DAY-3
Sat. 31 March. 2012

SEE US AT
HALL 14, BOOTH 14.26

Defence Exhibition Organisation
Ministry of Defence
Government of India

Ministry of Defence
Government of India

FICCI

defexpo 12

SP'S

AN SP GUIDE PUBLICATION

SOLE OFFICIAL MEDIA PARTNER

SHOWNEWS

DEFEXPO INDIA 2012

PUBLISHERS OF: SP'S MILITARY YEARBOOK, SP'S AVIATION, SP'S AIRBUZ, SP'S LAND FORCES, SP'S NAVAL FORCES & SP'S MAI

[inside]

EDITOR-IN-CHIEF AND PUBLISHER
Jayant Baranwal

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

BIG ARTILLERY FOCUS

K9 THUNDER

BY **SP'S SPECIAL CORRESPONDENT**

It is no secret that the Indian Army artillery modernisation programme has been hamstrung for over two decades by a variety of circumstances, both political and otherwise. But in a renewed atmosphere of urgency to shed demons of the past and move forward substantively, the field is once again wide open. Reluctance and cynicism has slowly given way to cautious optimism, and now enthusiasm to modernise what is, by all accounts, one of the key war-winning arms of the Indian Army: the Artillery Regiment. The Indian artillery modernisation programme is at once large as it is ambitious. Indications at Defexpo 2012 have been hearteningly positive not just for continuing interest from established technology houses worldwide, but the incredible amount of interest from Indian private firms willing to go out on a limb.

For instance, one of India's largest and most experienced private defence players Larsen & Toubro Limited (L&T) and South Korea's Samsung Techwin Co., Ltd (STW) have announced right here at Defexpo 2012 that they would be cooperating in the Indian Army's Tracked Self Propelled Artillery Programme. A proposal to develop the 155mm/52-calibre tracked, self-propelled artillery, with L&T as the lead partner, had been submitted last year to the Ministry of Defence. "L&T and Samsung Techwin have joined together to offer a state-of-the-art self-propelled tracked howitzer system meeting the aspirations of the Indian Army for this strategically important programme. This cooperation would lead to new avenues in Indian and global defense markets for both the partners working together," said M.V. Kotwal, Member of the Board, L&T and President, Heavy Engineering. The agreement reflects the success of both companies in their respective areas of proficiency. L&T has had a series of successes as an innovator and systems integrator for key systems & technologies, and has indigenously developed and supplied complete systems for the Indian defence and aerospace sectors. Samsung Techwin is the OEM for the Korean "K9 Thunder" self-propelled howitzer, one of the largest and most successful of the 155mm/52-cal self-propelled artillery systems in the world today. Larsen & Toubro, as the lead partner, has announced that it will indigenously produce the self-propelled howitzer. As part of the cooperation agreement between the two companies, STW will provide key technologies to L&T for localisation of the K9 Thunder. During the production phase of the Indian tracked artillery programme, the joint offering would have over 50 per cent indigenous content including components like fire control system, communication system, NBC & AC, APU, life support system, etc which have already been used in India. This phase will also include significant localisation of hull /turret structure and major sub-systems. L&T also plans to set up the integration and testing facility for roll out of these guns from its world-class, dedicated defence equipment facility in Talegaon, near Pune. The K9 Thunder is on display at the L&T stall in the Defexpo, with L&T-STW jointly announcing its readiness to field the system for

PHOTO: Abhishek Singh

SP GUIDE PUBLICATIONS CMD AND EDITOR-IN-CHIEF JAYANT BARANWAL WELCOMING THE MINISTER OF STATE FOR DEFENCE DR M.M. PALLAM RAJU TO SP'S BOOTH

Indian Army's user evaluation trials which are expected to commence shortly.

Bharat Forge, one of the world's largest forging companies, has expressed its interest in competing for the Indian Army's monumental 155mm/52-cal towed gun requirement, one that has slipped for years without an acquisition being made. The company's executive Director Amit D. Kalyani announced at Defexpo, "We are developing a towed gun of 155/52-calibre mainly for the supply to the Indian Army. We have already responded to a tender for supplying this gun." The company is making an initial investment of $20 million (₹100 crore) to build capacity and acquire technology to develop and build the new gun at a facility already up in Pune. Kalyani said: "We have initially committed ₹100 crore only on development. If we win the tender we will need another dedicated line of investment for the assembly line." The company currently engages about 60 people to develop the gun.

The impressive BAE Systems M777 ultra-light howitzer is back at Defexpo this year. After months of uncertainty, the government has made indications that it is moving forward with the procurement of 145 M777s, though it is reportedly still to complete a full evaluation of the guns. The government has stated that the field evaluation of the ultra-light howitzer comprises three parts, user trials, DGQA trials and maintainability trials. "The performance of the gun can be ascertained only after evaluation of all three trial reports," Defence Minister A.K. Antony said earlier in March. BAE Systems is, incidentally, ready to assist in India in building some of its older Bofors guns to meet critical gaps in the interim. The ordnance factories will build capacity for the manufacture of Bofors (now BAE Bofors) artillery guns within the country and will receive $75 million (₹375 crore) to create the manufacturing infrastructure. The Defence Minister said in Parliament, "The government had secured the right of transfer of technology during the purchase of Bofors guns. Though all the technological documents as per the ToT contract were received by OFB from M/s AB Bofors, the transfer of technology was not carried forward as the dealings with the technology provider, (M/s AB Bofors) were suspended. Further, no indent was placed by Army on OFB for manufacture and supply of complete gun system. Capital expenditure of ₹376.55 crore has been sanctioned by the Government in March 2012 for creation/augmentation of large calibre weapon manufacturing capacity in ordnance factories."

Another company with the experience of forging ties with the Indian private sector, Nexter Systems of France, is also back at Defexpo and raring to go. The company has said that "Nexter plans to open up new areas of cooperation in the Indian defence market by developing partnerships with Indian industry (transfer of technology, joint ventures, sale of components etc.), to support and provide the local industry with the latest technology for the "Make India" projects and any new requirement of the Ministry of Defence of India, to collaborate with the DRDO for modern and high technology research and development projects." The company has established cooperations in India to collaborate in the Indian Army's artillery competitions. For instance, Nexter Systems and Larsen & Toubro signed an agreement in June 2010 to cooperatively develop a 155mm mounted gun system (MGS) for the Indian Army. In September last year, the company and Larsen & Toubro signed a second agreement for the TRAJAN® 155mm/52 cal towed gun for the Indian Army. Both agreements announce the formation of a Nexter Systems led consortium for the 155mm/52 calibre mounted gun programme and the 155mm/52 cal towed gun programme and the upgunning of the M46 for the Indian Army. In a statement, the company said, "Due to the importance of Indian artillery and other programmes and the willingness of Nexter Systems to become a leading partner of Indian defence industry, Nexter Systems has decided to establish a wholly owned subsidiary, Nexter India, in 2012." Elbit Systems has model displays of its ATMOS wheeled (self-propelled) 155-mm howitzer and ATHOS 155mm towed gun system, the latter experienced in Indian field evaluation trials in the past.

The Indian Army is in the process of acquiring the following gun types: 155mm/52-calibre towed guns, 155mm/52-calibre tracked (self-propelled) guns, 155mm/52-calibre wheeled (self-propelled) guns, 155mm/52-cal mounted gun system (MGS) and 155mm/39-calibre ultra-light howitzers. •

MANAGING EDITOR AND PUBLISHER
◢ Jayant Baranwal

ASSISTANT GROUP EDITOR
◢ R. Chandrakanth

SR COPY EDITOR & SPECIAL CORRESPONDENT
◢ Sucheta Das Mohapatra

SENIOR CONTRIBUTORS
◢ Air Marshal (Retd) B.K. Pandey
◢ Air Marshal (Retd) V.K. Bhatia
◢ Lt General (Retd) Naresh Chand
◢ Lt General (Retd) V.K. Kapoor
◢ Rear Admiral (Retd) S.K. Ramsay

PLANNING & BUSINESS DEVELOPMENT
◢ Executive Vice President: Rohit Goel

DIRECTOR SALES & MARKETING
◢ Neetu Dhulia

SALES & MARKETING
◢ Head Vertical Sales: Rajeev Chugh

SENIOR ART DIRECTOR
◢ Anoop Kamath

LAYOUT DESIGNERS
◢ Vimlesh Kumar Yadav
◢ Sonu Singh Bisht

CHAIRMAN & MANAGING DIRECTOR
◢ Jayant Baranwal

ADMIN & COORDINATION
◢ Bharti Sharma
◢ Survi Massey

SP's WEBSITES
◢ Sr. Web Developer: Shailendra P. Ashish
◢ Web Developer: Ugrshen Vishwakarma

SP GUIDE PUBLICATIONS PVT LTD
A-133, Arjun Nagar
New Delhi 110003, India
Tel: + 91 (11) 24644693, 24644763, 24620130
Fax: + 91 (11) 24647093
Email: guidepub@vsnl.com

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

Uncompromised mobility

Unrivalled mobility where it is needed, when it is needed, no matter what the conditions. AgustaWestland's range of proven helicopters delivers for you. Sharing the load when the mission calls.

agustawestland.com

AgustaWestland
A Finmeccanica Company

Oto Melara all set to participate in Indian Navy's large calibre gun tender

BY **SUCHETA DAS MOHAPATRA**

Finmeccanica company Oto Melara is looking for a greater share of the Indian naval, land and defence market and is eyeing the larger calibre gun segment besides the unmanned turret for the armoured vehicles.

Addressing a press conference at Defexpo, Oto Melara officials stated that the company will participate in a tender for the supply of a large calibre gun to be installed on board the new Indian Navy vessels. The gun is a state-of-the-art system deploying advanced technologies in the field of naval artilleries, including capability to fire the extended range Vulcano guided ammunition with a range of over 100 km. The supply would also include transfer of technology (ToT) on the lines of its collaboration with the Bharat Heavy Electricals Limited (BHEL) for manufacture of the 76/62 SR naval gun. The company has showcased its 127/64 LW large calibre gun at the show.

At Defexpo, the company is also highlighting on the 30mm OWS unmanned turret suitable for installation on armoured infantry combat vehicles because of is reduced weight and no penetration inside the hull. The turret is fit for installation of two anti-tank ground missiles (ATGM). Oto Melara has already tied up with Pipavav which involves ToT to India, if the turret is selected by the Indian Ministry of Defence (MoD).

The company has also developed a new family of Vulcano long-range guided ammunition for naval (127mm) and land (155mm) applications. For the Indian Army's requirement for armoured vehicle requirements, Oto Melara and Iveco (CIO) are promoting the Centauro Armoured Infantry Vehicle "Freccia" and the Centauro 120mm light tank.

Giving a presentation of the Oto Melara products on offer to the Indian defence forces during the show, Ulderigo Rossi, Senior Vice President, Marketing and Sales, Oto Melara, said, "We can tailor make our products according to the Indian requirement." •

127/64 LIGHTWEIGHT

Polaris displays Ranger RZR SW and Sportsman MV 850

MV RZR SW POLARIS

At Defexpo, Polaris India Pvt Ltd has displayed its new Ranger RZR SW and Sportsman MV 850. The vehicles provide the military, security forces, law enforcement and other government agencies unmatched off-road mobility in the most challenging terrains. These capabilities are well-suited for missions in India and Asia in general and have proven results with vehicles deployed across the region.

Speaking on the occasion, Pankaj Dubey, Managing Director, Polaris India said, "After successfully entering the Indian market last year with our off-road vehicles, we are now concentrating on providing solutions to the Indian defence, security and government sector. For almost a decade, Polaris Defence has been working with military and government customers, all over the world, integrating their unique needs with effective solutions and Polaris India will do the same for the Indian market. Working directly with an OEM provides benefits to our customers beyond the world class quality of Polaris products. Our customers get access to the equipment manufacturer to expedite missionisation requirements and can leverage the Polaris global dealer network for service."

Polaris Defense provides the military and security forces the light mobility to conduct operations such as patrolling, reconnaissance and surveillance, law and order, perimeter security, casualty evacuation, search and rescue, training and many more.

Ranger RZR SW is a two-passenger LTATV with features suited specifically fortactical operations. It has an 800cc high output twin 4-stroke petrol engine which delivers a top speed of 109 kmph. It has 1000 Lbs (454 kg) of payload capacity and possesses 4-wheel independent suspension with 12"/30 cm of travel and is black out drive and IR capable.

SPORTSMAN MV 850

The Polaris MV 850 is the next generation of militarised ATVs. The MV 850 comes perfectly equipped for today's demanding operations with 850cc/77 hp 4-stroke SOHC twin cylinder petrol engine with a fuel capacity of 44.5 litres and a towing capacity of 680.4 kg. It comes with electronic power steering and Polaris front and rear metal racks. •

THE BOARD OF DIRECTORS OF DLSI AT DEFEXPO 2012

GUY GRIFFITHS, GROUP MD–INTERNATIONAL, BAE SYSTEMS, ANAND MAHINDRA, CEO, MAHINDRA & MAHINDRA, DEAN MCCUMISKEY, PRESIDENT & CEO, BAE SYSTEMS INDIA AND M&M'S ASHWIN SHASTRI AT BAE SYSTEMS STAND

TRUSTED TO PROTECT...

...your borders

As India's wealth and prosperity grows, so do the threats of illegal immigration or incursion across its frontiers by unfriendly neighbours or insurgents.

These frontiers span exposed and hostile terrain which manpower alone cannot protect.

General Dynamics UK's containerised surveillance solutions can be transported to the more remote locations you need to cover, and networked to ensure maximum visibility of threats to India's borders.

We are trusted to protect British Forces in theatre. We can protect you too.

General Dynamics UK – Trusted to protect your borders.

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

www.generaldynamics.uk.com

GENERAL DYNAMICS
United Kingdom Limited

The robot army

BY **SP'S SPECIAL CORRESPONDENT**

Defexpo is perhaps the only event in the country where India's unmanned ground vehicle programmes become visible. After a great showing at Defexpo 2010, the Indian robots are back. In the time between the last show and this, the Daksh remotely-operated bomb disposal and ordnance handling robot has begun inductions into the Army. With six delivered and 14 more to join the Army shortly, the robotic vehicle will be used in border areas and sensitive theatres.


DRDO'S MUNTRA

With that success under its belt the Defence Research and Development Organisation (DRDO) is now getting the Army to evaluate a new fighting robot, currently simply called the Gun Mounted Robot (GMR). The DRDO has pitched the GMR as a potential asset in hostage situations counter-insurgency missions. Developed with good cross-country endurance and mobility, the DRDO GMR sports a 7.62mm light machine gun (with beltfed ammunition) and 30mm grenade launcher. Both weapons use high-intensity lasers to aim, with simultaneous azimuth and elevation control. The GMR's integrated pano-vision camera provides a 180-degree view. The rugged master control station has a touch screen and joystick based controls.

One of the big debuts at Defexpo 2012 is DRDO's MUNTRA (mission unmanned tracked) unmanned tracked ground vehicle. There are two variants of the BMP-2 based vehicles, one configured for surveillance missions and the other a base vehicle from where the active MUNTRA is operated. The MUNTRA has a surveillance suite consisting of an indigenously developed Battlefield Surveillance Radar (BFSR), a daylight/low light camera, a thermal imaging video camera and a laser range finder. Using the BFSR, the base vehicle operator can detect and track a wide variety of ground targets from a range of 50 metres to 12 km in all environments. Targets can also be visually detected and monitored in day/night using optical systems. Details of detected targets are displayed on the operator's console unit in the base vehicle, superimposed on an IMGRS GIS map. Communication devices and surveillance systems are mounted on remotely controlled telescopic masts.

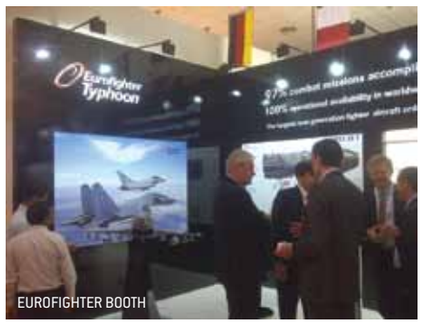
DRDO laboratories are also developing water-jet robots and search vehicles that assist in handling potentially dangerous or suspicious items in trains or houses.

In ten years, half of all combat functions of the Indian armed forces "should either be supported or taken over to a large extent by unmanned robotic weapon systems" according to India's highly ambitious Unmanned Warfare Doctrine, which envisages at least 16 indigenous military robot development programmes, most of them unknown. Programmes in development include a high-altitude border patrol robot, an unmanned assault boat, even an autonomous battlefield search and rescue vehicle. Programmes that the government has been fairly open about include the autonomous underwater vehicle (AUV), the Predator-like unmanned bomber based on the Rustom long endurance drone, the mini surveillance drone Netra, and the Nishant unmanned aerial vehicle. •

Defexpo **can't keep MMRCA away!**

BY **SP'S SPECIAL CORRESPONDENT**

It is clearly impossible to keep the monumental medium multi-role combat aircraft (MMRCA) competition away from even a land and maritime warfare expo like Defexpo, but that goes with the business. With attention still focused on India's single largest contract in history, and the competition still apparently some way from the finish line, the MMRCA effortlessly remains on centre stage.



EUROFIGHTER BOOTH

A MODEL OF RAFALE ON DISPLAY

Defence Minister A.K. Antony announced at Defexpo that while the Dassault Rafale had been selected as L1, there were still "at least seven-eight levels of scrutiny and process" before a contract is concluded. He also announced that the process would not move to the next stage until an inquiry was complete into issues raised by a sitting Member of Parliament.

Dassault Aviation, which traditionally stays away from the land forces expo, is still visible at several stalls at Defexpo, notable Thales, Safran and MBDA, all partners on the Rafale programme, and specifically the Rafale package for India. The company has expressed confidence separately that it looks forward to winning the Indian deal.

Eurofighter GmbH, which lost out narrowly to Dassault is, on the other hand, at Defexpo in full force! The company even has a separate stall dedicated to the multi-role fighter. Several top officials from the company are also here, an indication of the importance that EADS attaches to the deal, and perhaps also a recognition that nothing is over, till it's over. The Eurofighter consortium, deemed L2 in the final selection process, has signalled that it is willing to hone it deal and make it more competitive if called upon to do so.

All the same, Defexpo provides MMRCA firms the opportunity to meet offset facilitation companies in the country and tie up contracts in one of the most complex areas of the entire deal. Indications are that hectic discussions are underway with an array of small and medium firms which will contribute to the MMRCA licence build programme spearheaded by HAL in Bangalore. •

Selex Galileo and Data Patterns join hands on defence electronics

Selex Galileo and Data Patterns have signed a head of terms agreement with a view towards forming a joint venture (JV) later this year. At a press conference organised on the second day of Defexpo, Selex officials informed that the JV will be based in Chennai, which will focus on a broad range of defence electronic products and state-of-the-art technology developments.

Fabrizio Giulianini, CEO of Selex Galileo, said, "The JV gives the thrust that we need. If we have to be in India, we need to have a strong partnership". He further said that the JV will establish a centre of excellence for key technologies in the defence electronics sector. "It will create an effective partnership that will foster and sustain the long-term prospects of both companies."

The joint venture will provide greater thrust to critical technologies at a product and system level in 'Buy and Make', 'Make' and 'Offset' programmes in the areas of avionics, navigation, radars, unmanned aerial vehicles (UAVs), F-INSAS, etc in the Indian defence market and also facilitate access to export markets.

The JV will bring a technology value to India's growing defence programmes," said S. Rangarajan, CEO of Data Patterns Group, and added, "Selex Galileo is a leading global player and we are happy and proud to form a joint venture with them. This synergy will strengthen our capabilities to address our defence requirements with today's technology solutions.... Selex has a wide range of sensors and now we will work together with Selex on it in India and cater to the domestic market." •

—**SUCHETA DAS MOHAPATRA**

VISIT US AT
DEFEXPO
HALL 18, STAND 10

PILATUS

READY FOR TRAINING

PILATUS - TAILORED SOLUTIONS FOR BASIC TRAINING

Pilatus Aircraft Ltd
P.O. Box 992, 6371 Stans, Switzerland
Phone +41 41 619 61 11, Fax +41 41 610 92 30
info@pilatus-aircraft.com
www.pilatus-aircraft.com

Mahindra forges **Two Big Partnerships**

BY **SP'S SPECIAL CORRESPONDENT**

MAHINDRA AND RAFAEL FIRM UP JV PARTNERSHIP

It's two more big foreign joint ventures for Mahindra! First, in another emphatic move into the defence space by the Indian private sector firm, and making use of Defexpo as a platform, Mahindra & Mahindra Ltd and Israel's Rafael Advanced Defense Systems Ltd., today entered into a memorandum of understanding which will lead to the formation of a joint venture in India that will develop and manufacture advanced military systems, including anti torpedo defence systems, electronic warfare systems, advanced armouring solutions and remotely operated weapon stations for futuristic infantry combat vehicles (FICV).

The company announced that the Foreign Investment Promotion Board (FIPB) had already been approached for the creation of a 74:26 company. Rafael will make investments in Mahindra's existing Naval Systems division in Pune which will also be the location of a production facility that will be set up to meet the long-term requirements of the brand new JV company.

"Our joint venture with Rafael signals our strategic entry into a wide range of high tech-defence solutions which will enable the Mahindra Group to become a leading defence systems integrator in India," said Anand Mahindra, Vice Chairman & Managing Director, Mahindra & Mahindra Ltd.

Brig (Retd) K.A. Hai, Chief Executive, Mahindra Defence Systems, said "This JV will enable Mahindra Defence Systems to further leverage its innovative solutions in the maritime domain, enhance its product offerings, and present it with new avenues for growth. We intend to further expand into air, land and aerospace defence solutions."

Maj Gen (Retd) Ilan Biran, Chairman, Rafae,l said "As part of our global strategy, we form alliances to develop military applications based on our proprietary technologies and in Mahindra we see a lot of synergy and opportunities for growth in new markets and especially in India which is a strategic market for us."

Vice Admiral (Retd), Yadida Yaari, CEO, Rafael said "We see Mahindra as an ideal partner for expanding our business opportunities in India in sea, land and air domains. We have supported and will continue to support the Indian Ministry of Defence in gaining technological superiority and excellence."

PACT WITH TELEPHONICS. In its second big announcement on Day 2 of Defexpo, Mahindra announced that it was forming a joint venture with Telephonics Corporation, a leading designer, developer and manufacturer of high-technology integrated information, communication and sensor system solutions to military and commercial markets worldwide and a subsidiary of Griffon Corporation to provide the Indian Ministry of Defence (M-oD) and the Indian civil sector with radar and surveillance systemsidentification friend or foe (IFF) devices and communication systems. In addition, the JV intends to provide systems for air traffic management services, homeland security and other emerging surveillance requirements. With major platform development underway in the country and the acquisition of several new assets, the company sees a clear business opportunity in this advanced space. The JV will be the first in India to manufacture air borne and maritime radars utilizing licensed technology. Nearly 100 per cent indigenous capability is expected to be achieved in the near future in civil and military applications.

The project envisages establishing a plant in India which would manufacture and service airborne radar systems that are already being supplied to the Hindustan Aeronautics Ltd (HAL) and support airborne maritime surveillance systems for the Indian Navy and Coast Guard. The JV will licence technology from Telephonics for use on a wide range of products.

The companies have been in the process of negotiating definitive agreements and approval has been sought from the FIPB for the establishment of the JV in accordance with the current defence sector FDI regulations. The approval for this is expected soon.

Backed by strong R&D, Telephonics has developed a state-of-the-art three channel IFF MK-XII system which has the capability to integrate with civil/military aircraft and ground or sea based IFF systems. Telephonics' experience with respect to these systems in other countries will provide a platform for the JV. Telephonics has also developed secure communication systems which may be deployed on a variety of ground and airborne systems.

Themobile surveillance system (MSS) and advanced radar surveillance system (ARSS) are rapid deployment ground surveillance systems which can detect human and vehicular movement both in the day and the night. Through networking, a central command and control system can effectively watch a large area for vehicular and human movement. Nearly 4,000 of these systems are already being used by 10 countries for their homeland security applications.

Telephonics has an established presence in the Indian defence and civil markets. For example, Telephonics supplies RDR-1400 weather avoidance radar systems for helicopters being built in Bangalore, India. It is also contracted to supply Boeing with APS - 143C (V) 3 multi-mode radars (MMR) for India's P-8i Maritime Surveillance aircraft, and is responsible for installation of a sophisticated intercommunication system for the C-17 Globemaster contracted for by the Indian Air Force. •

General Dynamics UK and Tandon Group partner for Indian security and defence opportunities

General Dynamics UK has signed a teaming agreement with India's Tandon Group to jointly pursue opportunities in the security and defence markets in India. Together the companies will deliver indigenous systems integration capability to their Indian customers and India as a whole. This new relationship builds on General Dynamics UK's existing track-record of partnering with Indian companies to meet unique Indian requirements.

"This partnership with General Dynamics UK will enable Indian defence and security customers to realise the true benefits of systems integration, at the same time maximising the existing technical, manufacturing and support already available from our companies in India," commented Sandeep Tandon, Managing Director at Tandon Group.

"Teaming with Tandon Group will provide General Dynamics UK with a respected Indian partner, together with whom we can deliver excellent integrated solutions for programmes in India's defence and security sectors," commented Dr Sandy Wilson, President and Managing Director of General Dynamics UK.

"The Tandon Group partnership will enable us to continue our strategic focus enabling us to deliver real tangible benefit to our Indian customers," commented Wayne Beck, head of international partnerships at General Dynamics UK.

General Dynamics UK's contract with HAL is already delivering an innovative approach to sharing intellectual property (IP) with an Indian partner. The ₹39.3 crore (£4.9 million) contract sees General Dynamics UK establish an overhaul capability to provide third and fourth line servicing for all the Indian Air Force's and Navy's Hawk MK 132 aircrafts' stores management systems (SMS). The Hawk SMS includes two weapons control panels (WCP) and one weapons programming unit (WPU) designed, manufactured and supplied by General Dynamics UK.

In addition to the above avionics expertise, General Dynamics UK is a leading prime systems integrator for tactical communications networks, surveillance and security systems and armoured fighting vehicles, is the premier land systems provider to the United Kingdom Ministry of Defence, and delivers security programmes to governments and private organisations around the world.

Tandon Group has been a pioneer in creating high technology companies focused on providing global customers with low-cost innovative technology solutions. The group is now spending considerable resources through its defence licensed subsidiary MEPL to serve Indian defence and security customers.

General Dynamics UK is present at Defexpo 2012 in New Delhi. •

Thales highlights on its air defence solutions

BY SUCHETA DAS MOHAPATRA

SAMP/T MISSILE SYSTEM

At Defexpo, Thales is highlighting on an array of its air defence products, and emphasising more on it was Laurent Duport, Strategy and Business Development Director, Advanced Weapons Systems, Thales Air System, gave a presentation on Thales capabilities and solutions.

Speaking to the media, Duport gave details of Thales products like Shikra 60; air-defence extended solution (ADES); gun systems, SAMP/T short-range air defence systems, rocket systems, missile systems, etc.

The Shikra 60 provides complete airspace surveillance up to a range of 80 km and ensures optimised engagement of weapon systems against conventional and asymmetric threats in dense clutter or intense jamming situation. It combines high performance Ground Master 60 radar and innovative engagement control station (ECS). The ECS is an innovative and scalable command and control solution that enhances significantly the operational capabilities and killing probabilities of an air defence platoon. It optimises engagement against conventional and asymmetric threats and ensures an optimal pairing between air defence weapon systems and threatening targets, avoiding overkill, under kill and fratricide fire.

The Thales air defence extended solution (ADES) is the Thales latest mobile air defence system designed to provide manoeuvring forces with a highly effective air defence umbrella against airborne threats. ADES is integrated on a tracked or wheeled chassis with the power-operated turret equipped with the GM 60, 3D E/F band surveillance radar, 3D I/J band tracking radar and stabilised optronics package.

The company's gun system is a multi-role and mobile weapon system equipped with a powerful 40mm gun, which employs the cased telescoped ammunition and provides protection against air and ground threats.

SAMP/T, the medium-range ground-based air defence system has been developed by EUROSAM, a joint venture between Thales and MBDA. It is a theatre anti-missile system designed to protect the battlefield and sensitive tactical sites against all current and future airborne threats, including cruise missiles, manned and unmanned aircraft and tactical ballistic missiles in the 600 km range.

The company's missiles range include; innovative missiles for short-range and tactical arenas. Through its subsidiaries, TDA in France and Forges de Zeebrugge (FZ) in Belgium, Thales has delivered 10 million rockets in the last 40 years. The company is now building the precision rockets in the range of 60mm and 70mm and at Defexpo, we can see FZ's laser guided rocket of the 70mm calibre already selected to equip the advanced light helicopter with 70mm rockets systems. Duport also spoke about its lightweight multi-role missile system. •

Mazagon Dock on course to deliver Project 15 Alpha soon

Mazagon Dock Limited (MDL) expects to deliver the first ship under Project 15A in a year's time, according to its Chairman and Managing Director, Rear Admiral (Retd) R.K. Shrawat.

Speaking to *SP's ShowNews* at Defexpo India 2012, Rear Admiral Shrawat said three of the Kolkata-class destroyers under the name of Project 15A are at the 'outfitting stage'. MDL has launched the indigenous warship with enhanced stealth features and land-attack capabilities. "We are trying to curtail the period to deliver the first ship." The next two will be delivered in 2013-14.

On the timelines for the Project 15B destroyers, Rear Admiral Shrawat mentioned that the first ship would be delivered in 2018 and the remaining three warships in intervals of two years – 2020-22 and 2024. The Indian Navy order is worth ₹29,345 crore.

He informed that the contract for the seven follow-on Project 17A stealth frigates is expected to be awarded sometime during this year. Mazagon Dock will build four and the remaining three would be constructed by the Garden Reach Shipbuilders & Engineers Ltd (GRSE). The 17A series are expected to carry the BrahMos anti-ship and land attack supersonic cruise missile.

Rear Admiral Shrawat said his vision was to make MDL a 'truly world class shipyard', meeting international norms and standards of shipbuilding. "We are on track with regard to modernising our shipyard and the most important asset of our company is to further augment human resources which we will nurture for them to deliver world class products." •

—R. CHANDRAKANTH

Hindustan Shipyard Limited examining JVs

The Chairman and Managing Director of Hindustan Shipyard Limited (HSL), Rear Admiral (Retd.) N.K. Mishra has stated that the company was in the process of looking at joint venture possibilities as it could help accelerate the production capabilities to meet the growing needs of both the domestic and global markets.

Talking to *SP's ShowNews* at Defexpo India 2012, Rear Admiral Mishra said the focus now was to clear the backlog of merchant vessels by 2013 and gear itself up to take up the orders of the Indian Navy and the Indian Coast Guard. It has 13 inshore patrol vessels (IPVs) for the Coast Guard and 20 minor crafts for the Indian Navy. HSL has adequate substantial infrastructure for construction of surface ships and submarines.

HSL, he said, had been nominated for the construction of two amphibious warfare ships, called Landing Platform Docks (LPDs). The company was earmarking a programme for LPDs and the modernisation plan for which it had got an allocation of ₹457 crore that would come handy.

He said, HSL could easily upgrade the infrastructure for submarine construction, as HSL is already doing the refits for INS Sindhukirti, a Sindhughosh class diesel-electric submarine. From refit to construction of submarines, he said, would require workshops and the same was being augmented. 'The augmentation process would take about a year or so." •

—R. CHANDRAKANTH

Pipavav Shipyard: An architectural marvel

Pipavav Defence and Offshore Engineering Company is a testimony to the vision and active participation of the private sector in India's quest to become a major player in the global maritime defence industry, with a special focus on the defence and offshore sectors.

Strategically located on the western coast of India in the Arabian Sea, Pipavav Defence is India's largest shipyard. It has one of the largest dry docks in the world, 662 m X 65 m. The dry dock is serviced by two Goliath cranes with a span of 150 m and a hook height of 75 m, these together have a combined capacity of 1200 T. Fitted with a 688 m quay, the shipyard is the only one in India which can accommodate vessels ranging from OPVs to corvettes, LPDs, frigates, destroyers, submarines and even aircraft carriers. Pipavav Defence has recently built and commissioned the largest vessel ever built in India till now, a 75,000 T commercial carrier, in record time. The shipyard's second dry dock is under construction and once completed, it will be the largest dry dock in the world, with dimensions of 740 m X 90 m.

PANAMAX BULK CARRIERS PREPARED FOR LAUNCHING

The facility has over two million square feet of covered workshop space, which includes technologically advanced machinery, for manufacture, fabrication and assembly of blocks. This makes it the only modular shipyard in the country, thereby enabling many processes to happen simultaneously, and therefore, saving time.

It is these salient features that have enabled Pipavav Defence to be the first private shipyard in the country to be given a licence to manufacture warships by the Ministry of Defence (MoD). Subsequently, Pipavav Defence has secured an order to build five NOPVs for the Indian Navy. In the last two years, the company has also moved from being naval-centric towards becoming India's first integrated defence company. Some of the largest corporations in the defence sector globally have chosen Pipavav as their partner of choice. With the passage of time, things can only get bigger and better, not just for the company, but the country at large. •

Saab and Pipavav form Combat System Engineering Group

Saab and Pipavav will jointly form a group called the Combat System Engineering Group (CSEG) in India. This group will analyse the combat system design and architecture, and work closely with design group of Pipavav to undertake, modelling and simulation and prepare system integration requirements for naval ships constructed by Pipavav, starting with the naval offshore platform vehicle (NOPV) programme. This will ensure world class design with risk reduction and ships deliveries in time and budget.

The Indian Navy has a major shipbuilding and modernisation programme over the next decade and there is a major effort in system engineering of front line warships and submarines. With Saab's worldwide experience CSEG will fulfil this critical technology gap.

"This is an excellent start to our naval commitment in India and shows Saab is a responsible, high technology partner for the Indian Navy and Indian defence industry. Over time I see large business opportunities," says Gunilla Fransson, the Head of Business Area Security and Defence Solutions, Saab.

"The Combat System Engineering Group model is a great possibility for Saab to work with Indian partners on world class Naval Combat Systems Engineering. The CSEG will support our partners and the Indian Navy. We are very proud to be pushing the boundaries," says Thomas Kloos, the Head of Command and Control Systems at Security and Defence Solutions, Saab. •

GRSE modernisation programme to be complete end 2012

One of the premier shipbuilding yard of India, Kolkata-based Garden Reach Shipbuilders & Engineers Ltd. (GRSE) will be completing its modernisation plans by the end of the year which should further give the company a competitive edge.

Disclosing this to *SP's ShowNews* at Defexpo India 2012, GRSE Chairman and Managing Director, Rear Admiral (Retd) A.K. Verma said "We are on the last leg of the modernisation programme which has three key aspects – construction of new docks; workshops and a 250 tonne Goliath crane. The crane should be ready in the next three months.

About the various projects in the pipeline, Rear Admiral Verma mentioned that 'fitting out' work and system integration was on course for project 28 ASW Corvettes for the Indian Navy. "In about three months time, we should be sailing for the contractor's sea trials and the first ship is due to be commissioned end of 2012." GRSE, he said, had built enormous shipbuilding capabilities over the years and these would continue to serve the requirements of the Indian Navy.

Hailing the organisation of Defexpo India 2012, he said "it is the best-ever Defexpo...It has been organised in a very big way and it is far, far better than the previous expos, in terms of attendance by companies and by friendly countries." •

—R. CHANDRAKANTH

Goa Shipyard looking beyond shores

In its bid to consolidate its position as one of the leading Indian shipbuilding yard, Goa Shipyard Limited (GSL) has embarked upon a two-pronged strategy – enhancing capabilities to meet domestic requirements and two to explore further export opportunities in Asia, Africa and South America.

In an interview to *SP's ShowNews* at Defexpo India 2012, the Chairman and Managing Director of GSL, Rear Admiral (Retd) Vineet Bakhshi confirmed that GSL had been shortlisted by Oman for patrol vessels. "We are in the last three against a very stiff international competition. We are also looking at countries in Asia, Africa and South America where our range of products can find utility. GSL has design and build capabilities to meet the customers' requirements."

GSL has been exporting non-lethal vessels to many countries, some of which include Yemen, Mozambique, and Oman. "We are now wanting to export vessels which have greater complexity."

In line with the growing demand, GSL has commenced on a modernisation plan with a little over ₹800 crore allocation for the same. "The modernisation programme is expected to be completed a little over three years time, thus transforming the shipyard into one of the best in the world. The plan, once complete, will triple the capacity of the shipyard and also shorten the lead times."

Talking about Defexpo as a platform for further business, Rear Admiral Bakhshi said, "It is an excellent meeting ground for various countries and companies to synergise and understand each others' requirements as also project capabilities of our own shipyards."

The vision of GSL, he said, is to be able to leverage its strengths in design and its people skills to provide the best products to the discerning customers, not just in india, but elsewhere too. •

—R. CHANDRAKANTH

Ansys' software solutions for defence

The Indian market is accelerating at a fast pace and the offset policy has actually propelled it further. We are very optimistic about the market," says Kaustubh Nande, Manager, Marketing, Ansys. For the first time, the engineering simulation software company Ansys has participated in the Defexpo, though not as a separate entity but as a part of its partner company Entuple. However, at the next Defexpo, the company plans to put up its own stall too. "At Defexpo you get to see companies with their products and also get an opportunity to interact with many. Even at the ICAUV conference held in Bangalore recently, I had a chance to interact with many Indian Air Force personnel who showed interest in our solutions."

Ansys India, which has its headquarters in Bangalore and offices in Pune, Hyderabad and Noida, is coming up with offices in Kolkata and Chennai too. The company which is concentrating on four areas—automation; aerospace and defence; oil and gas; and electronics—in India, has customers across the world, including General Motors, Ford, Reliance, Defence Research and Development Organisation (DRDO), Hindustan Aeronautics Limited (HAL). "All DRDO labs are our customers," says Nande.

"We are an engineering simulation software company and our software helps product development. Our software helps test the viability of a product and is 95 per cent accurate. So instead of waiting for a product to be developed and tested, the affect of a product (say a bomb) can be tested even before production through our software solutions. It saves time, effort and money." •

—SUCHETA DAS MOHAPATRA

General Dynamics with a range of products at Defexpo

General Dynamics is at Defexpo with displays of combat vehicles and systems, security and surveillance systems, battlefield management and tactical communications systems, toughened laptop computers and a variety of other specialised products and services that are responsive to the requirements of India's national security and defence

General Dynamics United Kingdom is showcasing its successful C4I programmes that deliver the Tactical Internet to the UK and allies, which will be of interest to the Indian Army for its battlefield management system (BMS) programme. It is also demonstrating its capability in providing surveillance and electro-optics for border and coastal security, as well as airfield security systems.

General Dynamics Land Systems is showing the futuristic light armoured vehicle, and newly acquired General Dynamics Land Systems – Force Protection's light mine protected Ocelot vehicle, which enters UK service as "Foxhound" later this year.

General Dynamics European Land Systems is introducing the M3 Amphibious Bridge/Ferry System and the New EAGLE light tactical armoured vehicle to India. M3 is the world's most modern, most efficient and fastest amphibious bridging and ferrying equipment in terms of loading capacity, construction time, cross-country and marine manoevrability. The New EAGLE is available in two configurations, 4 x 4 up to 10 tonnes GVW and 6 x 6 up to 15 tonnes with a capacity of 2 +12 soldiers. The New EAGLE is a highly-protected vehicle with superior mobility and unsurpassed payload in its class.

General Dynamics C4 Systems is showcasing its rugged computing and networked communications products, which help users create their own networks in remote locations, send search and rescue data, and provide highly dependable line-of-sight communications. General Dynamics Canada is highlighting its command, control and communications products and systems for land combat platforms, including its smart displays and its MESHnet tactical mobile router. It will also be demonstrating its sonobuoy processing system for detecting underwater threats and its airborne mission management system.

AxleTech International, General Dynamics' custom drive train and suspension systems business, will show its independent suspension axle systems (ISAS), which are appropriate for military vehicles requiring high mobility and manoeuvrability. •

Maini group acquires majority stake in TOMCAR

Bangalore-based Maini Group has acquired a majority stake in Israel-based TOMCAR, engaged in design and manufacture of high performance off road vehicles.

At Defexpo 2012, Maini launched the TOMCAR. "With the Indian defence, paramilitary and homeland security scouting aggressively for all terrain vehicles, we intend to promote TOMCAR amongst them as part of their modernisation drive," said Sandeep Maini, Chairman of Maini Group.

Designed and built in Israel and the US, TOMCAR is a military grade, high-performance all-terrain vehicle designed for military, order patrol and first responder use. TOMCAR is deployed by the Israeli Military, the US Customs and Border Patrol and supports the British Army in Afghanistan as a combat support and replenishment vehicle. The Israeli military has also deployed the vehicle on border patrol missions, in an unmanned configuration known as Guardium.

TOMCAR has been customised for special operations, reconnaissance and surveillance, military and border forces. In the light strike version TOMCAR can carry heavy machine gun, anti-tank guided missile launcher, or automatic grenade launcher. It can also be fitted with a winch for self-recovery. TOMCAR has an option of being customized for both armoured and unmanned versions. The vehicle is also air transportable and para-droppable.

TOMCAR all-terrain vehicles feature strong, fully-welded steel tube chassis and heavy duty four-wheel independent suspension. These vehicles are designed to be safe, rugged and extremely dependable. •


TOMCAR BEING UNVEILED

MTL Group's advanced design solutions

MTL Group is displaying its design for manufacture (DFM) capabilities at Defexpo, and has also introduced a new range of innovative solutions for processing armour plate which includes IMPAS add-on armour.

IMPAS is a light-weight add-on steel armour solution that gives the customer a lower cost alternative to ceramic and composite armour. IMPAS offers protection against various threat levels including: Stanag 4569 Level 2. Stanag 4569 Level 3 and FB7.

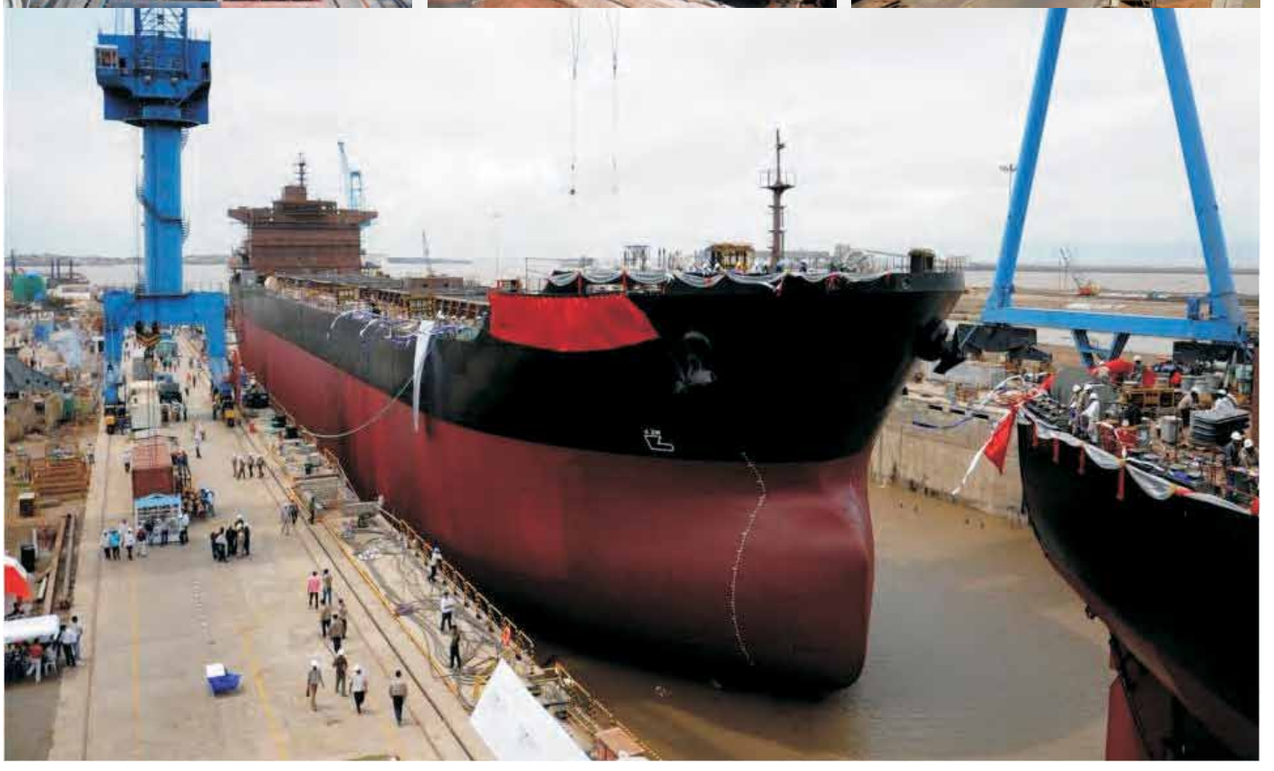
Simon Hurst, Sales Manager for Defence said, "MTL Group has been working with armoured vehicle manufacturers for many years now on a global scale and is recognised by the world's leading vehicle manufacturers as not just a supplier of armoured steel components but also as the leading specialist in DFM. Our customers are relying more and more on both our cutting edge technology and in-depth knowledge and experience in this field."

"Our knowledge and experience in processing armour plate and high strength material allows us to do three things for the OEM—make it lighter, make it stronger and make it lower the cost."

DFM is a specialist added value engineering service for the defence sector and is carried out by a dedicated cross functional team at MTL Group at the design stages, reviewing the customers design and look at alternative processing methods to reduce weight, cost and increase the protection levels.

'We have identified India as a key market in which MTL Group can offer something different and assist the vehicle manufacturers at the design stage to create a lighter, better protected and lower cost vehicle," said Hurst. •

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.
- The world class and global scale facilities at Pipavav have the capacity to put India on the global maritime map. It is the vision of the company to make India realise her dream of becoming a net exporter of maritime assets including frontline warships from being a net importing country.

PIPAVAV

Defence And Offshore Engineering Company Limited

India's First Integrated Defence Company

A SKIL INITIATIVE

Disclaimer : *"SKIL Infrastructure Limited (SKIL), promoter company of the Pipavav Defence and Offshore Engineering Company Limited (formerly known as Pipavav Shipyard Limited), is proposing, subject to receipt of requisite approvals, market conditions and other considerations, a public offering of its equity shares and has filed a Draft Red Herring Prospectus with the Securities and Exchange Board of India ("SEBI"). The Draft Red Herring Prospectus of SKIL is available on the website of SEBI and the websites of the Book Running Lead Managers and the Co-Book Running Lead Managers*

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".

Continued from SP's ShowNews *Day 2*

'Our intention is to be in India for the long term and we will expand our operations in a calibrated manner'

Commodore (Retd) Sujeet Samaddar
Chief Executive Officer, ShinMaywa Industries India Private Limited

DR M.M. PALLAM RAJU IN SHINMAYWA STALL

COMMODORE (RETD) SUJEET SAMADDAR WITH VCNS VICE ADMIRAL R.K. DHOWAN

SHINMAYWA STALL ATTRACTS DELEGATES FROM VARIOUS COUNTRIES

TAKAHIRO HIROTA OF SHINMAYWA WITH VCNS VICE ADMIRAL R.K. DHOWAN

***SP's ShowNews* (SP's): What technology and platform you have lined up for the Indian Navy and in what ways those products could blend with Indian Navy's ongoing modernisation plans?**

Commodore (Retd) Sujeet Samaddar (Samaddar): We have offered US-2, a tried and tested amphibian which has served the JMSDF well, to Indian Navy. Important characteristics of this amphibian includes capability of landing on and take-off from the outer sea. We have learnt that the Indian Navy has in its modernisation plans to build up capabilities and augment resources for a credible apparatus for humanitarian assistance and disaster relief (HAND) and logistics support missions to its widely dispersed Island territories on either sides of the Indian peninsula. Our internal evaluation has revealed that modernised and upgraded US-2 ideally fits the bill. We believe that this aircraft is really the best and second to none in its category. Its huge capabilities can play a major part in enhancing India's role in the region using cutting edge Japanese technology for the good of society. It can carry out a variety of missions ranging from constabulary, humanitarian assistance and disaster relief and logistic support missions. Accordingly, we have offered the same US-2 to the Indian Navy.

SP's: How do you see ShinMaywa growing as a business venture in India? Will you be focusing only on the US-2 or some other innovative products also for the Indian market?

Samaddar: ShinMaywa is really not a new entrant to India as it began operations almost 20 years ago. We already are a supplier of passenger boarding bridges and wire terminating machines to Indian customers. We have now responded to the Indian Navy's request for information (RFI) for amphibian aircraft. We also have regular inquiries for our other engineering products and environment systems. Therefore, we are here in India for the long term, and we will grow our business operations in a calibrated and systematic manner which will best contribute to the needs of the Indian Navy as well as other customers in India.

SP's: In what way is the US-2 different from other amphibian aircraft?

Samaddar: The short take-off and landing (STOL) technology based on boundary layer control (BLC) which allows ultra-low speed operations and introduction of spray suppressor technology which enables operation in rough seas against waves of up to three-metre high, which no other aircraft has achieved, so far. It also requires the least take-off and landing distance whether on land or sea, the longest range, the highest payload and is the only aircraft in its class which is proven, in-service and certified/ruggedised for military specifications. Its radar system combines both weather and surface surveillance. The US-2 on offer to Indian Navy uses the same class of engines which are installed on the C-130J Super Hercules. I think we have a very good product for our global and strategic partner—India. I also see the US-2 as a very good vehicle to implement the vision of our two countries to build a solid partnership between India and Japan. The US-2 is the best way to begin this partnership since this aircraft benefits a larger world community and would rightly fit into India's growing responsibilities.

SP's: What is the merit that US-2 brings?

Samaddar: With US-2, which is the only aircraft that can land on rough water, India can cover the Indian Ocean throughout the year. The STOL capability of US-2 enables Indian Navy execute the search and rescue operation and also the landing on and taking off from some lakes and rivers that have enough depth for the operation. The operation area of the aircraft will be drastically extended.

SP's: What are your business expansion plans for the Indian market? Where do you see ShinMaywa Industries in India 10 years down the line?

Samaddar: Ten years is not such a long time. Our focus is to first introduce the US-2 in the Indian Navy. Our other products are also of unmatched quality and use very powerful modern technologies. We expect that the Indian market will accept our products for their high quality and high technology. Not only the "buyer-seller" relationship for just selling state-of-the-art product but also the service and maintenance of US-2 will be provided from us as long as it flies in India and that will bring new technology for the Indian industries. Our intention is to be in India for the long term and we will expand our operations in a calibrated manner. •

US-2 STOL AMPHIBIOUS AIRCRAFT

Look no further for your Defence needs...

Punj Lloyd Manufacturing & Systems Integration Division

ISO 9001 | ISO 14001 | OHSAS 18001

- **Fabrication and Precision machining of Artillery and Air Defence Gun components**
- **Assembly, Integration and Testing of Weapon Systems**
- **Modification and Upgrade of Weapon Systems/Armoured Vehicles**

Facilities:

- **5 axes CNC machines capable of handling ferrous and non ferrous material including composites**
- **Fully equipped fabrication shop**
- **State-of-the-art Metallurgy and Metrology laboratories**

Punj Lloyd GROUP

Land Systems | Defence Aviation | Defence Electronics | Engineering Services

Punj Lloyd Ltd
Corporate Office I, 78 Institutional Area, Sector 32, Gurgaon 122 001, India
T +91 124 262 0123 F +91 124 262 0111

www.punjlloydgroup.com

Continued from SP's ShowNews *Day 2*

Rockwell Collins bringing NextGen capabilities to India

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

***SP's ShowNews* (SP's): Simulation and training have progressed slowly in Indian defence forces. What technologies can Rockwell Collins offer in this sphere?**
T.C. Chan (Chan): We offer technologies that enable training across the full spectrum—from instructor-led, computer- and web-based training to a virtual avionics trainer or full-fidelity simulator.

Our systems give operators (such as mission commanders, pilots and mounted soldiers) and maintainers effective ways to reach their highest level of preparedness. For that, you need a number of innovative technologies working together.

For example, if you want a pilot to make a seamless transition from a simulated training environment to the real battlespace, you need to make the training experience as close to the real thing as possible. We do that with high-fidelity image generation, dynamic model and terrain interaction, the industry's largest environment database library and open systems architecture to keep the system state-of-the-art. And because we also are an avionics original equipment manufacturer, our training system can re-host the actual avionics that pilots will use in the cockpit.

Some of our latest simulation and training technologies include: EP-80 image generator; UH-60 flight training device; CORE instructor operating system; 2015HC projector; SimEye SX45 helmet-mounted display; radar simulation systems; and live virtual constructive training.

SP's: What technologies for unmanned aerial vehicles (UAVs) can Rockwell Collins offer to India?
Chan: Most of our communication and aviation electronics are suitable for use in both UAVs and manned platforms. In fact, our sub-systems can enable a traditionally manned, general aviation aircraft to operate as a UAV as a mission dictates.

We offer a variety of UAV solutions for military applications as well as for homeland security, law enforcement or disaster recovery, where pilot safety or mission requirements prohibit manned aircraft.

Our technologies help UAVs complete their missions more safely and securely. For instance, we offer robust, assured data links for command and control, plus greater situational awareness for our military customers.

We make flight-control technologies with patented algorithms that enable UAVs to do what was considered impossible before – undergo what ordinarily would be catastrophic damage, recover flight and safely land. You can watch our damage tolerance video and see for yourself: http://www.youtube.com/watch?v=dGiPNV1TR5k

SIMEYE SX45 HELMET MOUNTED DISPLAY

SP's: What technologies can Rockwell Collins offer to Indian security forces for homeland security in battling terrorism and insurgencies or for border surveillance?
Chan: We believe our satellite communication (SATCOM) product offerings and software defined radios would be of interest to the Indian security forces, in addition to our HF cellular capability.

The HF cellular concept is similar to the "cellular" phone or mobile phone concept. In a cellular telephone network, a mobile user initiates a call and the closest (or best-receiving) base station completes the call. In HF cellular, all of the radio sites within an HF network are set to scan the available frequencies (or channels) in automatic link establishment (ALE) mode, waiting for a mobile platform to initiate an ALE call.

It is estimated that manual (non-ALE) linking on the first attempt is successful less than 15 to 30 per cent of the time. By adding ALE, the first attempt success rate jumps to greater than 90 per cent (based on experience with the US Customs Service). By using an HF cellular architecture with multiple radio sites strategically placed throughout an area, the first attempt success rate is improved to greater than 98 per cent, with significantly improved link reliability and availability throughout the coverage area. Lower-noise communications are also provided as HF cellular selects the best channel and the best radio site. •

Rossell India, CAE joint venture gets nod from FIPB

Rossell India Limited announced it has received approval from the Indian Foreign Investment Promotion Board (FIPB) to form a joint venture company with CAE to provide synthetic training solutions for the Indian defence market. Rossell India will hold a 74 per cent share, while CAE will hold the rest.

The focus of the JV is to provide training solutions for defence procurements where India is acquiring foreign platforms.

"Rossell has been looking for growth opportunities and we are pleased to form a joint venture with a global leader such as CAE," said Harsh Mohan Gupta, Executive Chairman, Rossell India Limited. "The Indian Ministry of Defence has specifically recognised simulation and training services as being eligible for offsets so we expect this company, which will have access to CAE's world-class technology and experience, to be an attractive partner to foreign OEMs looking to meet offset requirements."

CAE TRAINING CENTRE IN BANGALORE

Martin Gagne, CAE's Group President, Military Products, Training and Services, said "The Indian defence forces recognise the benefit that simulation can provide to enhance their operational training while reducing costs and are now requiring high fidelity simulation for all their major platform acquisitions. CAE believes simulation and training will continue to take on more importance in India, which is why we have and will continue to make significant investments in-country. We are firmly committed to being a long-term partner by bringing our world-class technology and capabilities to India's defence forces."

To know more contact Air Vice Marshal (Retd) Satish Sofat, Vice President at corporate@rosselltechsys.com or Chris Stellwag, Director, Marketing Communications-Military at chris.stellwag@caemilusa.com. •

Strengthening Defence, Safeguarding the Nation.

NEW FRONTIERS. NEW DREAMS

Armoured Recovery Vehicle

BEML LIMITED, a Mini Ratna Category - I company under the Ministry of Defence, manufactures and supplies equipments to defence sector such as Heavy recovery Vehicles (HRV), Armoured recovery Vehicles (ARV), BrahMos Missile Carrier, Loader and Replenishment Vehicle for Pinaka, Bridge Carrying Vehicles (Sarvatra), Pontoon Bridge Systems (PMS) apart from Heavy Vehicles of Tatra Variants, Milwagons, Milrails etc.

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.

Loaded with essential military capabilities, these powerful vehicles from BEML form an integral part of our nation's defence segment.

Pontoon Bridge Systems

BrahMos Missile Carrier

Pinaka

Sarvatra

BEML LIMITED

A Govt. of India Mini Ratna Enterprise under Ministry of Defence.

5th Floor, Unity Building. J.C. Road, Bangalore - 560 002

Website : www.bemlindia.nic.in Email : mi@beml.co.in

Ph : +91 80 22963518 / 519 Fax : +91 80 22963520

Continued from SP's ShowNews *Day 2*

'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): What does Textron have to offer to India in the field of unmanned aerial systems (UAS), especially with its recent acquisition of AAI UAS now an operating unit of Textron Systems?**

Kevin J. Cosgriff (Cosgriff): Textron Systems and its AAI UAS business brings a wealth of ground control and UAS expertise to India, supporting border and port security as well as broader intelligence, surveillance and reconnaissance requirements. This includes the Universal Ground Control Station which based on the mature One System Ground Control Station used by the US Army, Army National Guard and Marine Corps, delivers the next generation of interoperability and flexibility to allow small teams to control multiple air, land and sea platforms serving various missions.

AAI UAS is also well known for its Shadow family of tactical unmanned aircraft systems (TUAS), including the US Army and Marine Corps cornerstone intelligence-gathering system, the Shadow 200, which has flown over 7,00,000 hours mostly in Iraq and Afghanistan.

SP's: What methods are being adopted by Textron Systems to discharge its 'offset' responsibilities enshrined in the Defence Procurement Policy (DPP) vis-à-vis the sale of defence equipment in India? Please also comment on the industrial cooperation opportunities and your views on transfer of technology (TOT).

Cosgriff: Textron Systems, and our parent company Textron Inc., actively support development and trade in India as a close and important ally of the US. Since 2007, Textron India has led our work and growth in the region, including Textron's Global Technology Centre in Bangalore that is home to local engineers that are a key part of our business development and engineering teams. Textron is also an active member of the US-Indian Business Council and regularly explores potential partnerships and teaming arrangements that would support our offset responsibilities as well as create greater industrial cooperation. The extent of ToT remains an open and active discussion.

For example, we have a positive relationship with HAL on the integration of SFW onto the Jaguar and have been in discussion with DRDO on other capabilities we could possibly bring to India.

We also continue to seek and plan the direct purchase and export of defence products and components manufactured by the Indian industry. We have identified partners such as QuEST Machining & Manufacturing, Aidin Technologies and Mahindra & Mahindra in our offset plans and will add more Indian suppliers to our plans going forward as we continue to evaluate new Indian sources.

RQ-7B SHADOW 200 TUAV

SP's: What are the Textron Systems future plans in India in the next plan period (2012-17), especially in the field of 'homeland security' covering 'site security programmes', 'unmanned systems' and 'software solutions'?

Cosgriff: In the next five years, we will continue to support the Indian Government, its armed forces, and its security agencies as well as the local defence industry, addressing their requirements in the areas of unmanned systems, hovercraft, weapon systems and platform integration, and intelligence solutions for homeland security. We see the coming five years as being particularly focused on industrial partnerships that support licensed manufacturing and ToT. •

Ceradyne body armour plates, not a single failure

BY **R. CHANDRAKANTH**

In the 26/11 Mumbai terror attacks, one of the casualties was the anti-terrorist squad chief Hemant Karkare. He was said to be wearing a 'bullet-proof' jacket and yet the bullet pierced through. That speaks volumes of the importance of the 'right' kind of equipment.

At Defexpo India 2012, US-based Ceradyne Armor Systems claims to have a 100 per cent fail-safe body armour plates. Marc A. King, President of Ceradyne, proudly proclaims "not one of the US Army or Marine Corps wearing a Ceradyne body armour plate has lost his life either in Afghanistan or Iraq. There has never been a failure."

MARC A. KING

DRDO TESTING CERADYNE BODY ARMOUR PLATE

Ceradyne has submitted about a fortnight ago the body armor plate to the Defence Research and Development Organisation for testing. "Based on the outcome of the test, we will work out the commercial distribution aspect, including finding the right partner," said King.

"With Ceradyne body armour plates, the soldier can feel more confident. In the US Army and Marine Corps, 80 per cent of the plates used are that of Ceradyne. The plates go beyond the current technology of what is offered to the soldier," he said and added that the plate has multiple uses to – it can be used as a shovel, as a seat etc. The plate is made out of boron carbide, hardest material after diamond.

Ceradyne has already supplied over three million plates to the US Army and is looking for new markets. In 2012, it has an order for three lakh plates. Ceradyne has a capacity of 50,000 body armour plates a month with 50 per cent capacity utilisation. The company is looking at new markets.

The company has also put on show combat helmets which have substantial improvements in fragment protection and 'can stop a rifle bullet'. •

भारत इलेक्ट्रॉनिक्स लिमिटेड
Bharat Electronics Limited

भारत इलेक्ट्रॉनिक्स
BHARAT ELECTRONICS
QUALITY. TECHNOLOGY. INNOVATION.

BEL Empowers the Air Force with C4I Solutions

Bharat Electronics Ltd (BEL), India's leading defence electronics company, empowers the Indian Air Force with C4I systems.

BEL's C4I solutions enable networking of forces in a Digital Battle Space. They ensure Collaborative Mission Planning and Joint Intelligence, leading to increased combat power. C4I solutions from BEL for the Indian Air Force include Integrated Air Command and Control System (IACCS) and Air Defence Control & Reporting System (ADCRS).

Established in 1954 to meet the specialized electronic needs of the Indian defence services, BEL, a multi-product, multi-technology, multi-Unit conglomerate, offers state-of-the-art products and systems that go a long way in safeguarding the nation's frontiers.

Visit us at

DEFEXPO 2012

Central Hall - Lake, Pragati Maidan, New Delhi.
29th March - 1st April 2012

♦ MILITARY COMMUNICATIONS ♦ RADARS ♦ WEAPON SYSTEMS ♦ C4I SYSTEMS
♦ NAVAL SYSTEMS ♦ ELECTRONIC WARFARE SYSTEMS ♦ AVIONICS ♦ ELECTRO OPTICS
♦ MOBILE COMMUNICATION ♦ COASTAL SURVEILLANCE SYSTEM ♦ SHELTERS

Toll Free No: 1800 425 0433

www.bel-india.com

Security and Resilience: Protecting India's Air Force on the ground

General Dynamics UK's experience of working with the Indian Air Force through its support programme for Hawk, combined with its pedigree in infrastructure protection around the world is applied to the security of military and civil airfields where the combination of extensive external perimeters, high-value strategic assets and round the clock operational activity demands a comprehensive response.

General Dynamics UK enjoys a 50-year pedigree in protecting key facilities around the globe; from borders, airports, commercial ports and communications centres to some of the largest oil and gas installations and pipelines that run across some of the most inhospitable terrain in the world. Key facilities currently protected include the Shell Pearl GTL facility in Qatar, the Neste Oil NExBTL plant in Singapore, Khalifa Port in the United Arab Emirates.

In addition, its work in protecting the US and Italian Air Force bases in Europe as well as civil airports such as London's Heathrow and Vancouver's International Airport means that General Dynamics UK has a holistic view on how best to protect an air force's most valuable assets—its equipment, its infrastructure and its people.

So how would General Dynamics UK protect Indian airfields?

In addition to providing an integrated system approach to protecting assets and infrastructure on the ground, General Dynamics UK also protects aircraft from unexpected attack and observe airfield runways for foreign objects such as IEDs. A typical airfield will have an external perimeter defining and protecting the facility within which high security zones such as fuel or armament stores will be established. Flight lines will require protection within and beyond the external perimeter to ensure the safety of aircraft from ground-based attack as they depart or approach the airfield. During the course of day to day operations, many staff, visitors and contractors will require controlled access to the site with the ability to restrict certain areas to authorised personnel only.

So how does General Dynamics UK ensure that these variables are taken into account in a protection system?

An integrated command and control system for security operations is at the core of the General Dynamics UK solution and provides centralised situational awareness and control. The system is designed to use the latest developments in security technology alongside existing sensor and communications networks. Sophisticated threat detection and evaluation tools ensure that the operators are only delivered relevant and verified information allowing rapid decision-making and better coordination of response to the threat.

A perimeter fence encompassing the facility to provide a physical barrier that prevents vehicles and pedestrians from gaining access to the facility may be supplemented with other physical measures such as embankments or ditches, as well as electronic measures. These are deployed in a layered approach and would typically include buried sensors to give early notification of approach; area sensors, such as cameras, to detect when something is in the area and fence mounted sensors to detect physical contact with the fence. Long-range day/night cameras or radar systems can also be used to provide additional extended coverage over large open areas.

Site wide access control systems restrict access to the airfield to personnel and vehicles with the required level of authorisation. Within the facility there are several areas that require an extra level of security at which an enhanced level of access control can be installed. Command and control sub-systems allow operators to interact with the system at an appropriate level to their role and all transactions can be overseen by the operations centre. Physical measures such as turnstiles, vehicle barriers and blast protection are in place to provide a safe and controlled environment in which surveillance, access control and search technologies can be deployed. Within the facility there will be certain areas such as fuel and armaments stores that will require a higher level of security than the external perimeter. Access to these areas will be limited to only essential personnel and additional security measures such as biometric identity checks, camera surveillance and fence detection systems will be deployed.


HAWK

The flight line area extends beyond the external perimeter of the facility and is at risk of ground-based attack on the aircraft on their approach or departure from the airfield. Systems such as buried sensors ground radar and long-range cameras provide operators in the operations centre with the ability to detect and monitor the activity in and around the area. General Dynamics UK has worked in partnership with QinetiQ to develop the Tarsier Runway surveillance system which detects foreign objects on the runway and apron areas with high resolution video and camera, millimetric scanning radar plus day, night and all-weather (DNAW) capability. •

NH90: The new generation naval helicopter

AgustaWestland is promoting the NH90 at this year's Defexpo India as a contender for the Indian Navy's multi-role helicopter (MRH) requirement. Meanwhile, deliveries of NH90s are now rapidly building up with over 100 naval and transport variants of the helicopter in service worldwide. Naval variants have now been delivered to France, Italy, the Netherlands and most recently Norway. These countries plus Belgium have a total of 111 NH90 NFH naval helicopters on order. The NH90 is the only new generation naval helicopter in its weight class and incorporates a number of unique features such as its all composite airframe and state-of-the-art fly-by-wire flight control system.

The NH90 NFH variant is primarily designed for autonomous and joint anti-submarine warfare (ASW) and anti-surface warfare (ASuW) missions. The comprehensive mission equipment packages allow a wide range of additional missions to be performed including search and rescue (SAR), maritime patrol, vertical replenishment, troop transport, medical evacuation and amphibious support roles.

The helicopter is designed for day and night operations in adverse weather conditions from the decks of ships. Because of its optimal weight and dimensions, the deck-lock system, the deck traversing system and the automatic blade and tail folding system; it can operate from small frigates even in high sea states.


NH90 NAVAL HELICOPTER

The NH90 is the most successful European helicopter programme ever. Firm orders have been placed by 14 countries including France, Germany, Italy, the Netherlands, Portugal, Sweden, Finland, Norway, Greece, Spain and Belgium in Europe, as well as Australia, New Zealand and Oman outside of Europe. The NH90, developed in the TTH utility transport and NFH naval versions, proves the ideal solution to meet the requirements of the customers worldwide for a wide range of military roles. The NH90 programme is managed by the NATO Helicopter Management Agency (NAHEMA) representing France, Germany, Italy, the Netherlands and Portugal, and by the NHIndustries industrial consortium comprising AgustaWestland (32 per cent), Eurocopter (62.5 per cent), Fokker (5.5 per cent).

In the framework of the NH90 programme, AgustaWestland is responsible for the production of the main transmission, tail drive shafts, hydraulic system, automatic flight control system, rear ramp, rear fuselage and on-board computers. Furthermore, AgustaWestland is also responsible for the overall integration of the NH90 naval mission system for all NFH variants and in particular the electronic warfare system for Norway. AgustaWestland's Venice Tessera plant is the new final assembly line for the NH90s ordered by Italy (Army and Navy, 60 and 56 helicopters respectively), the Netherlands (20), Norway (14) and Portugal (10) giving a total of 160 helicopters so far. •

Rolta aiming at Indian Army's BMS, F-INSAS, tactical communication systems programmes

BY SUCHETA DAS MOHAPATRA

Rolta which is one among the leading suppliers of a host of products—from sensors to shooters—to the Indian Army, it is now looking ahead to bagging the Indian Army's tactical communications systems, battlefield management systems (BMS) and the future infantry soldier as a system (F-INSAS) deals. The company has already tied up with Selex Communications for tactical communication system and is looking for international partners for the other two programmes.

Speaking to *SP's ShowNews* during Defexpo, Atul D. Tayal, Joint Managing Director and Chief Operating Officer, Domestic Operations, Rolta, said that the "Make Indian' concept would give Rolta an edge over the others in getting these orders for us. Defexpo is a good platform which enables us to showcase our range of products before the decision-makers.

ATUL D. TAYAL, JOINT MANAGING DIRECTOR AND COO, DOMESTIC OPERATIONS, ROLTA

While the company has trade relationship with other countries for its engineering and enhanced IT capabilities, the company defence sector relationship is restricted to India only. "We have business in Middle East, Europe and many other countries on our engineering capabilities but our defence and security sector relationship is only in India," said Tayal. Besides the BMS, F-INSAS and tactical communications system, Rolta is also looking at Indian Army's command and control (C2) systems, intelligence surveillance and reconnaissance (ISR) programmes.

The company which started three years back as a data processing company eventually went into 'mapping' and tied with the Survey of India. "We started with military mapping for the Indian Army and expanded with times." Apart from the Indian Army, the company is working with the Indian Air Force (software and digital display for heads-up display), Indian Navy (hydrographic mapping), homeland security agencies and is also into nuclear engineering, space, business intelligence, etc. Besides working with agencies under the Ministry of Home Affairs (MHA), it has tie-ups with many state police forces too. "We started with the Mumbai Police seven years back and today we are working for many state police forces," said Tayal. •

FlexNet software defined radio achieves four times data rate increase in field conditions

During recent testing in real conditions, Thales and Rockwell Collins FlexNet Software Defined Radios (SDRs) have achieved a two megabits per second data rate at a range of 35 kilometres. The data rate is four times greater than previously fielded for the FlexNet radios. This success confirms FlexNet position as the heart of the most advanced digital battlefield solutions.

This high bandwidth broadband connectivity is essential on the modern battlefield. Today's command, control, communication, computing, intelligence, surveillance and reconnaissance (C4ISR) applications are presenting ever increasing demand for higher data rates to exchange battlefield intelligence and situation awareness information. The continuous availability of data, images and video is essential to help forces to take the best decision, even in the most critical situation. Seamless interoperability is the key word, enabling cooperative operations with allied forces over legacy and future networks.

FLEXNET

FlexNet's powerful networking capabilities, based on IP standard protocols, dramatically simplifies integrated applications such as BMS (battlefield management systems) interworking with other IP data networks including long reach Satcom systems.

This unique flexibility allows FlexNet to address various tactical communications architectures, including full mobility at the tactical edge, long distance point and multipoint deployment scenarios.

The software defined architecture of FlexNet family ensures full interoperability with the large installed base of 150000 Thales PR4G-F@stnet radios in 42 countries. The PR4G/F@stnet VHF waveform is the one of the most advanced EPM VHF waveform (electronic protective measure) on the market. In addition to providing three high quality services simultaneously, voice, data and GPS position, it also includes a unique transverse communication capability allowing the radio to operate simultaneously on two independent radio channels.

Rockwell Collins and Thales have teamed to provide customers with FlexNet SDR communication systems that meet today's operational requirements in support of real-time network-centric operations in a complex, multinational combat environment. •

First successes with SDR Networking Lab

A first version based on FlexNet-One delivered to an international customer Thales, a key player in software-defined radio (SDR), has announced the first deliveries of its SDR Networking Lab solution, which enables customers to develop and adapt their own SDR-standard waveforms and integrate them with SDR platforms.

The SDR Networking Lab is a complete set of tools and solutions that let users define, develop and adapt new generations of waveforms with high-data-rate and network-centric capabilities. These waveforms can subsequently be ported to SDR systems compliant with the software communications architecture (SCA) international standard.

With the shift to network-centric operations, the SDR Networking Lab gives national armed forces and regional defence organisations the ability to develop their own network waveforms to meet their specific operational requirements, with guaranteed joint and combined forces and international interoperability.

The SDR Networking Lab is based on two complementary tools:

- Com Lab, which uses advanced simulation to help users specify the system and network characteristics of tactical communication systems for forces in the field, as well as their operational benefits.
- Waveform Lab, which supports the development, transfer and integration of waveforms on a wide range of SDR platforms, in compliance with the SCA standard (such as the FlexNet-One platform).

SOFTWARE DEFINED RADIO (SDR)

"Thales is proud to announce these first successes with the SDR Networking Lab, which confirm our position as a key partner in the development of SDR technologies and standards," said Patrice Caine, Thales Vice President in charge of Radiocommunications business. "At a time when almost all operations are conducted by coalition forces, software-defined radio, with its unique capacity for interoperability, is a crucial component in the continuing evolution of the digitised battlespace."

Thales is involved in the European Secure Software Defined Radio (ESSOR) programme and is an active contributing member of the Wireless Innovation Forum. •

Raytheon gets RFI for integrated air and missile defence from IAF, Indian Army

BY R. CHANDRAKANTH

Raytheon has received request for information (RFI) from the Indian Air Force and the Indian Army for its integrated air and missile defence (IAMD), according to Dave Hartman, Director, Business Development, IAMD, Raytheon.

Giving details to the media on the layered air and missile defence structure, Hartman said that it incorporates air and missile defence integration approach; improves capabilities; maintains protection of critical assets; and maximises synergy from multiple systems. The four principles of air and missile defence, he mentioned, are—mix of weapon systems; mass; mobility and integration.


PATRIOT MISSILE

IAMD focused at both ends of the threat spectrum, Hartman said and added that tactical ballistic missiles, cruise missiles, and 'cheap' unmanned aerial vehicles are the threats that IAMD had to address.

DEFENCE IN DEPTH

Raytheon develops and manufactures the world's most effective reliable and proven air and missile defence systems comprised of radar, interceptor and command and control capabilities. Raytheon has partnered with over 30 countries to deploy, deliver and transit the IAMD architecture for layered missile defence, and to enhanced their indigenous production and maintenance capabilities. These defensive systems continue to protect lives, national interests and critical infrastructures against evolving threats.

Raytheon offers comprehensive, fully integrated security management solutions that are flexible and powerful to meet key Indian defence and internal security requirements. By providing near-real-time information for quick and effective analysis and decision-making, these proven, interoperable and upgradable systems address the protection of populations, border security and the protection of comlex critical infrastructure including aviation and air base security.

PATRIOT RESURGENCE

Hartman stated that there was a resurgence of the Patriot missile system and that production in an unnamed country had commenced. The Patriot missiles are in operation in 11 countries.

Raytheon recently completed a system-level guided flight test of the new production Patriot at White Sands Missile Range in the US. The modernised Patriot provides an affordable, low-risk and rapid path to meet the warfighter's current and future air and missile defence requirements.

"The system's flawless performance using all newly-built major end items is a significant milestone for global air and missile defence. It also highlights the capability of the combat-proven patriot and the viability of the global Patriot supply-base," said Sanjay Kapoor, Vice President for IAMD in a release. •

DCNS signs cooperation agreement with IIT Bombay

DCNS has signed a memorandum of understanding (MoU) with the Indian Institute of Technology (IIT) Bombay. It has been signed by Dr Alain Bovis, Executive Director of DCNS Research and Professor Shiva Prasad, Dean of Academic Programmes in IIT Bombay. This MoU opens new cooperation avenues to DCNS in India for education and research programs in naval defence and energy. Considering their respective domains of expertise, DCNS and IIT Bombay expect a rapid deployment of several projects and will include,sponsoring research and development programmes to be carried out cooperatively by IIT Bombay and DCNS Research teams, sponsoring Indian student projects and fellowships at IIT Bombay, training DCNS personnel through "continuing education programmes" conducted by IIT Bombay.

The research projects will be run at IIT Bombay premises with support of DCNS Research teams or in dedicated common facilities. Thermo hydraulics, electrical engineering, material sciences are the most promising areas of scientific interaction between the two organisations. Professor Shiva Prasad said: "There is a huge potential for cooperation in educational programmes and R&D programs in the maritime and energy domains between IIT Bombay and DCNS."

Dr Alain Bovis added: "This new development emphasises our investments in long term in India. It also aims to accelerate technology progress in mutually beneficial areas by tying up with one of the top Indian research centres".

The agreement is supported by the Science and Technology Department of the French Embassy in India. •

Bharat Forge expanding its horizons

SUCHETA DAS MOHAPATRA

Bharat Forge, the flagship company of the Kalyani Group, is making an invasion into the Indian defence and homeland security market with a range of products from guns, armoured vehicles, advanced control system and signal processing platform, etc. The company has tied up with many Indian and international companies to manufacture the products in India.

Speaking to *SP's ShowNews*, Rajinder Singh Bhatia, Executive Vice President, CEO, Defence and Aerospace said the company instead of waiting for customers and orders has begun manufacturing the products first. "Besides the tie-ups with various companies, Bharat Forge has already acquired a full plant Ruag Defence in Switzerland. The factory will be relocated to Pune in another two months."


AMSTAF - UNMANNED GROUND VEHICLE

The company is manufacturing a 105mm howitzer gun, the first prototype of which will be ready in two months and working on 'Project Sunrise' which is likely to be completed by 2015. "While the software and navigation products are being brought from outside, the hardware is completely made in India," said Bhatia. He further informed that the company is in talks with the Defence Research and Development Organisation (DRDO) for more than one and a half years now.

At Defexpo, Bharat Forge displayed prototypes of a range of its products some of which are in the design and some in the production stage. The products included light armoured vehicle; light strike vehicle suited for surveillance, base patrol rapid offensive actions; light-weight state-of-the-art unmanned ground vehicle with all terrain manoeuvrability; perimeter security electromagnetic fences; millimetre wave imaging system; advanced control system and signal processing platform for defence, etc. The company has tied up with the Automotive Robotic Industry Ltd to manufacture AMSTAF unmanned ground vehicle. "We signed the contract with Bharat Forge a year back and we are now looking for customers. The manufacturing process will start depending on the volume of the customers, said Amos Goren, Founder & CEO, Automotive Robotic Industry. •

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.

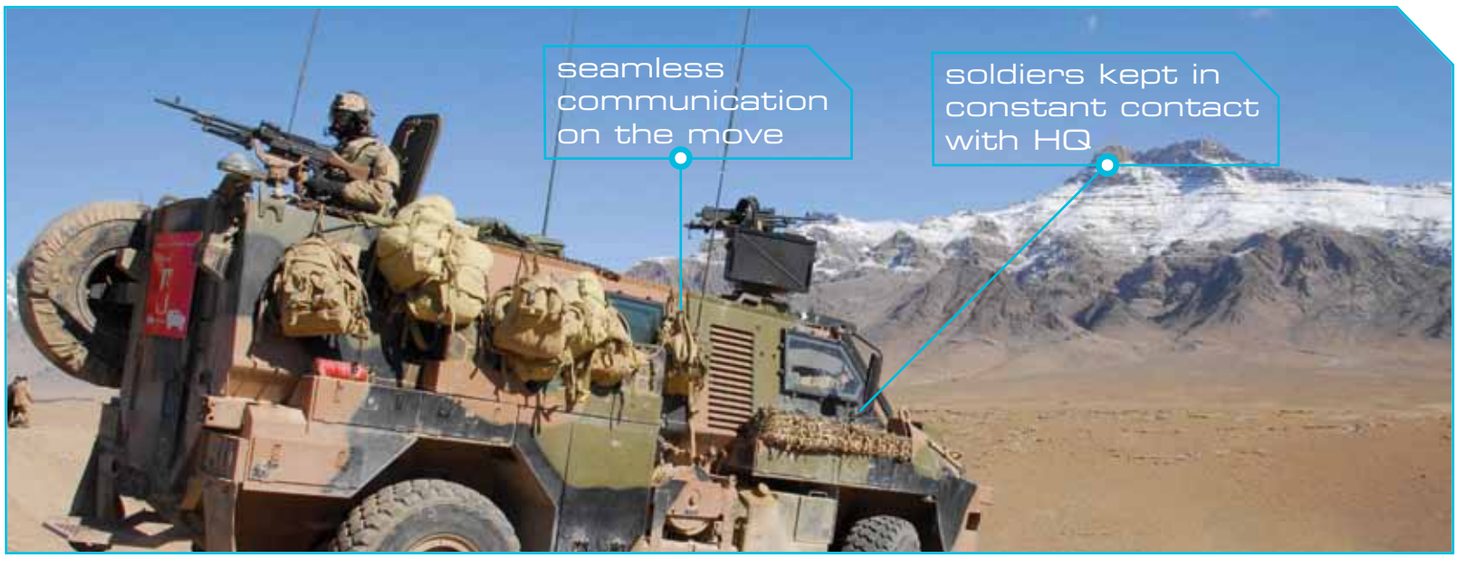
ShinMaywa

Brighten Your Future

ShinMaywa Industries India Private Ltd.

Flat No.207-208, Kailash Building, Kasturba Gandhi Marg, New Delhi 110001

URL http://www.shinmaywa.co.jp E-mail air.sales@shinmaywa.co.jp



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