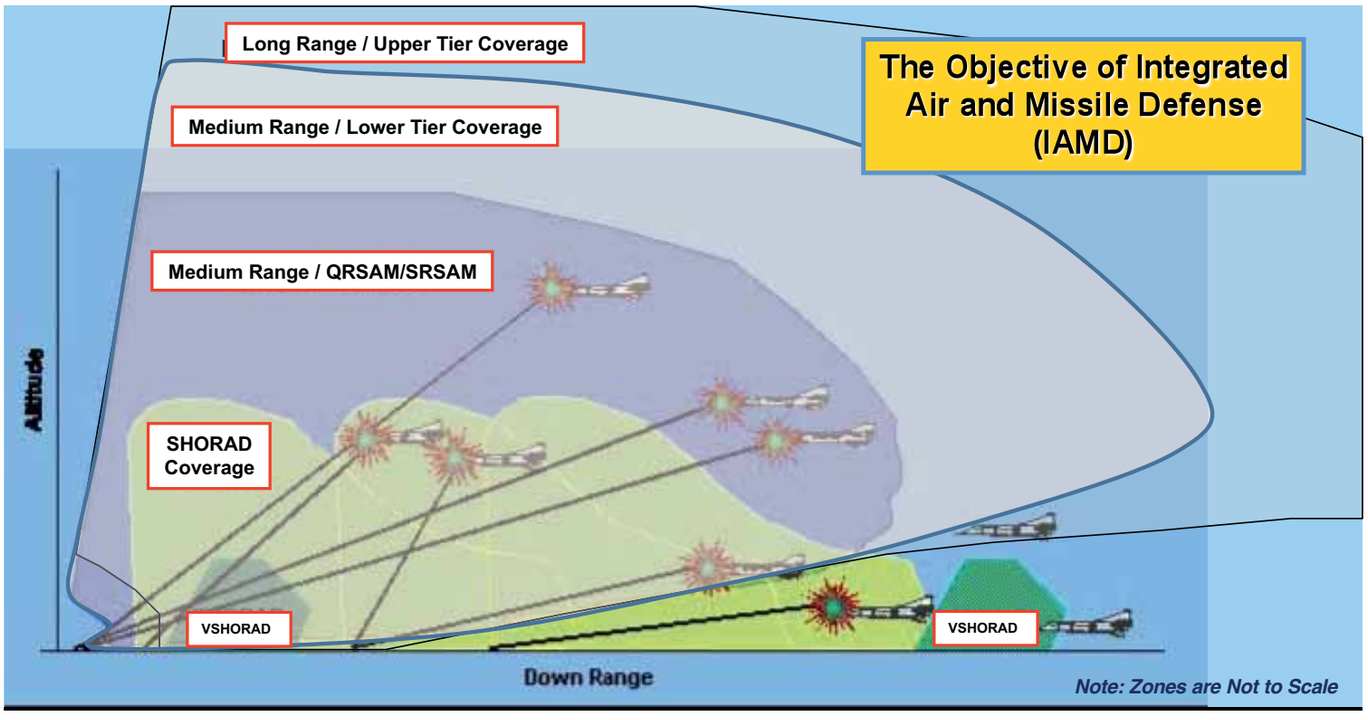

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ATK to participate in executive trade mission to India

At Defexpo 2012, ATK is there with a variety of capabilities and programmes. ATK is part of the US-India Business Council (USIBC) Executive Mission to India from March 26 to March 31, 2012. As a part of that trade mission, Karen Davies, ATK Senior Vice President and President of the company's Armament Systems group, participated in a panel discussion on the topic of return on investment in the Indian defence market on March 28. The panel featured representatives from India's Ministry of Defence and other defence industry executives.

Defexpo provides ATK an opportunity to highlight its growing capabilities in several business areas including integrated weapon systems, precision-guidance for artillery and mortars, advanced programmable artillery fuzing, ammunition and accessories for law enforcement and special operations forces, missile warning systems, small-calibre ammunition and illuminating flares.

ATK's stand is featuring information on the company's most powerful and flexible gun system, the Mk44 30mm cannon. This next-generation system is in production now and builds on the Bushmaster tradition of excellence with its design simplicity, external power, positive round control, ease of maintenance, and constant velocity ammunition feed. Visitors will also be able to learn more about the Mk44's airborne cousin, the Apache helicopter's 625 round-per-minute M230 30mm chain gun.

Visitors to the ATK stand will be able to learn about the company's affordable precision approach that combines GPS guidance and fuzing into one package, transforming conventional 155mm artillery projectiles and 120mm mortar cartridges into precision munitions. Another offering in this space is ATK's multi-option fuze for artillery (MOFA), the combat-proven, NATO standard, all purpose artillery fuze for bursting munitions.

ATK's stand will also feature the company's cutting-edge ammunition and accessory products for law enforcement and special operations forces. ATK brands in this category include Eagle Industries and Blackhawk tactical gear and apparel and Federal Premium and Speer ammunition. ATK ammunition offerings for these customers include long-range precision rifle; barrier-defeating; non-toxic; short-barrel carbine; and law enforcement high-performance handgun service ammunition.

ATK will also feature its AAR-47 aircraft missile warning system with available hostile fire indication (HFI), the first system of its type to detect small-calibre weapon fire and rocket propelled grenades. AAR-47 is installed on the recently-delivered C-130J aircraft to the Indian Air Force.

In addition, ATK will highlight its role as the leading supplier of US and NATO small- and medium-calibre ammunition, and as a source of non-NATO munitions to US and international security forces.

Another important ATK capability the company will be featuring at Defexpo, is its decades-long experience in building and continually updating illuminating flares. ATK's LUU flares are aircraft-deployed and provide illumination for battlefield operations, search and rescue, ground targeting and other missions. •

Northrop Grumman highlights industry-leading security capabilities

Northrop Grumman Corporation will be at Defexpo 2012 with its range of industry-leading capabilities in airborne early warning and control systems for maritime reconnaissance and unmanned aircraft systems.

"Our core competencies and proven capability in airborne early warning and control and unmanned systems for aerial surveillance are well matched to meet the region's growing defence and security needs," said Bill Schaefer, Sector Vice President of Business Development for the company's aerospace systems sector. "We look forward to highlighting how our products and capabilities can help India achieve its defence modernisation objectives and the requirements for a coordinated national defence structure."

The E-2D Advanced Hawkeye couples newly designed electronically scanned radar with a matching suite of sensors, avionics, processors, software and displays to provide the most technologically advanced command and control capability available worldwide. The AN/APY-9 radar with a two-generation leap in capability is the backbone of this aircraft and provides greater flexibility and significantly improved detection and tracking over all terrains. Till date, Northrop Grumman has delivered seven E-2D Advanced Hawkeye aircraft to the US Navy. The programme is undergoing its initial operational test and evaluation in 2012 and is on track for initial operational capability with the US Navy fleet in 2015.

An E-2D tactical workstation will be available to demonstrate the capabilities and functionality of the E-2D Advanced Hawkeye for military and civil applications. India is among the first countries for which the Advanced Hawkeye capability has been released.


BAMS UAS

In addition, the company's persistent maritime intelligence, surveillance and reconnaissance (ISR) capability will be highlighted with the MQ-4C broad area maritime surveillance unmanned aircraft system (BAMS UAS) based on a maritime derivative of the combat-proven RQ-4 Global Hawk unmanned aircraft. The BAMS UAS is a US Navy programme designed to complement the manned P-8 aircraft with an unprecedented surface surveillance capability yielding the highest possible degree of maritime domain awareness.

Also featured will be Northrop Grumman's revolutionary aviation concept in lighter-than-air hybrid airships, which will shape the future of persistent ISR surveillance. The company is developing an aerodynamic hybrid airship with less drag than competing designs. It uses existing proven hull materials with type-certified engines and is flexible and reconfigurable to accommodate any combination of sensors and communications equipment, making it truly multi-mission capable.

Northrop Grumman has well-established relationships with India and has been supporting a number of defence and civil programmes, including air traffic control communications systems and radars, unmanned ground vehicles and marine navigation systems, for more than 20 years now. The company brings significant, relevant capabilities for homeland defence modernisation, and command and control, intelligence, surveillance and reconnaissance. Northrop Grumman will be located in Hall 14, Stand No. 14.3F. •

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Honeywell Spectra ballistic materials strengthen combat helmets in Asia

Honeywell has announced that its Spectra Shield® II ballistic materials will be used in combat helmets to protect soldiers in Asia.

Dae-Sung Tech Co., Ltd., a Korean body armour manufacturer, will use Spectra Shield II materials in helmets designed to protect soldiers against a variety of threats, including fragments from improvised explosive devices and small-calibre rounds. The material's lightweight strength enables the helmets to provide critical head protection at a lower weight, which helps soldiers move more easily and comfortably.

Spectra Shield II materials help the helmet achieve a 20 per cent weight reduction when compared with Dae-Sung's previous helmets. The company will produce the helmets with the material under a three-year contract with Honeywell.

"Spectra Shield II ballistic material provides the right combination of light weight and ballistic performance that can help improve the protection, mobility and comfort of soldiers in the field," said James Thagard, global marketing manager for Honeywell's Advanced Fibers and Composites business. "We are pleased that Honeywell's lightweight Spectra Shield II materials will help protect military men and women in Asia."

The contract represents the latest application of Spectra materials in combat helmets. Honeywell announced in June that it was awarded a three-year contract from the US Army to provide advanced ballistic materials that will improve the performance and reduce the weight of their helmets.

Spectra Shield II materials for helmet applications are designed to maintain a high level of performance in a curved shape, offering soldiers excellent head protection against multiple hits and angle shots.

Spectra Shield II is a high-strength, lightweight composite material made with Spectra fibre. Spectra fibre is ultra-high-molecular-weight polyethylene made using a patented gel-spinning process.

Pound-for-pound, Spectra is 15 times stronger than steel, yet light enough to float. The fibre features a high resistance to chemicals, water and ultraviolet light, and exhibits excellent vibration damping, flex fatigue and internal fibre-friction characteristics. It also has up to 60 per cent greater specific strength than aramid fibre.

Honeywell ballistic materials have been trusted to protect military and police forces around the world for more than two decades. In addition to helmets, they are used in a variety of applications where lightweight strength is critical, including bullet-resistant vests, breast plates, combat vehicles and military aircraft.

The fibre is also used in a wide variety of industrial and recreational applications, including rope and lifting slings, mooring lines, fishing line, sail cloth and security netting.

Honeywell maintains an active Spectra fibre and ballistic materials research and development programme focused on meeting increased demand for its high-performance materials. •

Nexter-L&T JV for 155mm towed gun artillery programme

Defence majors Nexter Systems of France and Larsen & Toubro Limited (L&T) of India signed an agreement late last year announcing the formation of Nexter Systems-led consortium for 155mm towed gun artillery programme for the Indian Army.

Under the proposal, Nexter will field TRAJAN, 155 mm/52-calibre weapon system. TRAJAN offers enhanced firepower through quicker response, longer range and improved accuracy. It covers larger areas with fewer guns and favours initiative, manoeuvring and quick reaction time while minimising risks. Nexter has provided 145 towed guns systems to French Army and other armed forces.

"Joining forces between Nexter and Larsen & Toubro will bring through a fruitful cooperation, the development of the innovative 155mm towed gun that will better answer Indian Army needs," said Philippe Burtin, Chairman and CEO, Nexter Systems.

Larsen & Toubro, in association with Nexter Systems, will manufacture critical subsystems for TRAJAN which will integrate and provide required support for the gun system to the Indian Army. L&T brings to the consortium its track record of development of various weapon systems for Defence Research and Development Organisation and Indian armed forces across land, naval and air defence applications. •

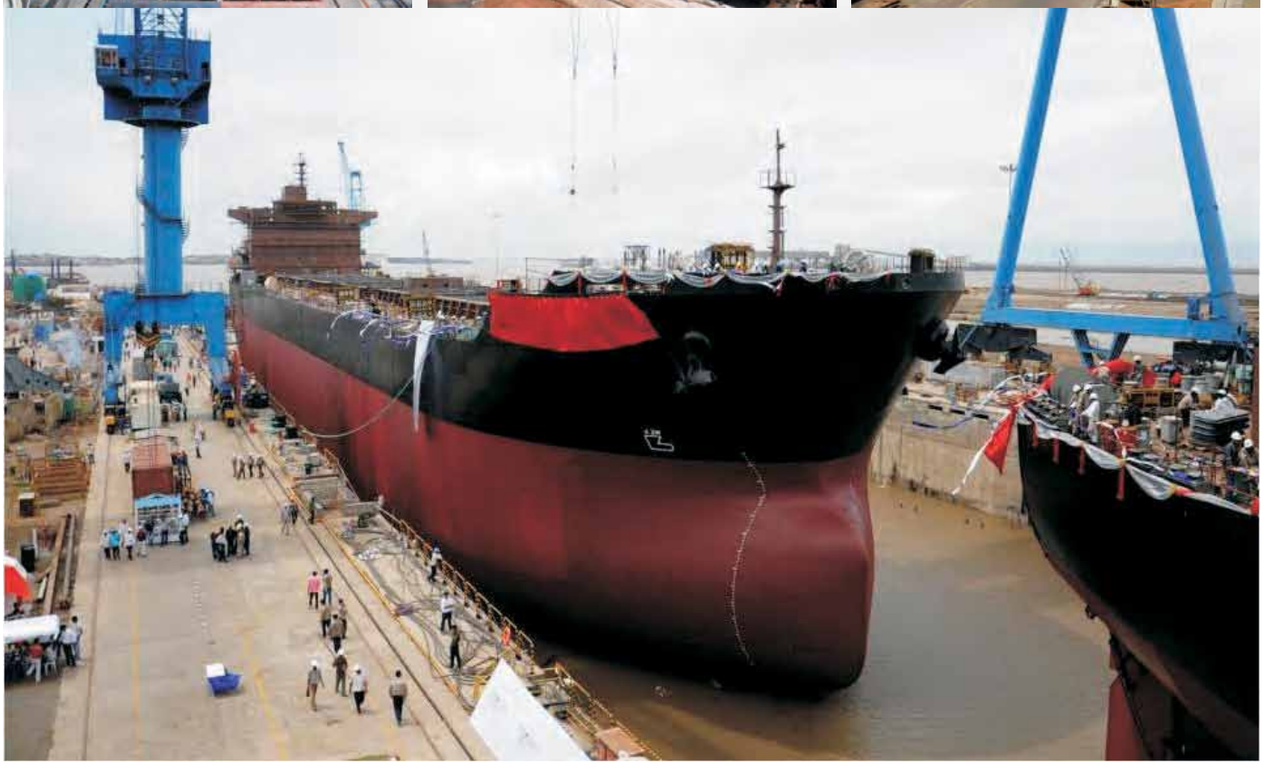
DRS Technologies launches Intel Core I7 MRT

DRS Technologies has announced that its Tactical Systems division will launch the next generation of the MRT tablet computer at the AUSA ILW Winter Symposium and Exposition in Ft. Lauderdale, Florida.

This next generation MRT includes new technologies from Intel such as the Core i7 Processor. This next generation dual core processor is combined with additional product enhancements that include significantly improved processing capacity, faster graphics, expanded memory, video capture capability, extended battery life, and improved security features to enable trusted computing operations.

"This MRT is the result of our continuous technology insertion to optimise customer value and system capabilities," says Mike Sarrica, Vice President and General Manager of DRS Tactical Systems. "We are proud to have already made our first production deliveries of more than 150 systems earlier this month—the newest members of a worldwide fleet of fielded MRTs that exceeds 27,000 systems." •

PUTTING INDIA ON THE SHIPBUILDING MAP USING MODERN TECHNOLOGY



- ₹ 3,100 Crore of bold investment.
- Investing additional ₹1,300 Crore for building 2nd drydock which will be the largest dry dock in the world.
- India's first world class, global scale and only modular shipbuilding and engineering company.
- Listed on NSE and BSE.
- Pipavav Defence and Offshore Engineering Company Limited has teamed up with some of the finest partners globally, from Singapore, Korea, Russia, Germany, UK, Sweden, France and USA.
- The Company is currently building 74,500 DWT Panamax Vessels for European Customers and Offshore Supply Vessels for ONGC.
- First Indian Private Company to receive an order of ₹2,975 crore for building Naval Offshore Patrol vessels from Indian Navy, Government of India.
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Any potential investor should note that investment in equity shares involves a high degree of risk. For details, potential investors should refer to the Red Herring Prospectus which may be filed with the Registrar of Companies in future, including the section titled "Risk Factors". Potential investors should not rely on the Draft Red Herring Prospectus filed with the SEBI".

'We are excited to be a part of Defexpo India 2012 and keen to showcase our expertise in naval defence'

Bernard Buisson, Managing Director, DCNS India

***SP's ShowNews* (SP's): What are the key highlights for DCNS at Defexpo India 2012?**
Bernard Buisson (Buisson): DCNS is to showcase a wide range of expertise at Defexpo India 2012. We will be displaying the Indian P75 Scorpene submarine together with its SUBTICS combat system and its optional MESMA air independent propulsion section.

- The Mistral-Class LHD (199 metres, 21,500 tonnes), the Gowind OPV L'Adroit (87 metres, 1,000 tonnes) together with the Barracuda SSN and a future aircraft carrier design will also be displayed.
- On a wider note, DCNS is aiming at providing 'solutions'. We work through partnerships to adapt our solutions to the customers' needs. That is to say, we do not only design a product but a comprehensive industrial package. As per our recent contracts, we provide custom-made designs, transfers of technology (ToT) and of know-how, industrial partnerships and trainings (from a range a vessels to their naval base).

SP's: There will be a lot of interest and excitement for India P75 Scorpene submarines at Defexpo. What is the current status of the Scorpene programme?
Buisson: The hulls of the five first submarines are completed. The sixth hull shall be completed by the year end.

A few weeks ago, DCNS India has delivered Mazagon Dock Limited (MDL) the first locally produced Scorpene submarines equipment. We are at the stage of outfitting where equipment are being integrated inside the hulls' sections for submarines 1 & 2. For the upcoming stages of the building (outfittings together with systems' integration and running of trials), an adapted organisation from the shipyard is needed. Together with MDL, we created a common 'task force' aiming at quality and greatest efficiency.

The first Scorpene submarine is to be launched by the end of 2013 and commissioned in 2015. The sixth Scorpene is expected to be commissioned in 2018.

SP's: Who are the Indian partners with whom DCNS is currently working with?
Buisson: DCNS is continuously striving to go beyond the contractual ToT with MDL so that vital equipment could be locally manufactured. The aim is to enhance local expertises with the Indian industries.

DCNS India is in the process of finalising the selection of the industrial partners for the indigenisation of the Mazagon Purchase Materials (MPM). We have been successfully delivering the first equipment with Flash Forge a few weeks back.

Recently, DCNS India signed a contract with SEC Industries for the manufacture of further P75 items (hull hatches, cofferdam doors, knuckle hoses, ballast vent valves, high pressure air cylinders, weapon handling and storage system) and we are to announce more partnerships shortly.

SP's: Can you tell us more about your partnership with Flash Forge?
Buisson: In June 2011, DCNS India signed a contract with Flash Forge India Private Limited under the Scorpene submarine programme.

The factory acceptance test (FAT) for the first locally made Scorpenes' equipment (for the piping system) was successfully performed at Flash Forge premises in Visakhapatnam in January 2012.

With the expertise and cooperation of Flash Forge, DCNS India has delivered the first locally produced Scorpene submarines equipment to MDL. Flash Forge has already proven experiences in forgings and pipe fittings with MDL and other Indian shipyards. Today, through the participation in the P75 Scorpene submarines, higher standards of qualifications have been achieved.

SP's: In which areas is DCNS transferring technology to India/MDL under P75?
Buisson: First of all, each ship is locally produced and assembled. The major part, the pressure hull, is made and assembled by MDL. This is a complex manufacturing process acquired by MDL under the DCNS ToT.

GOWIND OPV L'ADROIT

Indigenous elements that are fitted onboard are part of the MPM. Their indigenisation—or manufacture by Indian companies with ToT and of know-how is on its way. The main systems, sub-systems and components of various equipments (mechanical, electrico-mechanical, navigation) will be sourced and made locally.

We are genuinely transferring technologies and know-how on conception and manufacturing to MDL. Together with their local network of partners, they will develop capabilities to maintain the submarines, analyse potential obsolescence(s) and adapt upgrades (foreign and/or indigenous systems) throughout the lifetime of the platforms (generally around 30 years per ship).

At the end of the P75 programme, most of the ships will have been locally sourced. This will allow local competences for the maintenance of the ships together with an industrial independence.

SP's: Are you going to participate in P75I?
Buisson: The significant ToT investments together with the collaborations we are setting for P75 are hopefully paving the way for future programmes. These are investments both for the Indian companies involved and for DCNS. We obviously wish to make the best of these investments and to become a long-term partner.

We have participated in the P75I request for information (RFI) and we hope to be selected to receive the forthcoming request for proposal (RFP).

SP's: What are your expectations from Defexpo India 2012?
Buisson: We are excited to be a part of Defexpo India 2012 and keen to showcase our expertise in naval defence. We hope to attract a huge crowd so our teams can present our solutions in the respective domains; submarines and surface ships together with their associated equipment and services. On a wider note, we wish the attendees to appreciate the value DCNS can bring to the Indian defence industry. •

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Besides, BEML is also manufacturing equipment to other core sectors of economy like Mining & Construction and Rail & Metro. Aerospace, Dredging, Trading and e-engineering are other business segments of the company. Apart from holding lion's share in the domestic market, BEML is exporting its products to over 55 countries with local presence in Indonesia, China, Brazil and Malaysia and Dealer Tieups at Zimbabwe & Thailand. 4 Manufacturing Complexes, 11 Regional Offices, 16 District Offices, 4 Zonal Service Centres and a Global Service HQ ensure 24 X 7 service support to the valued customers.

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'Rafael will feature for the first time the Spike SR short-range missile'

Major General (Retd) Ilan Biran,
Chairman, Rafael Advanced Defense Systems

For over 63 years, Rafael has been developing, manufacturing and marketing a wide array of state-of-the-art military systems for air, space, sea and land applications.

Rafael is a centre of excellence and a national laboratory, combining vast capabilities and investment in research and development (R&D), made possible by highly trained professionals, which has allowed it to offer ground-breaking technologies to its customers and partners. Most of these systems have already been combat proven. As recently as a few weeks ago, Rafael's Iron Dome withstood the complicated battle test when it successfully intercepted over 50 short-range rockets that were fired at Israel from the Gaza Strip. Rafael's armour vehicle Trophy System, currently mounted on Israel's Merkava-4 MBT's, for active defence against rockets, also became combat proven in April 2011.

India is a strategic partner for Rafael, with many areas of joint cooperation, and as such, has sold many of Rafael's cutting edge systems for air, naval and land applications. Rafael produces families of multi-purpose systems, which "speak the same language". One such family is "Spike", a family of tactical electro-optical missiles for ranges of 0.5-25 km for land, sea and air applications, with "fire-and-forget" and mid-course navigation capabilities, enabling abortion of mission to prevent collateral damage and civilian casualties. The Spike is already in use by many militaries around the world.

At Defexpo, Rafael will feature for the first time the Spike SR short-range missile. Another such family is the Spyder System, bringing together Rafael's Python-5 and Derby Air Defence missiles, electro-optical pod such as the Reccelite and Litening and many others.

Rafael is a team-player, having established numerous fields of cooperation with partners in Israel and around the world, both with governments and with defence industries.

Rafael's experience in sharing its know-how and local production, and in building cooperation agreements grants its partners and customers an added technological and operation value.

Rafael is continuously working to expand its activities in India in different fields with companies such as BEL, BDL and Mahindra.

We are also working to widen our activities with DRDO and its Director to bring more of our advanced technologies and systems to India.

It should be noted that Rafael's activities are not limited solely to military applications, but also include solutions for other requirements such as border control, security integrated systems (SIS), and paramilitary forces.

Rafael's display will include the following:

- Spyder and Iron Dome air defence systems with Rafael's MICAD is an advanced unified integrated C4I system that commands and controls operations of air defence, missile defence, and air superiority missions—conservatively handled as three different domains. The system provides end-to-end solution for multi-mission, multi-layer, and multi-range air and missile threats.
- The Spike Family combined with remote weapon stations (land and naval).
- Protector USV, an unmanned naval patrol vehicle carrying a powerful engine, an electro-optical pod, Mini-Typhoon, a stabilised remote weapon station, PA system and other capabilities that enable it to perform its required remote life-saving operations.

Torbuster: Hard kill torpedo defence countermeasure for defence against a variety of acoustic homing torpedoes launched from ships and helicopters.
ImiLite-multi-source, multi-task imagery exploitation system that receives, exploits and processes multiple imagery and data in a unified manner.

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Israel Aerospace Industries' RAM MkIII is rough and tough

High performance, air-mobile armoured combat vehicle combining extreme off-road mobility, high reliability and affordability, the RAM from IAI/RAMTA has been delivering those attributes for more than 30 years, proving its worth as a multi-mission combat proven platform in service with numerous military forces throughout the world.

Now delivering the latest generation RAM MkIII, the design is rooted to the pioneering concept of the mine-protected RBY platform, developed by Israel Aerospace Industries (IAI) during the early 1970s. A few years later, the Ramta Division of IAI adapted the basic design, and modified it into a multi-mission armoured personnel carrier and versatile weapon-carrying platform known as the RAM. The requirements defining this innovative platform are relevant today—a versatile platform offering adequate off-road mobility, basic and enhanced ballistic mine protection, high reliability and cost-effective life cycle cost. The RAM has been ordered and has been proven on real world/combat operations with more than a dozen military, paramilitary and police forces in Asia, Latin America and Africa, as well as supporting United Nations (UN) peacekeeping operations throughout the world.

VERSATILE COMBAT PLATFORM. The vehicle currently produced in its third generation RAM MkIII version, is maintaining all these attributes, with additional features added, adapting it to new missions. As a true combat vehicle, RAM MkIII features ballistic armour, counter-mine blast protection techniques and a firewall bulkhead, separating the engine compartment and fuel tank from the crew compartment, protecting the crew, weapon system and power-pack. The vehicle maintains a low silhouette and reduced weight, offering superior battlefield survivability, land and air mobility necessary for special insert missions. The basic RAM maintains an integral blast-protected belly design and all-round ballistic protection, employing the 'diamond shape' for deflecting mine blasts away from the vehicle and defeating 7.62mm AP and 0.5" ball threats. The vehicle is offered in two ballistic versions and over 20 configurations.

In the event of a mine blast, the armoured hull remains intact; being virtually separate from automotive section and the wheels. The geometric profile of the hull also enhances the vehicle's resistance to such a mine blast. Once the wheel of the vehicle activates a mine, the explosion damage cuts the respective axles and the fibre glass fenders disintegrate, allowing the force of the blast to be directed outwards and away from the crew cabin.

ADVANTAGES OF THE REAR-MOUNTED ENGINE. The rear engine compartment represents a unique feature of the RAM. Unlike other armoured vehicles, which have the engine at the front or under the protected cabin, RAM places the entire power-pack engine, automatic transmission and transfer cases at the rear. Forward or central engine placement has significant implications for an armoured vehicle, potentially increasing vehicle height, exposing the vulnerable power-pack to physical and ballistic threats.

The RAM's rear-mounted air-cooled engine solves these problems, offering additional benefits, especially in facilitating field maintenance by providing simple and quick access to the engine, gearbox and drive train. An armour-protected forward engine would often require complex support systems, employing spring-loaded lifting systems, or special tools and support, complicating routine maintenance activities. The air-cooled diesel engine demonstrates remarkable performance with very high reliability, requiring minimal logistic support.

The Deutz air-cooled engine has provided the heart of the RAM automotive system since the 1980s. This power-pack has demonstrated very high reliability in continuous and extensive operation under extreme field conditions. It offers many advantages for military operators, particularly its operational endurance in extreme tropical and/or desert temperatures, high mean-time-between-failure (MTBF) and low maintenance requirements.

Maintaining a 28.3:1 power-to-weight ratio with the powerful engine provides a major factor in the RAM's cross-country mobility. The large wheel size complements this power to deliver superior agility. "To maintain its high mobility at the level required for the RAM we chose the largest tires we could use," explained RAM Project Engineer ZviZuk, "We selected the 12.5 x 20 MPT—considerably larger than those used on most other vehicles of this type. They deliver extremely high mobility over rough terrain, in mud, snow and sand, without the use of heavy, complex and expensive independent suspension. Approach and departure angles, and low centre of gravity with high ground clearance provide the vehicles with high manoeuvrability and stability".

Another unique attribute of the RAM MkIII is its undercarriage design. Unlike many conventional armoured vehicles built on commercial chassis, the RAM forms around a structural skin (Monocoque hull), which is built of two pieces of diamond-shaped ballistic steel.

RAM MkIII Specifications

Combat weight 6.5 tonnes for the basic version, and 7.2 tonnes for the configuration with add-on armoured kit
Fuel capacity of 160 litres
Engine: 6.472 litre Deutz 189 hp @2500 rpm
Automatic transmission
Power assist steering
Hydraulic power assist brakes
Overall length: 5,950mm (including spare wheel)
Overall height: 2,120mm
Overall width: 2,080mm

RAM MkIII Performance

Cruising speed: 100 kmph (on-road)
Cruising range: 800 km
Seating: 1+7
Fording: 1m (w/o preparations)
Grade: 60 per cent
Side slope: 30 per cent
Vertical obstacle: 0.60m
Ground clearance: 0.53m

Ramta offers the RAM MkIII exclusively with automatic transmission, selectable 2x4/4x4 drive modes, with or without differential locking, depending on customer requirements. Ramta maintains this flexibility to meet requirements for ultimate simplicity, in order to support customers in developing markets, where the users seek to minimise the skills needed to operate and support its vehicles. The vehicle is offered in open or closed cabin versions, configured in armoured personnel carrier, command vehicle, scout vehicle, weapon and missile carrier, air defence vehicle, mortar carrier, and is even offered with a special weapons and tactics (SWAT) configuration, complete with tactical assault ladders for multi-story breaching operations. The RAM has also been manufactured in both full and short configurations per customer demands.

TAILORED SOLUTIONS. "By minimising the part count required for each production kit, IAI Ramta maintains a lean production line able to quickly and efficiently modify, adapt and produce the platforms to meet specific customer requirements, even for small production quantities," explains Rafi Jahn. "By relying on our plant's computerised CAD/CAM and NASTRAN programmes, these modifications can be tested, verified and approved by our vehicle designers and automotive engineers prior to the production of the modified platforms."

The RAM MkIII is designed for air mobility in medium transports including the Antonov 12 and C-130, both of which can carry two long vehicles or three short versions. "So far we have designed and produced over 20 different models of the RAM," said HagaiShmuel, Ramta's Marketing Manager. "We developed our production line to support small to medium quantities, characteristic of typical military orders. We can quickly gear up to produce the RAM MkIII in small batches in a short period of time, delivering dozens of vehicles within a period of a few months."

The basic design offers mine protection meeting STANAG 2A and 2B level, and ballistic protection conforming to STANAG 2 or 3, depending on customer requirement. Because the entire vehicle and its ballistic protection package are designed, integrated and manufactured by the same group, Ramta has the flexibility enabling it to increase the level of armoured protection with add on armour kits without unknown variables potentially compromising performance.

This holistic approach to the vehicle has allowed Ramta to develop and successfully test protection kits specifically designed to defeat a wide range of threats (IED, mines, small arms, etc). •

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Saab's array of products and capabilities

Saab's product portfolio for the Defexpo 2012 includes products from the air, land, naval and civil security domains. A 80-strong delegation from Saab operations around the world are coming together to participate in Defexpo 2012 and share knowledge and experience from their respective domains. At the exhibition this year, Saab is displaying a majority of the product portfolio. The focus is on land and naval systems, with a highlight on the RBS 70 NG missile system. Saab is also displaying its underwater AUV systems and the C4I systems, along with camouflage and cutting edge technologies across domains.

Speaking on the importance of Defexpo 2012 for Saab CEO Hakan Bushke says: "Saab is growing outside Sweden and India is one of the market areas for Saab. In fact we believe India is a home market for the future, a market that has the potential to be larger than our European markets."

According to Jan Widerstrom, Chairman, Saab India Technologies Pvt. Ltd., "India is one of our most important markets. The main theme for Saab for this Defexpo is Teaming Up With India in Defence and Security. We really, truly believe that partnership is the way forward to work in India and to be able to fully support the market."

As Saab celebrates its 75th anniversary in 2012, the emphasis is on partnerships and teaming up for defence and security solutions with India.

Inderjit Sial, Managing Director, Saab India Technologies Pvt Ltd, says "Defexpo is a biennial opportunity to showcase the full range of products. As India is looking at a high level of defence spending and technology transfer, we see the Defexpo as an opportunity not merely to display our capabilities but also scout for partners who can absorb the transferred technology." •

BEML, CVRDE joint tech centre to speed up defence R&D


V.R.S. NATARAJAN

Government-owned BEML Ltd and the Combat Vehicle Research and Development Establishment (CVRDE), a defence research unit, have jointly set up a technology centre.

The newly named BEML Technology Centre was recently inaugurated by Dr V.K. Saraswat, scientific advisor to the defence minister and secretary, defence R&D. Some of the projects that were jointly developed and delivered together include the launch and recovery system for the underwater autonomous vehicle, and testing of torque convertor and quality assurance and quality control for the Arjun main battle tank.

Dr Saraswat said the BEML which has extended its support to the CVRDE to develop the Arjun tank's sub-systems, documentation, and development of Bhim tanks will also extend its coordination for projects taken by the CVRDE such as the landing gear project.

According to V.R.S. Natarajan, Chairman and Managing Director, BEML, the company would depute engineers to the centre to work on various projects. The joint initiative, he said, would help DRDO design and develop defence projects in a short span of time. •

Saab India Technology Centre with Mahindra Satyam tie-up

HÅKAN BUSKHE WITH C.P. GURNANI

The Saab India Technology Centre (SITC) will form a bridge between India and Sweden. The aim of the centre is to support the internal operational excellence and optimisation initiatives within Saab, while also supporting Saab to expand in the Indian market. An initial base of 100 skilled Indian engineers to be inducted by the close of 2012 will form the backbone of the Centre. The SITC is expected to increase its headcount to at least 300 over the next three years.

The Centre will undertake research and development in aerospace, defence and urban innovation including civil security. The primary areas of development will include software engineering, electronic engineering and mechanical engineering. The SITC envisages future development in the areas of Signal processing and systems engineering.

Saab President and CEO Håkan Buskhe said: "With the establishment of SITC, Saab has invested in a sustainable and long term relationship with Mahindra Satyam to co-develop critical technologies not only for India but to support our global markets. This Centre is a part of Saab's future offer for the world market."

C.P. Gurnani, CEO, Mahindra Satyam said: "Aerospace and defence is a major growth area for us and establishment of SITC is a strategic step towards synergizing Mahindra Satyam's unique strengths in mission critical systems, engineering services, systems integration and Saab's expertise in aerospace, Network centric warfare, special IT systems."

According to Saab India Technologies Managing Director Inderjit Sial: "This Centre represents Saab's commitment to investing in India and partnering in creating India's technology base in areas of national security and defence needs. Saab is providing technological and knowledge partnership to support India's ambition to be an independent player within the defence technology market, with special focus on aerospace technology." •

1+1=3: Making air & missile...

continued from page 44

integrated engagement operations (EO) and force operations (FO).

Engagement Operations: Engagement operations are actions required to negate the full spectrum of air and missile threats. Those threats include rockets, artillery and mortars (RAM), theatre ballistic missiles, rotary and fixed-wing targets, unmanned aerial vehicles, anti-radiation missiles, and cruise missiles. Functions required for engagement operations include: detecting, tracking, classifying, and identifying aerial platforms; performing friendly protection; performing threat assessment; directing engagements of hostile targets in accordance with established rules of engagement (ROE) and assessing engagement results.

Force Operations: Force operations are those functions required to plan, coordinate, sustain, and synchronise the battlespace. Planners must have the ability to conduct parallel and collaborative planning to take full advantage of the additional capability provided by fully integrated joint and multinational sensors and weapon systems.

Integrated Communications Network: Integration of AMD assets requires an open-architecture communications network that enables C2 platforms, sensors and weapons systems to integrate at the component and/or weapon system level at an affordable cost without constraining sensor or weapon system capabilities. Current communications and hardware should be leveraged and enhanced in order to integrate with legacy and multinational AMD assets and achieve a true SIAP. A networked force can increase combat power, achieving greater speed of command decisions with a better SIAP; while increasing the lethality by selecting the best weapon for engagement; and improving survivability with better SA/SU, quicker engagement decisions, better weapon selection and earlier engagements. Finally, central to successful establishment of an IAMD are several important characteristics. Not all are necessarily mandatory for accomplishing each mission, but the presence of these characteristics provides confidence for successful mission accomplishment. Specifically, IAMD demands a layered defence, both in range and altitude. Further, common command and control, an integration level that works across weapon systems and resides above specific weapon capabilities, adds efficiency and effectiveness to the defence by selection and allocation of the best resources. Given the reality that many nations face weapons of mass destruction (WMD) — chemical, biological, nuclear — the need for hit-to-kill technology to defeat these weapons is paramount. And of last but not the least, IAMD's success is largely dependent on integrated logistics to ensure the family of systems remains operational throughout the campaign.

The high cost of procurement of air and missile defence platforms demands full optimisation of each precious resource. No single service or weapon system can respond efficiently to all threats, driving the demand that individual capabilities be brought into an increasingly capable and effective integrated structure for sensor and weapon optimisation. IAMD offers that promise, ensuring mission success for the defence of the nation and its critical assets. •

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UPGRADATION OF AIRFIELD INFRASTRUCTURE

Services

- Value Added Design & Engineering
- Turnkey Electronic Manufacturing
- Telecom Project Implementation
- Turnkey Infrastructure Services
- Integrated Product Support

Key Products

- Last Mile Networking Solutions
- Power Systems
- Voice & Data Acquisition Systems
- Transmission Systems for Milcom
- Antenna Mast Systems
- Command and Control Systems

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"we always know who we're working for"

Elbit's C4ISR systems and products for a digitised battlefield

Accurate situational awareness allows for quick coordination and effective responses to rapidly changing operational scenarios. Leveraging in-house development of underlying technologies, products, platforms and systems, Elbit Systems has developed expertise in digitised battlefield C4I by applying advanced technologies in combination with commercial off-the-shelf (COTS) hardware and software packages. Our systems employ a tactical building-block approach to link various applications and levels of command implementing a net-centric concept. Configurations comprise tactical computers, digital maps, message handling systems, border surveillance, advanced communication controllers and modems as well as various components developed for customer-specific needs. We also provide software infrastructure and applications for mobile and airborne platforms, for the individual soldier, and for headquarters command and control (C2) applications. Based on these core technology building blocks, we offer our customers comprehensive integrated solutions of C4I for land forces at all levels. The systems process, manage and present massive amounts of data arriving from various sources into a user-friendly format. We also provide a full range of simulators and customisable training programmes.


TADIRAN PRC-710MB AND CORAL THERMAL IMAGING CAMERA

COMMAND, CONTROL AND COMPUTERS
Elbit Systems' advanced networked battle management systems deliver improved coordination and planning and rapid closure of the sensor-to-shooter loop. These systems provide all branches of the fighting force with enhanced situational awareness and mission-critical information. Advanced C4ISR solutions provide end-to-end, innovative and integrated systems to all operational levels. Autonomous C4I arrays that improve national situation awareness enable full connectivity through highly advanced communications systems and incorporate a variety of integrated sensor and weapon systems.

DAP: DIGITAL ARMY PROGRAMME
A powerful force multiplier, DAP connects and coordinates all land, air and sea forces from the highest echelon HQs to the individual platform, sensor and soldier. DAP implements advanced combat concepts that increase operational effectiveness and connectivity throughout all echelons in all combat situations—under a unified operational doctrine.

TORC2H: ALL-IN-ONE C4I SYSTEM
Covers all army branches and echelons, enabling universal situational awareness as well as indepth collaborative mission planning and management based on real-time information, and an always-updated common operational picture. TORC2H is the only C4I solution to be fully deployed and operational in a major military organisation—the IDF.

DTAC2: MOBILE EMBEDDED C2 APPLICATION FOR TACTICAL DISMOUNTED UNITS
The DTAC2 provides a mobile embedded C2 system for operational dismounted personnel. The DTAC2 system enables all-terrain operability and range-based on dynamic network connectivity and integrated battle command capabilities—achieving accurate and rapid reaction within the task-force mission assignment. It transforms the dismounted commander/soldier to a force-multiplier within the task force operation and increases their operational effectiveness within the tactical force network warfare.

DOMINATOR: INFANTRY COMBAT SOLUTION
An integrated infantry combat system enabling full situational awareness from the infantry battalion level down to the individual soldier. The Dominator dramatically shortens the sensor-to-shooter loop, enhancing the combat effectiveness of the dismounted soldier.

WEAPON-INTEGRATED BATTLE MANAGEMENT SYSTEM (WINBMS): NETWORKED INTEGRATED BATTLE MANAGEMENT SOLUTION
Enhancing the connectivity and coordination of the tactical level manoeuvring forces, the WinBMS increases their lethality and survivability. Based on integrated sensor and weapon systems, WinBMS provides a full-scale solution both at the task force level and within the armoured combat platform, thereby increasing the combat effectiveness of the combined force within the dynamic battlefield.

COMBAT NG: FULLY-INTEGRATED MODULAR ARTILLERY SOLUTION
Incorporates C4I systems and platform suite upgrades to establish an autonomous artillery array, achieving an effective fire support process.

AIR DEFENCE COMMAND AND CONTROL SOLUTION: INTEGRATED AIR DEFENCE C4I SOLUTIONS IN PURSUIT OF AERIAL SOVEREIGNTY
A comprehensive air defence (AD) solution that provides a host of integrated tools and capabilities for real-time air space surveillance, engagement and interception control, air command and control, early warning systems and mission management. This AD solution incorporates radar surveillance arrays, ground AD units and ground air command and control centres, achieving air space sovereignty within interior and national aerial zones.

BORDER DEFENCE SOLUTION: FULL-SCALE BORDER SECURITY SOLUTION
Providing regional operation centres and frontier guard forces, Elbit Systems' offers integrated C4I and surveillance arrays in support of terrestrial, naval and aerial border protection. The system enables complete real-time connectivity among the entire border defence array and allows optimum coordination of intelligence, surveillance and reconnaissance (ISR) efforts throughout the national territory operational zones and along the country borders.

GENERAL HQ SOLUTION: COMPREHENSIVE C4I SOLUTION FOR ALL LEVELS OF THE COMMAND CHAIN
Providing the Joint General Staff with an integrated C4I solution that supports strategic planning and joint command and control at all operational levels.

CRISIS MANAGEMENT SOLUTION: STRATEGIC ORGANISATIONAL MANAGEMENT SOLUTION FOR DISASTER/EMERGENCY PREPAREDNESS
Equips emergency centres with an integrated C4I solution to improve national crisis preparedness and enhance the control and management of routine, crisis and emergency situations.

FRONTS SOLUTION: CUSTOMISED C4I SOLUTION FOR MISSION-CRITICAL OPERATIONS
Provides first-responders and rescue units with an integrated C4I suite in support of the control and monitoring of both routine and rescue activities.

TACTICAL COMPUTERS
A range of versatile, rugged and battle-proven tactical computers and displays, deliver C4I applications to the modern battlefield.

ENHANCED TACTICAL COMPUTERS (ETC): ULTRA RUGGED, BATTLE-PROVEN, HIGH PERFORMANCE TACTICAL COMPUTING FOR COMBAT VEHICLES
Providing powerful C4I capabilities and tactical data dissemination to a broad range of combat, command and reconnaissance vehicles, this versatile range of tactical computers is designed for success in the harshest conditions, is fully battle-proven and is in use by numerous armed forces around the world.

GROUND SMART DISPLAY UNIT (GSDU): MULTI-FUNCTION C4I DISPLAY UNIT
A high-brightness display unit supporting multiple video formats, the GSDU

features a customizable front panel. The GSDU is fully ruggedised and compliant with all relevant military standards.

TACTER-31D: VERSATILE TACTICAL COMPUTER IN A TABLET CONFIGURATION SUPPORTING BOTH VEHICLE-MOUNTED AND DISMOUNTED APPLICATIONS

It is an indispensible C4I tool for the digital battlefield, ensuring complete continuity across vehicle-mounted and dismounted applications. Designed with flexibility in mind, the Tacter-31D's unique vehicular docking station and latch enable seamless operation both in and out of the vehicle. The lightweight tablet configuration and integrated handle allow the unit to be quickly and easily transported.

RPDA 57: SITUATIONAL AWARENESS ON-THE-MOVE

It is a reliable rugged multi-function tactical PDA, delivering real-time data access even in the harshest conditions.

X700 DISPLAYS: MULTI-FUNCTION SMART DISPLAYS FOR LAND VEHICLES

Compact and fully integrated into fighting vehicles and main battle tanks, the X700 series of smart displays incorporates advanced computing power with a high-resolution display. Best-in-class for size, weight and power, the X700 provides the crew with a unique tool to enhance situational awareness and improve operational efficiency.

PERSONAL DIGITAL UNIT (PDU): COMPACT, HIGH-PERFORMANCE COMPUTER

It is a ruggedised tactical computer specially designed for the dismounted soldier. Compact and energy-efficient, this PDU delivers powerful data processing and storage capabilities including embedded global positioning system (GPS) and interfaces to all of the peripheral elements.

EYEPIECE: INSTANT ACCESS TO C4I APPLICATIONS

The eyepiece provides the soldier with instant access to C4I applications including high-resolution images and video. The lightweight eyepiece is highly effective both indoors and outdoors and in all weather conditions.

COMBAT DISPLAY: LIGHTWEIGHT DISPLAY FOR THE DISMOUNTED SOLDIER

The lightweight 8-inch display enables the viewing of C2 maps and battle plans even in the brightest sunlight. The display includes a glare-resistant LCD and anti-reflective coating. •

Textron Marine & Land Systems awarded armoured security vehicle reset contract


M1117 ASV

Textron Marine and Land Systems, an operating unit of Textron Systems, a Textron Inc company has announced that it has been awarded a competitive contract by the United States Army Tank-automotive and Armaments Command (TACOM) to reset 392 M1117 armoured security vehicles (ASV). The base contract value is $19.8 million but could expand with the exercise of two option years and for emergent work, depending on the condition of vehicles inducted into the programme.

The reset programme, administered by TACOM life-cycle management command, is designed to reverse the effects of combat stress on ASVs while also giving the Army, if desired, the ability to apply vehicle survivability, safety and mobility enhancements. The programme's objective is to return these ASVs to fully mission-capable, combat-ready assets, regardless of their current condition. Work will be performed at Textron Marine & Land Systems in New Orleans.

There are two one-year contract options—option year one includes work on an additional 225 vehicles, and option year two involves work on another 167 ASVs. If both options are exercised, reset activities could continue through August 2014.

In 2008, Textron Marine & Land Systems, in collaboration with Red River Army Depot, executed a six vehicle ASV reset pilot programme for TACOM. In 2010, Textron successfully refurbished an additional 12 ASVs.

"We value the trust our Army customer has in our team to apply its knowledge and experience in getting these ASVs back into the hands of our soldiers as quickly and efficiently as possible," said Textron Marine & Land Systems Senior Vice President and General Manager Tom Walmsley.

"As the result of our initial ASV reset work, we've developed a comprehensive set of procedures, tooling and test equipment for M1117 vehicles. These resources, together with personnel uniquely qualified to apply lessons learned from ASV production and reset efforts, decreases execution risk, and reduces overall programme costs for the Army," added Walmsley.

Textron Marine & Land Systems has delivered 3,327 M1117 ASVs to the US Army, as well as related vehicles to military and police forces in Iraq, Colombia and Bulgaria. These vehicles have consistently achieved exceptional operational readiness and combat availability rates greater than 90 per cent over the life of the US Army programme. Through September of this year, Textron Marine & Land Systems also has achieved 73 consecutive months of on-time ASV deliveries to the US Army.

Current US Army ASV missions include military police operations in support of convoy protection, checkpoint security, perimeter security and reconnaissance, as well as field artillery Combat Observation and Lasing Teams (COLT) with the M1200 Armoured Knight configuration. •

AAI delivers Aerosonde and Orbiter UAS to the US Army

AAI Unmanned Aircraft Systems (UAS), an operating unit of Textron Systems, has announced that it has delivered an Aerosonde Mark 4.7 small unmanned aircraft system and an orbiter miniature unmanned aircraft system to the US Army Communications-Electronics Research, Development and Engineering Center (CERDEC). The systems will support the five-year cooperative research and development agreement (CRADA) into which the organisations recently entered, enabling AAI UAS and CERDEC to work together on various payloads for three classes of UAS — tactical, small and miniature, also known as Groups 3, 2 and 1.


ORBITER MUAV

AAI UAS and CERDEC's Flight Activity, Lakehurst, completed a technical interchange meeting to review plans for payload integration onto the Aerosonde (Group 2) and Orbiter (Group 1) systems. Many payload varieties are being considered for integration, including signals intelligence, sensor and communications. AAI's UAS flight crews conducted Aerosonde and Orbiter aircraft check flights prior to their delivery at Joint Base McGuire-Dix-Lakehurst in New Jersey.

Upon CERDEC Flight Activity's successful payload integration onto either aircraft, AAI UAS operators will take the lead on a capability demonstration flight. Till date, AAI UAS already has integrated more than two dozen payloads onto the Aerosonde UAS, including scientific, meteorological, electronic warfare, signals intelligence and intelligence, surveillance and reconnaissance.

"Our experienced UAS operators understand both the aircraft and the unique characteristics of the mission based on each payload," says AAI UAS Vice President, Small Unmanned Aircraft Systems Stephen Flach. "In research and development exercises like this one, the result is reliable, comprehensive performance data to improve the user's end product."

The Aerosonde Mark 4.7 is an expeditionary system featuring a large payload capacity and modular design. It is ideally suited to accommodate a multitude of payload options. The Orbiter miniature unmanned aircraft system uses electric power to deliver a minimal acoustic signature. It is being offered to various military and law enforcement customers through a teaming agreement between AAI and Israel-based Aeronautics Ltd. In addition, AAI's renowned Shadow tactical unmanned aircraft system, a Group 3-sized aircraft, is available to CERDEC through this CRADA. Together, the three classes of UAS can accommodate a large spectrum of mission profiles. •

Russian Air Defence Systems

Current production of Concern Almaz-Antey

Long range ADMS (Aircraft & BM interceptors)	Antey-2500 ADMS	
Medium range ADMS	Buk-M2E	
Short range ADS	Osa-AKM (upgrading), Tor-M2E	
	Tunguska-M1 (upgraded)	
Very short range ADS	Shilka-M4 (upgrading)	
Radars & C²P	1L121E, 1L122E, Nebo-SVU, Gamma-DE Baykal-1ME, 9S80M1	

Naval ADS

Ghibka (Komar) turret mount

Shtil-1, Rif-M SAMs

Production available for co-developing

AA systems, Short &Very short range ADS	Komar Family	
Long range ADMS (Aircraft & BM interceptors)	ASADS	

ALMAZ-ANTEY CONTACTS, 41 Vereiskaya Str., Moscow, 121471, Russia
E-mail: vts@almaz-antey.ru , markering.pvn@mail.ru

Guidelines for joint ventures by defence PSUs

The Government recently approved Defence Ministry guidelines for its public sector units (PSUs) to establish joint ventures with private firms.

"The Union Cabinet approved the guidelines for establishing Joint Venture Companies by Defence Public Sector Undertakings (DPSUs). The guidelines contain provisions for important matters that are critical from a national security perspective," an official release said here.

"The Ministry will issue the guidelines to harness the emerging dynamism of the private sector in India and increasing opportunities to obtain advanced technologies from foreign sources through adoption of appropriate partnership approaches by DPSUs," it added.

The guidelines will help in "enhancing fairness and transparency in the selection of the JV partner" by the DPSUs while ensuring a "well-defined nature and scope" of the tie up. As per the guidelines, DPSUs will retain the "affirmative rights" for taking key decisions in the JV company.

"Retention of the affirmative right of DPSU for prior approval to key JV decisions such as amendments to the articles of association of the JV company, declaration of dividend, sale of substantial assets, and formation of further subsidiaries," the release said.

The guidelines provide a "streamlined, fair and transparent framework for entering into JVs by DPSUs, with the ultimate objective of better risk-management and shorter time frames for delivery to meet the increasing demands of our armed forces."

"The formation of JVs will henceforth be undertaken by board-managed DPSUs within the framework of the JV guidelines and there will be regular reporting and monitoring of the functioning of these companies," the release said. •

Chinese delegation at Defexpo

China has accepted the Indian Ministry of Defence's invitation to participate in Defexpo 2012 which will now have a total of 567 companies from 32 countries who will display weapon systems for the army, navy and internal security, according to Secretary (Defence Production) Shekhar Aggarwal.

On participation of countries from the neighbourhood, he said, "Bangladesh and Sri Lanka are sending official delegation but not displaying their products.... The new revised policy is under discussion and very shortly we would be coming up with that." •

27 Mi-17 helicopter delivered

A contract for procurement of quantity 80 Mi-17 V-5 helicopters for the Indian Air Force (IAF) was concluded between the Ministry of Defence and Rosoboronexport, Russia, on December 5, 2008. A total of 27 helicopters have been delivered so far of which 24 helicopters have been inducted into the IAF. Three helicopters are under acceptance.

The total cost of the contract is $1.345 billion, according to the Defence Minister A.K. Antony. •

MI-17 V-5 HELICOPTER

MUST VISIT

Akshardham Temple: The temple took complete two years for completion. The main monument at the temple is about 141 feet high with a beautiful statue of Lord Swaminarayan.

- Location: NH 24, New Delhi
- Entry Cost: Free
- Opening Hours: 9.00 a.m. - 9.00 p.m. from Tuesday to Sunday. Closed on Monday

Qutab Minar: The Qutub Minar made of red sandstone rising to the height of 72.5 mts is an architectural marvel of the 13th century. Also a must is the visit to Ashoka Pillar dating back to the 5th century. The complex is listed as a UNESCO World Heritage Site and is one of the most popular tourist destinations in Delhi.

- Location: Mehrauli, South Delhi
- Entry Cost: ₹250
- Opening Hours: Sunrise until sunset, daily

Red Fort: Better known as the Lal Quila, the Red Fort is an eloquent reminder of the glory of the Mughal era and its magnificence leaves many wonder-struck and breathless.

- Location: Netaji Subhash Marg, Opposite Chandni Chowk
- Entry Cost: ₹250
- Opening Hours: 10.00 a.m. to 4.00 p.m. Monday closed.

Bahai (Lotus) Temple: The Bahai Temple is commonly referred to as the Lotus Temple, as it's shaped like a lotus flower.

- Location: Near Nehru Place, South Delhi
- Entry Cost: Free
- Opening Hours: Daily, from 9.00 a.m. to 6.00 p.m., Monday closed

SHOPPERS' PARADISE

Dilli Haat: Thatched roof cottages lend it a village atmosphere and a quaint ambience. The market offers an exciting blend of handicrafts, food, and cultural activities—craftsmen display wares from across the country and over 25 food stalls serve a variety of regional specialities. The cultural and music evenings are enthralling. The entry fee is ₹15 (35 cents).

- What to Buy: Indian handcrafts and artifacts
- Location: INA and Pitampura, New Delhi
- Opening Hours: Daily from 10.30 a.m. to 9.00 p.m.

Janpath & Tibetan Market: This very popular and lively market has something for everyone. You'll find goods from everywhere in India and Tibet here.

- Location: Janpath, near Connaught Place
- Opening Hours: Daily
- What to Buy: Handicrafts, hippy clothing, shoes, paintings, brassware, Indian artifacts, etc.

Chandni Chowk: The lanes of Chandni Chowk are divided into bazaars with different areas of specialisation. For fabrics, head to Katra Neel. In the Bhagirath Palace area, you'll find a huge range of electronics. Dariba Kalan is Old Delhi's ancient silver market full of silver jewelry. Food vendors in Chandni Chowk also serve up a delicious assortment of Delhi street food.

- Location: Old Delhi
- Opening Hours: Monday to Saturday
- What to Buy: Fabrics, jewelry and electronic goods

EATING OUT

North Indian Cuisine

- Haveli: Hotel Taj Mahal, 1, Mansingh Road Telephone: 23026162
- Gulati: 6, Pandara Road, Delhi- 110003, Phone: (011) 23388836, (011) 23782949
- Pind Balluchi: Connaught Place, Lajpat Nagar, Deer Park, Safdarjung, etc

Chinese Cuisine

- Berco's: G-2/43, Middle Circle, Connaught Place, New Delhi-110001. Ph: 011 49422222
- Fa Yian: A-Block 25/5, Connaught Place, Delhi, Delhi: Ph: 011 41516788

Mughlai Cuisine

Karim's: Jama Masjid/ Nizamuddin- Ph: 011- 23269880, 23264981
Moti Mahal: Daryaganj; Ph: 011-23273011 / 23273661: Timings: 12 noon to 12.30 a.m.

South India Cuisine

Sagar Ratna: Defence Colony Market
Swagat: Defence Colony & Janpath Hotel, Janpath
Dakshin: Mariott Welcome HoPh, District Center, Saket
Saravana Bhavan: 46, Janpath, Connaught Place, Delhi

Thai Cuisine

Baan Thai: Oberoi Hotel, Zakir Hussain Marg
Spice Route Restaurant: The Imperial, Janpath
Ichiban Restaurant: Shop No-9, Pandara Road, New Delhi

ShinMaywa manufactures the world's largest in service proven amphibian with matchless STOL capabilities, unrivalled sea keeping ability and outstanding endurance. Meeting Indian Requirements, Fulfilling Regional Aspirations and Matching Global Expectations for "Safe Seas and Secure Coasts" the US-2 is India's best option for a brighter tomorrow.

ShinMaywa

Brighten Your Future

ShinMaywa Industries India Private Ltd.

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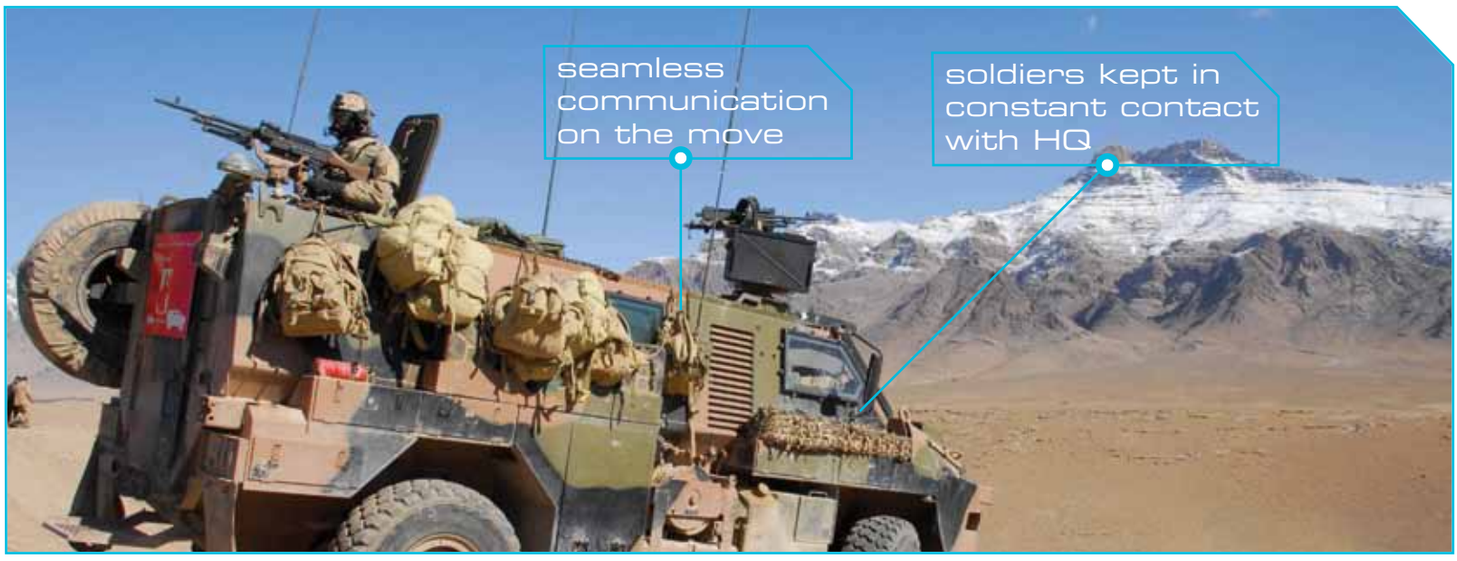

Software Defined Radio. Fully equipped to help Land Forces make the right decisions

Land Tactical Communications are entering a new era with the development of Software Defined Radio. This new technology will offer larger bandwidth, greater interoperability and higher reliability. Yet what will prove to be the real benefits for forces? Will the operational gap be worth the investment? Pierre Suslenschi, Vice-President in charge of Tactical Radio Communications Solutions at Thales, answers these fundamental questions.

What are the main developments in the field of Tactical Communication?

Pierre Suslenschi:

"Tactical Communications are absolutely integral to modern forces. C4I solutions, new generation Battlefield Management Systems (BMS), surveillance systems and real time force tracking systems all rely on Tactical Communications networks. Consequently, the vast increase in the flow of data, images and videos requires the ongoing expansion of communication bandwidth. In addition to this, recent conflicts show that the old concept of the frontline isn't valid any more; theatres tend to be wider and therefore Tactical Communications Systems have to be even more far ranging and far reaching. Furthermore, forces need to maintain permanent contact with their teams. It's vital that the command chain is never broken."

What is the impact of this requirement from a technological point of view?

Pierre Suslenschi:

"This new operational requirement impacts waveforms and radio platforms. Forces need waveforms that provide a high data rate and ad-hoc networking – this is achieved in UHF. While, in VHF, forces need new waveforms that are able to simultaneously handle data, voice and added value services such as blue force tracking, while still being interoperable with legacy systems. To answer to this need, Thales developed Geomux, a new waveform fully interoperable with the PR4G/Fastnet waveform. This represents a true revolution in Tactical Communications and Software Defined Radio (SDR) advances. It allows multi-megabyte radio on UHF frequencies and increases user services in VHF. With FlexNet, Thales and Rockwell Collins developed SCA-based SDR running Thales' latest high data rate UHF and VHF waveforms. Fully compatible with legacy radios, and particularly the PR4G radio, FlexNet ensures perfect interoperability. Technology that has helped critical decision makers achieve better outcomes in recent multinational operations."

A complete range

Thales proposes a large range of tactical radiocommunications products from the command post to the soldier.

FlexNet recently reached a 2 Mb/s datarate on a 35 km distance, confirming the reliability and efficiency of this unique Software Defined solution.

This PR4G/Fastnet soldier radio includes the latest Thales Geomux waveforms. Voice, IP data and blue force tracking data are simultaneously managed by the same device.

This vehicle-based HF radio provides a seamless, mobile communication link over distances up to 1,000 km.

This UHF Software Defined Radio is the perfect tool for dismounted forces with its 1.5 km range. Able to manage simultaneously voice, data and force tracking, it enables soldiers to remain in constant contact with headquarters and other squad members.

To learn more about what we offer in Defence scan the QR code or visit our website **thalesgroup.com**

THALES
Together • Smarter • Safer