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SWAN SONG

**Indian Navy decommissions
the Sea Harriers**

Exclusive

Pre-Eurosatory
Press Tour to
France



Equal Partners

United States holds the first Maritime Security Dialogue with India



GROWING TIES Defence minister Manohar Parrikar and US secretary of defence Ashton Carter agreed to work towards enhancing military cooperation

DILIP KUMAR MEKALA | NEW DELHI

THE UNITED STATES OF AMERICA has recently undertaken certain legislative reforms to elevate India's status as one of its major defence partners. The reforms put India on par with closest American NATO and non-NATO allies including Israel, Japan and Australia. Through these legislations, the US also eased the export control restrictions to India, and laid the groundwork to facilitate the transfer of US defence technology which until now was only available to its closest allies.

On May 19, the US House of Representatives passed a pro-India amendment that was incorporated into the 'National Defence Authorisation Act'. The amendment, cited as 'US-India

Defence Technology and Partnership Act', was introduced by Congressman George Holding, co-chair of the House Caucus on India and Indian-Americans. This legislation institutionalises the US government's focus on the US-India security relationship, sending an ostentatious signal indicating the enhanced partnership. The amendment advised the secretary of defence and secretary of state to jointly conduct an assessment on an annual basis to check the strategic operational capabilities to support military operations of mutual interest between India and the US. The amendment also advises the President to "approve and facilitate the transfer of advanced technology in the context of, and in order to satisfy, combined military plan-

ning with the Indian military for missions such as humanitarian assistance and disaster relief, counter piracy and maritime domain awareness".

"Given the dynamic nature of the Indo-Pacific region and its importance to our own national security and future economic growth, now is the time to build on recent successes and propel the US-India strategic partnership forward," Holding said while moving the amendment. "Such actions may be necessary to recognise India's status as a major defence partner of the US," he added. Congressman Ami Bera, who also supported the amendment said, "India plays a critical role as a strategic partner to the United States, and as a pillar of stability in South Asia. I look forward to working with my colleagues to grow the economic and defence relationship between our countries". For the US, it encourages the executive branch to: designate an official to focus on US-India defence cooperation, facilitate the transfer of defence technology, maintain a special office in the Pentagon dedicated exclusively to the US-India Defence Technology and Trade Initiative (DTTI), enhance India's military capabilities in the context of combined military planning, and promote co-production/co-development opportunities.

Naturally, this has elicited enthusiastic response from the US-India Business Council (USIBC) in New Delhi. "The US-India Business Council strongly supports the amendment and congratulates Congressman Holding on successfully incorporating it into the House of Representatives' National Defence Authorization Act. This legislation will promote defence trade between our countries and will strengthen military ties. We look forward to the Senate taking action on similar legislation," said USIBC President Mukesh Aghi.

Coincidentally, the US had also made gestures that indicated that strategic partnership with Pakistan is on a back-foot. In February, congressman Holding issued a statement that read, "The pending sale of eight F-16 aircraft to the government of Pakistan is deeply troubling. Pakistan has continually proven to be an unreliable and unwilling partner for the United States on numerous fronts — chief among them our effort to combat growing threat of terrorism. It is difficult to see how this sale strengthens our national security and more importantly, how this sale would improve stability in the region". While

his statement did not stop the approvals of the F-16 sale to Pakistan, the US had, however, made it clear that Pakistan will not receive a loan from the US under Foreign Military Financing (FMF) programme for this fighter jet purchase. Without the FMF subsidy, it would be extremely difficult for Pakistan to make this purchase.

While this might sound like a major diplomatic victory for the Indian foreign policy strategists, there has been a hint of caution from the sceptics. The growing strategic partnership between India and the United States is seen by the sceptics as a move to dilute the efforts of BRICS alliance that could challenge the supremacy of the US in the long run. While the military coup in Brazil has given a perfect opportunity to push neoliberal reforms focussing on extreme privatisation that will eventually benefit the US companies, the Indian government is being wooed by the enhanced defence partnership where India is forced to favour American defence products in the future, giving them significant advantage over the trade.

First Maritime Security Dialogue

On May 16, the US and Indian officials met at Jawaharlal Nehru Bhawan, New Delhi for the first US-India Maritime Security Dialogue. Assistant secretary of defence for Asian and Pacific security affairs David Shear, deputy assistant secretary of state for South and Central Asian affairs Manpreet Anand, and Vice Admiral Aucoin, commander, US seventh fleet, met with their Indian counterparts from the ministry of external affairs and the ministry of defence to discuss strategic maritime security issues. Among the issues discussed were Asia-Pacific maritime challenges, naval cooperation, and multilateral engagement.

US Ambassador to India Richard Verma participated and noted that “the creation of this dialogue was agreed to during secretary of defence Ashton Carter’s recent visit to India and is a further sign of the growing relations between our two countries”. Ashton Carter’s official trip to India from April 10-13 laid the groundwork for the first maritime security dialogue and also emphasised on the joint strategic vision for the Asia-Pacific and Indian Ocean Region and the maritime security objectives therein. In this context, both countries reaffirmed their desire to expeditiously conclude a ‘white shipping’ technical



FRIENDS AT SEA Delegates at the first US-India Maritime Security Dialogue in New Delhi

arrangement to improve data sharing on commercial shipping traffic. They agreed to commence navy-to-navy discussions on submarine safety and anti-submarine warfare.

India and the US have reaffirmed the importance of safeguarding maritime security and ensuring freedom of navigation and over flight throughout the region, including in the South China Sea. They vowed their support for a rules-based order and regional security architecture conducive to peace and prosperity in the Asia-Pacific and Indian Ocean, and emphasised their commitment to working together and with other nations to ensure security and stability that have been beneficial to the Asia-Pacific for decades.

Military Logistics Exchange

In April, defence minister Manohar Parrikar and Secretary Carter announced their in principle agreement to conclude a ‘Logistics Exchange Memorandum of Agreement’, and to continue working toward other facilitating agreements to enhance military cooperation and technology transfer. They welcomed the efforts by the Indian and US Armed Forces to further expand collaboration in the years to come. They welcomed plans across Indian Services for greater complexity in their military engagements and exercises, including developing plans for more advanced maritime exercises. There were many symbolic gestures like

India’s participation in the Rim-of-the-Pacific (RIMPAC) multilateral naval exercise in 2016 as well as participation by the Indian Air Force (IAF) in the multilateral Red Flag exercise in April-May 2016 in Alaska and the US participation in the International Fleet Review of the Indian Navy at Visakhapatnam in February 2016.

DTTI

India and the US have reiterated their commitment to pursue co-development and co-production of advanced defence articles under the Defence Trade and Technology Initiative (DTTI). The countries are initiating two new DTTI pathfinder projects on Digital Helmet Mounted Displays and the Joint Biological Tactical Detection System apart from the on-going discussions at the Jet Engine Technology Joint Working Group (JETJWG) and the Joint Working Group on Aircraft Carrier Technology Cooperation (JWGACTC). There is also a greater cooperation in the field of cutting-edge defence technologies, including deepening consultations on aircraft carrier design and operations, and jet engine technology. There is also an understanding between the countries to conclude an information exchange annex (IEA) to enhance data and information sharing specific to aircraft carriers. In support of ‘Make in India’, the US shared two proposals to bolster India’s suite of fighter aircraft (F-16 and F/A-18) for consideration of the government of India. ||



New and Improved

Saab Unveils Gripen E, Next Generation Fighter

DEFENCE AND SECURITY COMPANY Saab unveils Gripen E, next generation fighter. Compared to the previous versions of the Gripen, this new model has a significantly improved avionics system. The capability to carry more weapons and the improved range performance, is possible by a more powerful engine and the ability to carry more fuel. Gripen E is equipped with a highly integrated and sophisticated sensor suite including an Active Electronically Scanned Array (AESA) radar, Infra Red Search and Track (IRST), Electronic Warfare (EW) suite, and datalink technology, which, when combined gives the pilot, and co-operating forces exactly the information needed at all times.

At a ceremony on May 18, with more than 500 guests, the Gripen E was unveiled. Among the guests were Sweden's minister of defence Peter Hultqvist, Sweden's Air Force Chief of Staff Mats Helgesson, Commander of the Brazilian Air Force, Nivaldo Luiz Rossato, and representing Saab; Chairman of the Board Marcus Wallenberg, CEO Håkan Buskhe and the Head of business area Aeronautics, Ulf Nilsson.

"Nations need modern air defences to uphold national sovereignty. Meanwhile, the cost in relation to other in-



vestments in society needs to be reasonable. Therefore, Saab has developed design and production methods for the Gripen E to both increase capability and to reduce costs," says Håkan Buskhe, President and CEO Saab.

Gripen E builds on the successful design of earlier versions. Gripen is a modern fighter with a balanced design equipped with all you can ask for from a multirole fighter that is needed for

future warfare environments. In 2019, deliveries of the next generation Gripen for Sweden and Brazil will begin.

Five nations currently operate Gripen: Sweden, South Africa, Czech Republic, Hungary and Thailand. Brazil has ordered Gripen, and Gripen has also been downselected in Slovakia. Besides that, Empire Test Pilots' School (ETPS) uses Gripen as platform for test pilot training. ■

Hitting the Bull's Eye

Radar Technology Continues to Evolve

DILIP KUMAR MEKALA | NEW DELHI

IN MARCH 2016, RAYTHEON unveiled its next-generation Patriot radar — a stronger, re-engineered version of the existing system that has been in service with the US forces for decades. This new radar uses Gallium Nitride (GaN) material for its powerful new circuits, and Active Electronically Scanned Array (AESA) for detection, and boasts 360 degree view on the battlefield. Raytheon has spent more than 15 years and around USD200 million to perfect the gallium nitride technology. It has previously built gallium nitride circuits for a number of products including jammers and other radars.

“The company wants to prove how far it has come in building a radar that is more powerful, more efficient and cheaper to run and maintain. In short, a radar to defeat the ever-changing threats the US and its allies will face for decades to come,” said Doug Burgess, Raytheon’s programme manager for Patriot AESA

radars. “Compared to what is used in radars today, AESA GaN radars weigh less, cost less, and use less energy than radars out there today,” said Norm Cantin, Raytheon’s director of Patriot AESA programmes. He added, “AESA GaN is what is going to give Patriot the ability to see and engage aircraft and cruise and ballistic missiles in 360 degrees.”

The latest version of Patriot missile system, according to the company, can be used to even deter ballistic missiles when different kinds of interceptors are fired in rapid succession. “Twenty years ago, who would have thought that non-state actors would fire ballistic missiles at cities?” wonders Ralph Acaba, vice president of Raytheon’s Integrated Air and Missile Defence. “Patriot has proven it can defeat emerging threats, and Raytheon has a technology roadmap and a robust research and development pipeline to ensure it can defeat threats 30 or 40 years down the road.” The United States is planning to introduce GaN technology into other

systems for their navy and air force.

Lockheed Martin announced its next generation radar technology called the Digital Array Row Transceiver (DART) in November 2015. According to the company, the radar products that use DART technology result in greater performance and lower life-cycle costs due to an increase in energy efficiency. DART claims to improve upon Lockheed Martin’s ground-based radar products that have a proven record of being reliable.

“This technology is based in part on feedback we have received from customers with whom we’ve developed strong partnerships over decades,” said Mark Mekker, Lockheed Martin director, surveillance radar. “We are excited to offer this enhanced technology to all our ground-based radar customers.” This new technology is available in the recently launched TPS-77 multirole radar system and also compatible with the legacy products manufactured by Lockheed Martin.



POWERFUL & EFFICIENT
Raytheon's latest version of Patriot missile system, which includes the newly-developed GaN radar, can be used to even deter ballistic missiles

Report | Ground Based Radars

In October 2015, ministry of defence Latvia and Lockheed Martin signed a contract for three TPS-77 Multi-Role Radars (MRR). Latvia's defence forces will use these radars, now equipped with the latest DART technology for air surveillance and to complement radar assets already in place. "Early warning and situational awareness is a very important condition in decision making process for an efficient response," emphasised chief of defence of Latvia, Lieutenant General Raimonds Graube. He also pointed out that surveillance, especially low-level flight surveillance and identification, is a vital part of Latvian airspace surveillance capabilities.

"This multi-role radar programme builds upon a 15-year-old partnership of radar development and training between Latvia and Lockheed Martin," said Greg Larioni, vice president of Lockheed Martin Radar Surveillance Systems. The TPS-77 MRR is designed for ultra-low power consumption and is the most transportable version of Lockheed Martin's successful TPS-77 product line. Latvia's variant of this high-performing radar can be truck mounted for operation at unprepared sites or dismounted for use at fixed sites. The radar's multi-role single scan technology allows operators to select specific roles for the radar such as long range or medium range low-level flight surveillance (including helicopter detection) in specific sectors. As the radar rotates through each 360 degree scan, the system automatically adjusts to the operator selected mission. Changes can be easily made if the system is moved or mission is changed. Once set, no further operator inputs are required.

The ground-based radars are now being used for dual purposes for civil and defence needs, which enhanced the scope of the radars enormously. In August 2015, Australia picked up airport surveillance radar from Airbus Defence and Space to monitor its military airbases. The company has received two contracts worth approximately 130 million Euros from Australia's acquisition wing to equip and support nine military and civil/military Australian airfields with the world's newest and powerful airport surveillance sensors. Under the project 10 Airport Surveillance Radar - Next Generation (ASR-NG) radars will provide enhanced input into the Australian national air traffic management surveillance picture and contribute to the

achievement of air battle management missions. Deliveries, including nine complete and one training system, are planned until end 2020.

"ASR-NG provides outstanding performance for wide-area surveillance around airbases as well as safe guidance of individual aircraft during take-off and landing," said Thomas Müller, head of Airbus Defence and Space's Electronics business line. The system also includes the secondary radar MSSR 2000-I allowing for reliable individual identification of more than two thousand transponder-equipped aircraft at a time. Other key features of the ASR-NG are the proven ability to mitigate wind farm effects, and a significant increase of the primary radar's detection range to 120 nautical miles (220 km). Additionally, it provides new 3D height measurement of primary radar and is resistant to interference by 4G/LTE mobile phone signals.

ASR-NG consists of solid state primary radar using an advanced signal processing technology for medium and long-range air traffic surveillance. With its recently completed primary radar 3D height measurement capability, ASR-NG closes the gap between a Tactical Medium Range Air Surveillance Radar and classical Air Traffic Control radar, combining operational advantages of both at excellent value for money ratio. With its extraordinary detection capabilities for even slow flying or hovering helicopters above heavy clutter areas, ASR-NG meets operational needs for military air traffic and mission area control. ASR-NG in-

DUAL USE Airbus Defence and Space's ASR-NG radar can be used in military and civil operations



tegrates with the Monopulse Secondary Surveillance Radar (MSSR) 2000-I secondary radar for automatic identification of individual cooperative aircraft. It meets the requirements for the military and its highly encrypted identification as well as the civil air traffic control requirements, which greatly improve aircraft identification security and safety.

Airbus Defence and Space supplies air traffic control and identification systems in the military and civilian sector worldwide. Amongst others, the company equips the German Armed Forces' airports with Airport Surveillance Radar, S-Band (ASR-S) radar and delivers an approach control system for the military airfields in Switzerland. ASR-NG is contracted to be delivered to the Royal Canadian Air Force as well to the Royal Air Force in the United Kingdom. In particular, the MSSR 2000-I secondary radar is deployed by the naval forces of Australia, the UK, Germany, France, Norway and Finland for military friend-or-foe identification. For civil and military air traffic control, those identification systems are used in countries such as Germany, France, the US, the UK, Bulgaria and the Philippines.

Saab has received orders from the UK ministry of defence (MoD) for additional Giraffe AMB radar systems plus upgrades of the existing systems and associated equipment. The order value is approximately USD 69 million. Deliveries started during the second half of 2015 and will continue until 2018. The Giraffe AMB radar provides a full 360 degree update of the air situation out to 120 km every second. It can operate in challenging environments such as mountains, complex coastal regions and wind farm areas. The upgrade will take the UK's existing systems to the same production-build standard as the new Giraffe AMB, enhancing the primary radar's performance and capacity. It also keeps the UK's radars in line with the Giraffe product roadmap. This, in turn, will enable the addition of a unique capability to spot small unmanned aerial vehicles and the capacity to screen out difficult radar 'clutter', such as birds.

The multi-mission Giraffe AMB surveillance radar system was first acquired by the UK in 2008 as part of the Land Environment Air Picture Provision (LEAPP) programme. Since deliveries started in 2010, it has been used to provide real-time air picture



ADVANCE TECHNOLOGY Lockheed Martin's TPS-77 multirole radar system boasts lower life cycle cost and higher performance

in support of airspace management on deployed operations and at major events in the UK. It has also made a vital contribution to force protection through the detection and prediction of the impact of incoming rockets, artillery shells and mortars.

Saab has extended its surface radar portfolio with the introduction of five all-new complementary Giraffe radars for land and sea. Saab's combat-proven and highly-regarded surface radar portfolio, including the renowned Giraffe AMB and Arthur radars, has been improved and expanded through the addition of new technologies and designs. So far, the Giraffe radars were only used in the short and medium ranges, but these new developments push Giraffe firmly into long-range air surveillance domain. Alongside its existing products, Saab is also producing new AESA radar variants for land and sea.

These AESA radars use leap-ahead design techniques that put them in a class of their own in terms of performance and capability. For the first time Saab's Giraffe radars also offer a solution for long-range air surveillance. "There is now a Giraffe option

for every air surveillance and air defence application, on land and at sea," the company proudly stated. The company boasts that its new advanced surface-based radars are highly effective against multiple difficult air targets even in the dense and challenging operational environments. "I'm proud to present this important milestone in our surface radar development," said Micael Johansson. "Our portfolio now caters for all advanced radar requirements, from very short-to long-range air defence, but also surveillance, and weapons location with true multi-role functionality."

At Paris Air Show last year, Israel Aerospace Industries (IAI) unveiled a unique, highly advanced family of modular Ultra High Frequency (UHF) Active Electronically Scanned Array (AESA) Radars. The new Ultra family of AESA UHF radars, developed by IAI's ELTA Systems Group and subsidiary, represents a formidable capability of early warning and long range search and tracking of low observable air breathing targets (ABTs), and ballistic missiles. The radars offer an advantage of low radar cross section (RCS) tar-

gets detection at long ranges, operation under all weather conditions, and in the presence of dense electromagnetic environments.

"Ballistic missiles present a significant global threat to nations, expeditionary forces and global peace-keeping missions", explained Nissim Hadas, IAI executive vice president & ELTA president, "We note increasing requirements worldwide for Early Warning radars, in order to extend the currently available Air Situation Picture and allow commanders and decision makers the valuable extra time for making informed and educated decisions concerning necessary defensive measures." The Ultra radars can be used as autonomous search radar, supporting all defence layers: Air Defence Surveillance for medium range, Early Warning system for long ranges, and a strategic system for very long ranges.

Another Israeli company, Rada Electronic Industries demonstrated counter-UAV capabilities at Seoul ADEX exhibition in October 2015. The company displayed four versions of its MHR radars, some of which are already in use with the Israeli defence forces.

According to Zvi Alon, Rada's CEO, "The issue of UAVs, especially low, slow and small (LSS) ones, is one of today's most burning concerns, since they have become a growing threat to tactical units, strategic sites, and commercial aviation. A number of recent incidents have shown that mini and micro UAVs have the potential to cause significant damage – making an immediate solution crucial." Alon added, "Our MHR family of tactical radars, which has been adopted by the Israeli ministry of defence to guard Israel's southern border, has proven to effectively deal with this critical issue. Our systems have demonstrated maximum efficiency in tests and in real time, detecting even the smallest unmanned vehicles." He further said, "We recently expanded our solutions portfolio, adding three variants to the MHR family, thus enabling our customers to select the exact type that meets their range/weight/price requirements". The MHR radars enable longer detection ranges for short/very-short range air defence (SHORAD/VSHORAD), sea & air surveillance missions. These radars are especially suitable for installation on ground platforms and small/medium-sized vessels, and as stationary systems for the protection of potentially-threatened areas. ■

Harmonious Pact

Atlas Elektronik's AMACS is a highly sophisticated integrated sonar system which will provide optimum detection capability

THE TERM 'INTEGRATED SYSTEMS' describes the merging of several sub-systems into one complex system with an overarching functionality. If we at Atlas Elektronik GmbH speak of integrated sonar systems for surface ships, we mean efficiently bringing together different sonar sensors into one comprehensive sonar system. For modern surface combatants it is essential to incorporate different sonar sensors as the operational areas have changed within the past decades. Besides the known blue water operations with their low-frequency variable depth sonars, the maritime battlespace also opened up or even shifted to the littorals and shallow waters, which require entirely different operational concepts and technical approaches compared to those in blue water.

Technological advancements in fields such as processing capability, sensor technology, miniaturisation and data transfer with higher data rates are en-

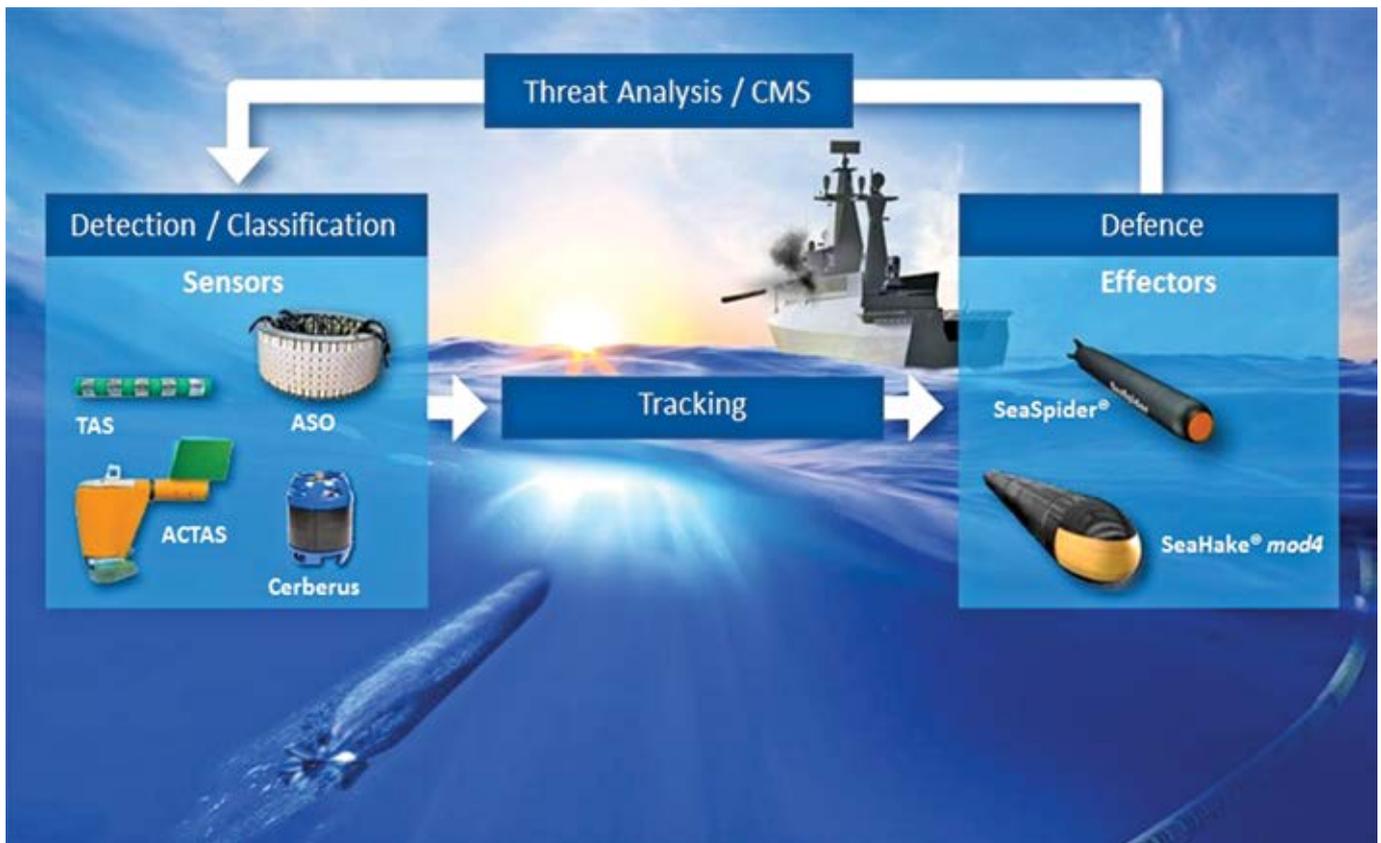
ablers for a new type of sonar. Not a single sensor is the key, but the combination of all sonar sensor types available these days, such as variable depth sonars, passive towed arrays, hull-mounted sonars, diver detection sonars, sonobuoys or even sonars from other platforms. Each individual sensor works monostatically in its operational limits that are e.g. defined by its frequency or the emitted sound pressure. Combining all these sonar sensors in one sonar system and fusing all the sensor data into one tactical underwater picture allows for the full spectrum of detection capabilities in modern underwater warfare, ranging from long range detection to close contact detection with high resolution.

Atlas Elektronik as a leading sonar system supplier offers a broad variety of sonar sensors such as the variable depth sonars ACTAS and ACTAS-C as well as passive towed arrays (TAS), the hull-mounted sonar family ASO7x3

(HMS) and the diver detection sonar CERBERUS (DDS) to give the customer the best sensor configuration at hand to successfully meet today's operational challenges.

Atlas Elektronik integrates all these sonar sensors into one highly sophisticated sonar system: the ATLAS Modular ASW Combat System (AMACS). The single sonar sensors are harmonised in terms of frequencies and signal processing and as a result provide optimum detection capability, even in difficult environmental conditions. Besides the sensors, a small Combat Management System (CMS) that is especially designed for underwater operations is added in order to perform data fusion as well as tactical functions and weapon assignment for torpedoes and the hard-kill Anti-Torpedo Torpedo (ATT).

The open system architecture of AMACS allows for deep integration of the sonar sensors and tactical ASW functions. Apart from the standard so-



nar functions such as detection, localisation and classification, it provides support functions for ASW-related operations. This includes a sophisticated torpedo warning function, active and passive data fusion, provision of performance information and sonar tactical recommendations as well as common simulation, recording, test and monitoring functions.

The Southeast Asian region has the world's highest shipping movement and at the same time faces the world's most prolific procurement of submarines. Therefore, over the past years for most customers ASW has gained particularly high priority – a trend which reflects the importance of the protection of the own territorial seas as well as of the surveillance of the exclusive economic zone. Whilst aggressive use of submarines is rare, the effectiveness of submarines as attack platforms remains potent. Effective ASW sensors are vital to counter this threat. The importance of ASW sensors was brought to mind again in the military world after the sinking of the Korean corvette in April 2010 and created some pressure on new improvements in self-ship or torpedo defence.

For the protection of naval platforms – tankers, destroyers, carriers, frigates, etc.— torpedo defence will play a more and more vital role. Our solution to counter the torpedo threat is the AMACS-TDS, a torpedo defence suite for surface ships. AMACS-TDS is a modular 'sensor-to-shooter' solution providing effective protection against underwater threats and attacking torpedoes.

On the sensor side of this operational task of torpedo defence, the most promising concept for torpedo detection, classification and localisation (TDCL) is based on the use of an HMS together with the compact passive towed array sonar (TAS) in a bistatic approach. In this configuration the HMS acts as transmitter, with the echoes being received together with the TAS. This way, it is possible to achieve 360° detection of torpedoes with a low false-alarm rate. Without an HMS, i.e. with a towed sensor only, there is always a blind sector in the forward direction that can be taken advantage of by the operators of a wire-guided torpedo. A welcome side-effect is that – with this bistatic approach using both, HMS and TAS – the detection performance of the platform against submarines increases considerably, even without the more costly and space-intensive integration of active towed array sonars.



UNDERWATER SURVEILLANCE Atlas Elektronik offers a broad variety of sonar sensors such as the variable depth sonars ACTAS and ACTAS-C as well as passive towed arrays (TAS)

However, the detection of a threat is only the first step; the second is the countermeasure. In terms of torpedo defence, the most effective way to protect the own platform is to destroy the approaching torpedo. With its SeaSpider Anti-Torpedo-Torpedo, Atlas Elektronik can provide the key component for a torpedo defence which is effective even under the difficult conditions of close and confined littoral waters. In combination with the bistatic sensor configuration consisting of a hull-mounted and towed array sonar, SeaSpider can effectively and efficiently protect all types of platforms against the threat posed by all types of torpedoes.

Nevertheless, torpedo defence is only one aspect of ASW operations. The en-

tire spectrum of ASW is way more complex than that: It also comprises long range surveillance with variable depth sonars, multistatic operations with multiple transmitting and receiving platforms, intelligence missions or search and rescue missions like the search for flight MH370. All this, and most likely even more, can be considered elements of an 'integrated sonar system'.

Technological progress will open new ways and concepts in modern ASW and Atlas Elektronik is at the forefront of these technological improvements. The constant research and engineering activities are ongoing to further improve the effectiveness of the Atlas Sonars and ASW Systems in general to provide the best technology to the customer. ■

Ashish Saraf, Airbus Group's 'Make in India' Officer Receives the Maxell Award



Maxell foundation is a non-profit registered charitable trust formed to confer Maharashtra Corporate Excellence Awards (Maxell). The objective of the foundation is to recognise and reward entrepreneurs, business leaders and innovators from Maharashtra who have dared to dream big, explored new horizons, and through their work, have proven themselves to be the architects of change. The foundation also aims to inspire Generation Next to follow these singular examples of extraordinary en-

trepreneurial spirit and leadership so that they are encouraged to transform their potential into performance.

"Aerospace has been my passion since childhood days and throughout my professional career I have tried to contribute to this field and to India in whatever way I could. I am honoured to receive this award as it shows that following one's dreams is the pathway to success," said Ashish Saraf.

Ashish is the vice president – Industry Development, Strategic Partnerships and Offsets at Airbus Group India where he is driving the Group's existing 'Make in India' initiatives and is conceiving new ones across all its three divisions in order to increase their industrial footprint in India.

Prior to joining Airbus Group, Ashish headed the Tata-Sikorsky joint venture in Hyderabad and was also responsible for Sikorsky's offsets, industrialisation and strategic partnership initiatives in India. ||

PGZ and Airbus Helicopters Launch Industrial Talks for the Tiger HAD

Polska Grupa Zbrojeniowa (PGZ) and Airbus Helicopters hosted a two-day workshop in Radom on the April 28–29 to identify potential areas of cooperation around the Tiger HAD project, in the frame of the Kruk attack helicopter project. The event included the global network of Tiger HAD suppliers who took part in the discussions with a number of Polish companies.

Tiger suppliers, among which major electronics, armament and helicopter communications groups such as Nexter, MBDA, and Thales Avionics, met with PGZ entities during one-to-one sessions in order to exchange possible cooperation opportunities. Airbus Helicopters plans on maintaining strong industrial ties with Poland and has kicked off the Tiger network by hosting this workshop which allowed 14 Tiger companies and 12 PGZ companies to discuss design, production, integration, and maintenance topics.



"We are not just laying the groundwork for future Tiger production in Poland: we are also paving the way for the establishment of a Tiger industrial network in the same way we have been doing with the Caracal," said Mickael Peru, MD, Airbus Helicopters Polska. "The Tiger is the most versatile and agile attack helicopter on the battlefield, and we are committed to strengthening Poland's defence industry in terms of advanced technology and expertise by making it a Polish helicopter," he added. ||

Agreement Signed for Airbus Safran Launchers JV



Airbus Group and Safran on May 2 signed an agreement for the second and final phase of their 50/50 joint venture, Airbus Safran Launchers.

Both companies will contribute to the current joint programme with industrial assets dealing with civil space launchers and military launchers.

Closing of the deal is expected in the second quarter of 2016 after completion of the remaining corporate and other formalities. Financial details of the transaction will be communicated at closing.

Under the first phase of the JV, Airbus Group and Safran created a joint programme company with their respective civil programme contracts and major participations related to civil launcher activities.

In this second and final phase, industrial assets and military launchers will be integrated in the joint venture. Airbus Safran Launchers will be a fully-fledged operational company.

Airbus Safran Launchers will employ around 8,000 staff and provide competitive solutions based on a family of versatile, high-performance, cost-competitive launchers that meet the needs of both government and commercial customers. This deal will ensure the success of the European space launcher business in the face of growing international competition. ||

Airbus to Retrofit the Sécurité Civile's 35 EC145



Airbus Helicopters has been awarded a contract by the French Defence Procurement Agency (DGA) to retrofit the avionics suite of the 35 EC145 helicopters operated by the Sécurité Civile, an agency of the French ministry of Interior that performs critical search and rescue and medical evacuation services throughout the French territory.

As part of this retrofit, all aircraft will be equipped with an improved avionics suite allowing them to retain their ability to perform missions in all weather conditions with the highest levels of safety, while at the same time complying

with the latest Performance Based Navigation regulations.

"We are very proud of the trust that the Sécurité Civile has placed in our support and services with this second contract in less than a year," said Matthieu Louvot, Airbus Helicopters executive vice president Customer Support and Services. "It is a great honour for us to be confirmed as the industrial partner of choice by this reference EC145 operator to which we are also providing a comprehensive, nose-to-tail global service solution".

The retrofit of the 35 aircraft follows on from the global services solution con-

tract for the Sécurité Civile and Gendarmerie Nationale's EC145 fleet awarded at the end of 2015. The aircraft, with this new contract managed by the Military Support Centre France (MSC-F), will be retrofitted over a seven-year period by Airbus Helicopters personnel deployed at the Sécurité Civile base in Nîmes in order to minimise the impact on the operational activity. The mechanical and electrical modifications necessary to integrate functions such as LPV/SBAS guidance, digital maps, and GPS installations have also been optimised to reduce the length of the retrofit operations.

Established in 1957, the helicopter division of the Sécurité Civile operates a fleet of 35 EC145 on call 24/7 throughout France for search and rescue and medical evacuation missions. In 2015 alone they flew over 16,000 flight hours, rescuing 16,000 people.

The MSC-F is a dedicated Airbus Helicopters organisation designed to support all French military and state customers by providing them with the most tailored services fitting their specific needs. The creation of this entity illustrates Airbus Helicopters' commitment to service quality and performance to keep customers flying, anytime, anywhere. ||

Airbus Helicopters Hands Over First Two H145M to Royal Thai Navy

On April 29 Airbus Helicopters handed over the first two of five lightweight military multi-role H145M helicopters to the Royal Thai Navy. This marks an important milestone in the H145M programme on its way to the final acceptance and entry into service in Thailand at the end of 2016. A delegation from the Royal Thai Navy and Airbus Helicopters Germany CEO Wolfgang Schoder participated in the ceremony at Airbus Helicopters' Donauwörth site.

"After the H145M made its market entry with the German Air Force at the end of last year, we are very proud that the Royal Thai Navy has become another operator of the new H145M", said Wolfgang Schoder. "The helicopter is the most advanced solution for the increasingly challenging demands of our military customers in modern-day missions.

It combines state-of-the-art technologies, outstanding performance and true multi-role capabilities while maintaining very high versatility and low operating costs."

The H145M is the military version of the civil H145 that entered service in mid-2014 and has recently reached the milestone of 15,000 flying hours in customer operations. With a maximum take-off weight of 3.7 tonnes, the H145M can be used for a wide range of military operations including naval, utility, reconnaissance, search and rescue, medical evacuation and armed scout. The Royal Thai Navy H145M is equipped with Multi-Purpose Pylons including aerodynamic fairings, cargo hooks, hoists, HF system for SAR operations, weather radar, internal long range fuel tank system and fixed provisions for future special operations upgrade.



These two H145M helicopters will stay in Germany for pilot training at Airbus Helicopters' Training Academy. All helicopters are scheduled for delivery in Thailand by September 2016.

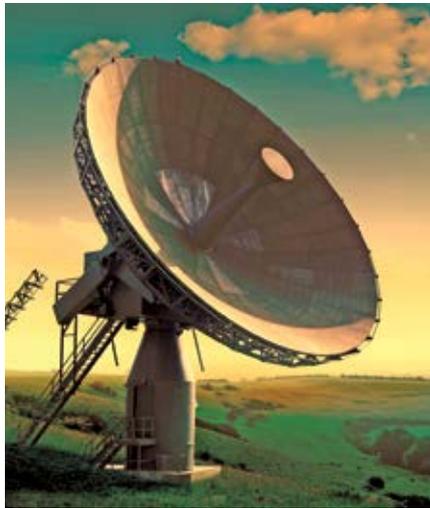
The H145 helicopter family has proven its value for military customers for many years. For instance, the German Armed Forces (Bundeswehr), the launch customer for the H145M, has ordered 15 of these helicopters in a Special Forces configuration. The third helicopter will be delivered in the coming days. ||

Airbus D&S Opens a Ground Station in Australia for its Skynet Military Satellite

A brand new purpose built satellite ground station has been established in Adelaide, to land Airbus Defence and Space's Skynet secure military satellite communications. The Australian facility extends an existing chain of teleports in France, Germany, Norway, the UK and the US, providing global coverage in both fixed and mobile satellite services. This worldwide teleport network provides global coverage for connectivity services by providing the link between the satellite constellation and terrestrial networks for reliable end-to-end connectivity at the highest service levels.

Skynet supports military satcom operations across the globe, especially in remote areas with little or no communication infrastructure and in mid-ocean, distanced from land and shipping lanes – making it ideal for naval and airborne platforms, as well as land operations.

The new Australian ground station is managed by Airbus Defence and Space in partnership with Speedcast, which has a long heritage in ground station and teleport operations and already manag-



es more than 30 ground stations around the world. Speedcast, as a local Australian provider for more than 25 years, has worked with the Australian military developing a wide range of complex communication solutions.

Richard Franklin, head of Secure Communications at Airbus Defence and

Space, said, "We are delighted to be able to announce the opening of the Australian facility, which now allows us to offer our customers a fully managed and anchored service across the globe to the harshest and remotest locations."

Airbus Defence and Space's teleports are fully redundant and operated 24/7. They have more than 25 antennas, ranging from 2.4m to 14m in size and are all locked on to the Skynet constellation of high powered X-band and UHF satellites, as well as commercial Ku-band assets.

Airbus Defence and Space completed the move of the Skynet 5A military communications satellite to 95 degrees East over the Asia Pacific region in September 2015. The relocation was initiated to extend the Skynet constellation's coverage and services from 178 West to 163 East, including the Indian Ocean and Western Pacific region. The Skynet network now offers global military coverage, expanding core service reach for the UK military and augmenting coalition capabilities in the region. ||

OIS-AT and Sagem Sign JV for Manufacturing AASM Hammer Glide and Guidance Kit



OIS Advanced Technology (OIS-AT) and Sagem (Safran) of France have signed an MoU to create a Joint Venture for the manufacturing of Sagem's AASM Hammer Bomb Guidance and Glide Kit in India. With this Sagem has declared OIS-AT as the Indian manufacturer for

this weapon system.

Considered to be the most advanced, precision Bomb Guidance and Range Extension kit, the AASM Hammer originally designed and manufactured by Sagem for the requirements of the French Air-Force and Navy on-board the Rafale aircraft, is intended to cater to requirements of the Indian Air Force's high precision munition requirements. The AASM Hammer has been extensively proven in combat, and the version that will be manufactured in India will be customised to specifically meet Indian Air Force (IAF) requirements.

"We are pleased that Sagem is collaborating with us with their combat proven, world leading, high precision munitions guidance and range extension kit. With its impressive list of advanced features, Sagem's AASM Hammer is the foundation for our joint venture to specifically cater to the requirements of the IAF under the government's 'Make in India' programme. This collaboration further endorses our corporate strategy of be-

coming the industrial partner of choice for leading global companies," said Sanjay Bhandari, Chairman and Managing Director of OIS Advanced Technology.

"We are pleased to collaborate with OIS-AT with our combat proven, high precision, AASM Hammer Guidance and Range Extension kit for aerial munitions for the IAF. With OIS-AT we have a partner with a core focus and appreciation of advanced technologies and innovation to advance our joint interests for the IAF," said Martin Sion, CEO of Sagem.

With modern combat moving to high precision weaponry, it has become necessary for traditional blast fragmentation munitions, and the more modern penetration munitions, to be guided with high precision to their targets from standoff ranges. The AASM Hammer from Sagem is an extremely high precision Guidance and Range Extension kit which is attached to aerial launched munitions to meet the high precision targeting needs of modern warfare. ||

India Becomes 11th International Customer for Longbow LLC's Apache Radar

The US Army awarded Longbow Limited Liability Company (LLC) a USD57.1 million foreign military sale contract to provide the Indian Air Force (IAF) with Longbow Fire Control Radar (FCR) systems for their new Apache AH-64E helicopters. Longbow LLC is a joint venture of Lockheed Martin and Northrop Grumman Corporation.

Under this contract, USD57.1 million is obligated to Longbow LLC with a total value not to exceed USD116.7 million. The contract covers the production of 12 Longbow FCR systems and spares for India. Production will extend through early 2019 at Lockheed Martin's Orlando and Ocala, Florida, facilities and at Northrop Grumman's Baltimore facility.



"With Longbow FCR, the IAF will receive a rapid all-weather targeting capability," said Jim Messina, Longbow LLC president and director of Longbow programmes at Lockheed Martin Missiles and Fire Control. "The FCR's

air over-watch mode provides aircrews with 360-degree situational awareness, improving survivability and mission success."

"Our highly reliable Longbow FCR has been repeatedly proven in combat, protecting warfighters around the globe at an affordable cost," said Ike Song, vice president, mission solutions, Northrop Grumman's Land & Avionics C4ISR Division.

For more than a decade, the Longbow FCR has enabled Apache aircrews to automatically detect, locate, classify and prioritise targets. It enables rapid, multi-target engagement in all weather, over multiple terrains and through battlefield obscurants. ||

The Royal Navy Adopts iXBlue's Inertial Technology

iXBlue, a leading global player in navigation and positioning solutions, is providing 70 MARINS M7 to equip 35 Royal Navy major surface ships and submarines, as part of the Navigation Compass Programme (NCP).

The decisions to equip both the Queen Elizabeth-Class Aircraft Carriers and the fourth Astute-Class nuclear-power submarine with iXBlue's MARINS Inertial Navigation System (INS) were the first steps made by the UK ministry of defence (MoD) toward the adoption of iXBlue Fiber Optic Gyroscope (FOG) technology. With a five-year contract awarded to Lockheed Martin UK, iXBlue's strategic partner, the UK MoD definitively embraces iXBlue's unrivalled inertial technology.

The 70 MARINS M7 INS will replace the obsolete gyro systems on board the Royal Navy ships which include Type 23 Frigates, Hunt and Sandown Class mine countermeasure vessels and submarines. They will be integrated by Lockheed Martin UK within the compass system installed on board.

Robert Kramer, Vice-President of Lockheed Martin UK – Integrated Systems, commented, "We conducted a detailed

assessment of all available possible partners along with their proposed technologies. By precisely understanding the Royal Navy expectations and assessing their views on the industry leading suppliers, it clearly appeared that iXBlue's solutions best fitted the needs in terms of performance, capability and cost."

"We are very grateful to the Royal Navy for such a decision that demonstrates through a fair and open competition iXBlue's INS excellence in terms of performance, reliability, lifecycle costs and versatility. This success relies on iXBlue core values: innovation, excellence and a strong commitment to the user," said Olivier Cervantes, iXBlue vice president for sales and marketing.

The MARINS family of military-grade FOG INS (M3, M5 and M7 models) are the latest additions to iXBlue range of naval products. They offer outstanding performances and unprecedented reliability to meet the requirements of the most demanding navies. MARINS M7 model is the best available INS on the market, offering a drift of less than 1 Nm in 72 hours of surface GNSS-denied or submarine dived navigation. ||



HAL-BEL Join Hands to Share Expertise



On May 25, HAL and BEL signed an umbrella MoU with an aim of mutual cooperation and knowledge transfer in avionics. CMD, HAL, T. Suvarna Raju and CMD, BEL S.K. Sharma in addition to senior officials from both the DPSUs were present on the occasion. D.K. Venkatesh, director (Engg. and R&D) HAL and A.T. Kalghatgi, director (R&D) of BEL signed the MoU.

"The umbrella understanding includes sharing of expertise in design, development, engineering and manufacturing between HAL and BEL to develop and produce advanced airborne communication, electronic warfare systems etc," said Raju.

CMD, BEL, S.K. Sharma said, "BEL is pleased to be associated with HAL and share the respective expertise and competencies for the common objectives. I am sure such efforts will lead to greater indigenisation and self-reliance in defence technologies. This collaboration will support the 'Make in India' mission". ||

Thales to build 'Cyber Range' for the Dutch DCC

In the Netherlands, the Defence Cyber Command (DCC) and Thales entered into a contract to set up a sophisticated cybersecurity training and testing facility, also referred to as 'Cyber Range'. With this 'Cyber Range', the Dutch ministry of defence will acquire a number of key cybersecurity capabilities, in particular for education and training of its own personnel.

To continuously improve the reliability and security of its sensor, weapon systems, command and control systems, information systems, networks and digital infrastructure, the DCC must not only be able to quickly and effectively respond to new threat developments, but also to acquire and test new cyber-defence techniques at an early stage. With the Thales 'Cyber Range', both small-scale and large-scale trainings can be carried out.

In this facility, cyber-attacks, incidents, as well as protective measures can be simulated and tested on dif-



ferent defence systems, information technology environments and communication links. As part of the agreement, Thales will build the facility and provide continued support for the next three years.

Brigadier General and Commander DCC Hans Folmer said, "The Cyber

Range is an important step for the Defence Cyber Command (DCC). It is a facility at which many forms of cyber operations can be simulated. This is essential for training our staff and testing our systems."

The Defence Cyber Command (DCC) forms part of the Dutch Armed Forces and is responsible for developing and preparing cyber capabilities and conducting cyber operations. One of the components of the DCC is the Defence Cyber Expertise Centre (DCEC), which aims to enhance the specific knowledge and the innovative capacity of defence within the cyber domain.

The Dutch ministry of defence has a long-standing relationship with Thales in the field of cyber security. In particular, Thales secures defence NATO communication links and has recently launched a study on Cyber Situational Awareness in collaboration with the DCC and, the Dutch research organisation, TNO. The study looks into how existing SEWACO systems (Sensors, Weapons and Command systems) can continue to be used securely in the future. The Cyber Range is a major step in expanding this collaboration. ||

Rheinmetall Wins Contract to Extend the Service Life of Switzerland's Air Defence Systems

Rheinmetall Air Defence AG of Zürich, a member of the Düsseldorf-based Rheinmetall Group, has won an important modernisation order from the Swiss armed forces. Recently booked, the order is worth a seven-figure euro amount. Through to 2019, Rheinmetall will upgrade the fire control units and guns of the 35mm medium-calibre Oerlikon Skyguard air defence system, which has been in service with the Swiss air force for many years. The contract also includes an overhaul of the associated command and control systems in the operations centre as well as additional spare parts. By boosting the system's operational effectiveness, these measures will extend its service life until at least 2025.

The contract between armasuisse (the Swiss federal procurement agency) and Rheinmetall Air Defence AG was signed a short time ago.

In its capacity as general contractor, Rheinmetall Air Defence AG is responsible for the work to extend the sys-



tem's service life. At the request of the customer, Rheinmetall Air Defence has assigned a number of tasks to RUAG Aviation, an important Swiss partner in the project.

The Swiss air force's ground-based short-range air defence systems include the lightweight Stinger guided missile, the mobile Rapier surface-to-air missile and the 35mm medium-calibre Oerlikon Skyguard. These systems

are used for defending assets and infrastructure from aerial attack. All three would have reached the end of their service life during the next few years. In order to avoid a capabilities gap prior to introduction of a successor system for short-range air defence of ground assets, the 35mm medium-calibre air defence system will undergo a major service life extension programme. ||

Thyssenkrupp's Vision-based Technology to Revolutionise Airport Ground Handling Services

Thyssenkrupp at 29th International Air Transport Association (IATA) Ground Handling Conference (IGHC), in Toronto, Canada showcased its expertise and innovation in airport Ground Handling Services, presented its Smart Docking Assist (SDA) for Passenger Boarding Bridges. The technology, which uses artificial vision to automate the bridge-to-aircraft docking process, allows more precise measurement of the risk variables involved during docking and minimises damage to the airplanes that is often a consequence. Whilst significantly reducing maintenance and repair costs in ground handling services, SDA can also improve the safety of passengers when boarding and disembarking from airplanes.

SDA has been developed following significant R&D investments from Thyssenkrupp, wherein algorithms and machine learning processes were used to measure and test reactions to identify the most efficient performance of the technology. The results of these tests were extremely positive, reporting that with SDA, the efficiency of trajectories is more predictable and accurate, and the repetition ensures a reduction of variability in the docking and undocking process.



The SDA innovation is set to revolutionise ground handling services in airports across the world. Javier Sesma, general manager of the Thyssenkrupp Elevator Innovation Center in Gijón, Spain presented the technology at a high-level speaker session at the IGHC conference on May 16, entitled Ground Support Equipment (GSE) Innovations to Reduce Ground Damage.

Sesma said, "At thyssenkrupp we have a long record of providing innovative solutions to challenging problems, and the SDA technology is a great example of this."

Enhanced safety whilst aircraft is on the ground is another key deliver-

able of the SDA. According to IATA, the incidents to the aircraft created by ground handling equipment have an impact of USD4 billion per year for the airline industry. The automation of Passenger Boarding Bridges simplifies this process and removes the potential for human error that can occur during manual connections, creating the opportunity to reduce aircraft damage in the process. Passenger safety is a major priority in airports and the SDA can improve this aspect when passengers are getting on and off the plane, and also speed up the time it takes for them to leave the aircraft and pass through the airport. ||

Bell 412EPI Takes off on Five Month Demonstration Tour

Bell Helicopter on May 11 announced plans to showcase the versatile capabilities of the Bell 412EPI through a series of customer demonstration flights in Asia Pacific.

Bell Helicopter last demonstrated the Bell 412's capability in 2013 in the region and since then has attracted a number of customers including the Philippine Department of National Defence and the government of Uttar Pradesh in India. There are currently more than 150 Bell 412 variants operating throughout Asia Pacific across a range of mission segments including VIP, energy, and general utility – proving the operational versatility of the aircraft.

"Customers around the globe rely on the Bell 412 to consistently perform in the toughest of environ-



ments, but also provide smooth and efficient travel across the region," said Sameer A. Rehman, Bell Helicopter's managing director of Asia Pacific. "We are delighted to showcase the versatility of this aircraft to our Asia Pacific customers. The new Bell

412EPI offers more powerful engine performance with a state-of-the-art integrated glass avionics suite that improves situational awareness and reduces pilot workload. We are eager for our customers to experience the power of this aircraft first hand."

Bell Helicopter pilots will embark on a five-month demonstration tour traveling to a number of countries in Asia.

The Bell 412EPI improves the Bell 412 platform with the Bell BasiX Pro fully integrated glass flight deck, providing critical flight information at-a-glance for greater situational awareness and safety. The Bell BasiX Pro system is specifically designed to meet the requirements of twin-engine helicopters and is optimised for IFR, Category A and JAR OPS3 compliant operations. The avionics suite also includes high resolution digital maps, electronic charts and approach plates, ADS-B transponder and optional HT-AWS and XM satellite links. ||

Elbit Systems Provides Driving Simulators for Two NATO Armies



Elbit Systems announced on May 3 that it has completed the delivery of a number of driving simulators for the armed forces of two NATO member countries. The simulators, which were delivered to the driving schools of both countries, are expected to enrich the training plan of new drivers, as well as support the operational readiness of qualified drivers.

As part of the project, Elbit Systems designed, developed, produced and delivered three types of driving simulators: a 4x4 mine protected vehicle (KMW's DINGO 2), an 8x8 armoured infantry fighting vehicle (GD-MOWAG's Piranha IIIC) and a 6x6 off-road truck (IVECO's Trakker). All of these can be operated in both stand-alone and convoy training modes. The next phase of

the project includes on-site maintenance and support and is expected to span the next 10 years.

"These high-fidelity driving simulators are part of our global land-based training programmes, which include customers in Israel, Europe and Asia," commented Yoram Shmueli, general manager of Elbit Systems' Aerospace Division. "In this project we delivered a highly-flexible solution capable of emulating a full range of driving scenarios in both tracked and wheeled combat vehicles. The advanced fidelity, realism and immersion achieved through the simulators is further proof of Elbit Systems' commitment to delivering reliable and affordable training capabilities to leading land forces worldwide." ||

Thales to Provide CATHERINE Thermal Imaging Cameras to India

Thales announces the award of a contract by BELTECH to provide CATHERINE thermal imaging cameras for India's T90 battle tanks. The CATHERINE thermal imager is already in service with the Indian Army and this new order consolidates Thales leadership in optronic technologies in India.

As part of this contract, Thales is doing a transfer of production to integrate 260 compact LWIR thermal imaging (TI) CATHERINE into BELTECH's TI Sights that will be installed on the T90 battle tanks of Indian Army. The transfer of production of CATHERINE contributes to the 'Make in India' policy of the Indian government.

The CATHERINE family is the most complete range of cameras available on the world market for target acquisition and weapon engagements by land vehicles. Thermal imagers allow gunners, commanders and land reconnaissance servers to see by night and by day in adverse conditions. More than 7000 CATHERINE cameras are in service on-board 30 types of fighting vehicles globally. ||



First Prototype of the Multirole Ka-62 Helicopter Takes to the Air

The first prototype (OP-1) of the medium multirole Ka-62 helicopter took off at Russian Helicopters' Progress Arsenyev Aviation Company (part of State Corporation Rostec) on April 28. The lift in a hover mode was part of the factory flight testing and was completed successfully.

The OP-1 Ka-62 was launched to evaluate its overall performance and to test its main power supply systems and avionics. The helicopter was operated by test pilots from the Kamov Design Bureau, which is the main developer of the Ka-62. Previously, the rotorcraft has successfully passed a series of tests

in a ground-based racing mode.

"This is a very significant event for



the Russian Helicopters holding company and a due result of our work," said the holding company's CEO Alexander Mikheev. "The new Ka-62 will complement the civilian versions of the honoured and most produced helicopter in the world - Mi-8/17, and it will fill a high demand niche in the class of helicopters with a six-seven tonne take-off weight."

The Ka-62 is designed for a wide range of tasks. Its main purposes include transporting passengers, rescue operations, and use in the oil and gas sector. With a spacious and comfortable cabin, this helicopter is ideal for corporate travel. The Ka-62's high power to weight ratio allows to operate it in a wide range of altitudes. The Ka-62 can be used in hot climates and above water. ||

10th Anniversary of Camcopter S-100



Ten years after the first delivery of CAMCOPTER S-100 to the launch customer, the Vienna-based Schiebel company proudly celebrates the anniversary of its world class product.

Unmanned helicopter development at Schiebel started in 1995 and once the first CAMCOPTER S-100 was supplied to the UAE Armed Forces in 2006, it took only three years before Schiebel had sold the 100th aircraft. During its ongoing production since then and in line with the company's philosophy of permanent performance enhance-

ment, the CAMCOPTER S-100 UAS has undergone continuous improvement in order to meet the ever growing demand for new capabilities from its worldwide customers.

Backed by Schiebel's customers and industrial partners, the CAMCOPTER S-100 now stands out as the unchallenged market leader in its class. After missions on five continents and oceans and in every environment from the tropics to the Arctic, the S-100 undeniably proved to be the most mature system of its kind in the world today.

The multi-sensor capability of the S-100 underpins the helicopter's outstanding operational performance across a wide spectrum of applications, from peace-keeping and humanitarian assistance to industrial, maritime and military support. With missions completed on thirty different vessels, Schiebel takes special pride in its ability to deliver exceptional capability from remote and austere operating sites, including "single-spot" vessels. The latter clearly explains the popularity of the system among naval customers such as the French Navy, who deployed the CAMCOPTER S-100

during their EU NAVFOR anti-piracy operation in the Arabian Sea, or the Italian Navy, for whose Mare Nostrum Operation in the Mediterranean the S-100 was essential.

Schiebel's CAMCOPTER S-100 has made history with several world firsts, including the first ever UAS flight displays at the Paris International Air Show, Le Bourget, the International Defence Exhibition and Conference (IDEX), Abu Dhabi, and the Langkawi International Maritime and Aerospace Exhibition (LIMA), Malaysia. The S-100, furthermore, excelled during its security support of both the G20 Summit in Seoul, South Korea, and the Winter Olympics and Paralympics in Sochi, Russia. More recently the CAMCOPTER S-100 was also the first UAS to be operated in the Russian and the Canadian Arctic.

In addition to such impressive achievements, Schiebel is especially proud and honored to assist the OSCE Special Monitoring Mission to Ukraine and the NGO Migrant Offshore Aid Station (MOAS), whose operation has saved the lives of thousands of migrants in the Mediterranean Sea. ||

MBDA's Spear Missile Secures UK Development Contract

The United Kingdom's ministry of defence (MoD) has signed a contract worth over GBP 400 million with MBDA for the Weapon Development Phase of the SPEAR air to surface, precision strike missile. This contract will further advance MBDA's SPEAR weapon design and builds on a successful series of technical milestones during the preceding Assessment Phase. The contract will run through to completion during 2020 and will employ 350 highly skilled missile engineering jobs across MBDA's sites in Stevenage, Bristol and Lostock, with an equivalent number of jobs in the wider supply chain.

The SPEAR missile is being developed to meet the UK's Selective Precision Effects at Range Capability 3 (SPEAR 3) requirement for the UK's F-35 aircraft, with the option to equip the Typhoon aircraft. SPEAR will precisely engage long range, mobile, fleeting and re-lo-

catable targets in all weathers, day or night, in the presence of countermeasures, obscurants and camouflage,



whilst ensuring a safe stand-off range between the aircrew and threat air defences.

Welcoming the contract, MBDA's executive group technical director and UK managing director Dave Armstrong said, "Delivering the solution for the UK's SPEAR 3 requirement is an important programme for MBDA, and for the future operators of the F-35 in both the RAF and the Fleet Air Arm. The contract confirms SPEAR as the only weapon to meet the UK's operational requirements. It delivers a UK sovereign capability on the F-35 that will bring the kind of precision against moving targets previously seen with Brimstone, but at stand-off ranges that give the aircrew numerous advantages in terms of operational flexibility and survivability." MBDA's CEO Antoine Bouvier added, "MBDA's selection to provide SPEAR confirms the company's position as the European leader in complex weapons and importantly positions MBDA in the international arena for the next decade with this unique precision strike capability." ||

Thales to Supply Scorpion Helmet Display for Spanish EF-18 Jets



The Spanish ministry of defence will equip the EF-18 with 80 Thales Scorpion Helmet Mounted Cueing Systems (HMCS). These HMCS will be installed in the aircraft during the course of 2016 and 2017, once the operational qualification phase and air-to-air (A2A) and air-to-ground (A2G) tests have been completed.

Scorpion is a 'force multiplier' system offering full colour symbology (navigation, intelligence, combat, etc.) for both night-time and daytime missions, in addition to target cueing in potentially degraded visual environments, therefore easily allowing target designation and allocation of points of interest with the aircraft's sensors. Scorpion is fully interchangeable between helmets/pilots

as it is installed directly over standard helmets, allowing the total amount of equipment necessary for the fleet to be reduced, thus favouring maintenance and reducing life-cycle costs.

"This new contract will not only strengthen the relationship with the Spanish ministry of defence but it will also allow the Spanish Air Force to reinforce its capacities. With Scorpion, Thales provides an innovative solution designed to simplify the mission for pilots and one that can be adapted to an extensive range of platforms," said Gil Michielin, Thales executive vice-president, Avionics.

Thales will be responsible for the viability study, testing phase, integration with test aircraft, qualification support and integration in the fleet. Thales will also be responsible for the development and production of the specific Scorpion configuration for the Spanish EF-18 including ejection safety analysis. The qualification phase includes inter-operability with the IRIS-T missile and the daytime/ night-time-imaging pod for cueing lightening targets. ||

Tata Power SED wins Night Vision Order for Supply of Hand Held Thermal Imagers

Tata Power's Strategic Engineering Division (Tata Power SED) has received an order from the Border Security Force (BSF), ministry of home affairs (MHA), for the supply of Rajak TBC DN-1, its indigenously developed Hand Held Thermal Imaging Systems (HHTI).



The BSF is one of the premier forces of India using HHTIs for border surveillance and has selected through a global tender Tata Power SED's Rajak TBC DN-1 Multi-Function Thermal Imager after extensive field trials.

Rajak TBC DN-1 is a 'Created in India' product designed, developed and manufactured at Tata Power SED's Optronics facility in Bengaluru. While this gives impetus to the 'Make in India' campaign, it also provides the end user the facility to reduce the repair downtime substantially, as the entire maintenance and repair will be done in-house. Until now, forces like the Indian Army and BSF used to source HHTIs from abroad and the downtime between repairs could even be in years.

Tata Power SED's Rajak TBC DN-1 is an advanced HHTI meant for Long Range Day/Night Surveillance application. It combines multiple sensors such as thermal imager, day sensor, digital magnetic compass and GPS receiver, all in a single compact housing. ||

Strong Demand for After Sales Services of Russian Aircraft in India

Based on strong demand for after sales services for Russian origin helicopters and aircraft in India, Technodinamika, a Rostec State Corporation company on May 4 announced that it has concluded after-sales service delivery contracts to the tune of Rs 166 crores (1.6 billion Rubles) with the Indian Air Force (IAF) for the period 2016-2017. This was based on the scope of contracts signed with the IAF in 2015.

Currently, 900 aircraft produced in Russia (and the former Soviet Union) are in use by the IAF. "India is one of the largest after-sales service markets for us. By 2018 we plan to cover 15 per cent of the demand in India for repairs of assemblies and components for the aircraft produced in Russia," said Maxim Kuzyuk, head of Technodinamika.

Going forward, an end-to-end service centre set up in Delhi will be used to conduct repairs of Russian equipment used by the IAF. The service centre



will be responsible for procuring hardware and ground equipment as well as supply components for Russian made planes and helicopters. The intention is that the process of maintenance will be fully localised in India. Technodinamika is currently in negotiations with its Indian counterparts to create a joint venture in this regards. ||

Boeing's India suppliers Cyient Limited and Rossell Techsys Win Special Awards

Boeing has named its 2015 Supplier of the Year award winners, recognising 12 companies for the high quality of their product or service and the value they create for Boeing and its global airline and the US and allied government customers.

Strong performance and close collaboration with these award-winning suppliers helped Boeing exceed customers' expectations while contributing to Boeing's record USD96.1 billion in revenue in 2015.

"I've witnessed first-hand the critical role suppliers — and especially the best ones — play in Boeing's success," said Dennis Muilenburg, Boeing chairman, president and CEO. "Our supply chain partners help us provide our customers with more capability for less cost in today's tough and dynamic business environment. We have ambitious goals for the future, and I know we will achieve them, in part, by working closely with our exceptional extended team."

In 2015, Boeing spent USD62 billion with more than 13,000 suppliers from 47 countries. Supplier-provided components and assemblies make up ap-



proximately 65 per cent of the cost of Boeing products.

"At a time when we are asking more of our suppliers than ever before, Supplier of the Year winners reflect an unrelenting dedication and commitment to Boeing and its global customers," said Pat Shanahan, Bo-

eing senior vice president, Supply Chain and Operations. "They are among the best aerospace suppliers the world has to offer and, with their help, we will continue to lead the market with affordable, innovative and technologically advanced products and services through the next 100 years." ||

Elbit Systems' BrightNite Performs Successful Demonstration Flights



Elbit Systems performed a series of successful demonstration flights using the BrightNite system, a solution that enables utility helicopters to successfully perform Degraded Visual Environment (DVE) missions in more than 90 per cent

of the nights.

The goal of the flights was to demonstrate the systems' performance in DVE conditions, in moonless, pitch dark nights, in which flights are rarely executed. Dozens of pilots from a variety

of air forces around the globe participated in the demo flights, which took place in Israel. Installed onboard an Airbus Twin-Star helicopter for the demo, the BrightNite system provided the pilots with night-piloting capabilities similar and even exceeding to those of attack helicopters.

In the sorties that took place during the demonstration flights, the feedback was extremely positive and the pilots emphasised the contribution of the system to flight.

Lightweight, compact and cost-effective, BrightNite is a multi-spectral end to end panoramic piloting solution that delivers the essential data directly to both eyes of the pilot, enabling intuitive flight in a head-up, eyes-out orientation in pitch dark and other DVE conditions. ||

Royal Thai Navy Selects Thales to Modernise its Naval Capabilities



Thales has announced two significant contracts for the supply of a full spectrum of Above-water and Underwater solutions for the Royal Thai Navy (RTN). Thales will modernise the Bang Rachan Class Minehunters and supply the combat, navigation and communication suite onboard the newly ordered Krabi Class Offshore Patrol Vessel.

Thales is the prime contractor for the modernisation of the Bang Rachan Class Minehunters.

Thales has been a partner to the Royal Thai armed forces since the late Nineties and has provided the Royal Thai Navy with numerous solutions from sensors to integrated combat systems for various vessels of the fleet. Building on the success of its collaboration with the RTN, Thales has been awarded the role of prime contractor for an extensive upgrade of two Bang Rachan Class minehunters built in the late Eighties (HTMS Bang Rachan and HTMS Nong Sarai). This marks Thales's first success in the underwater systems and sonars market in Thailand.

As prime contractor, Thales will be responsible for the revised vessel design, repairs and modernisation, the procurement of equipment and the platform integration. The upgraded ship will be equipped with new solutions, including a machinery control system, navigation systems, upgraded communications capabilities, Sonar TSM 2022 MkIII with M-CUBE command and control (C2) and a multi-influence signature range to manage

RTN ships' signatures.

Thales will work hand in hand with the local industry to manage the works. The Group will also provide training and Integrated Logistic Support (ILS) for the RTN to enjoy the best operational use of the vessels in the coming years.

Thales' solution extends the operational life of these ships by over 15 years.

In 2015, the RTN decided to launch a second vessel of the Krabi Class. The vessel, to be built by Bangkok Dock, will be equipped with a Thales integrated solution that includes the TACTICOS combat management system and an integrated bridge and navigation suite.

The sensors to be delivered are the VARIANT surveillance radar, STIR 1.2 EO Mk2 fire control radar and VIGILE Electronic Support Measures with SKWS chaff launcher. Furthermore, Thales will supply the Tactical Data Links Link RTN and LINK-Y Mk2 and all internal and external communication systems Thales will be responsible for all integration activities, including the 76 mm gun, 2x 30mm gun and HARPOON SSM.

The ship is expected to be commissioned in the second half of 2018.

By working together with its naval key industrial partner, Thales will be able to provide the best level of local training and service to the RTN and support Thailand's goal of strengthening high end local industrial capabilities. ||

Rheinmetall to Supply Ammunition for German Puma IFV

In the ongoing process of integrating the Puma infantry fighting vehicle into the German armed forces, Rheinmetall has recently booked a series of orders from Germany's Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support (BAAINBw). Besides production and delivery of 10,000 rounds of



30mm x 173 calibre armour-piercing ammunition, the Bundeswehr has contracted with Rheinmetall to modify a system gun rest, and to supply it with special tools and spare parts. The orders, placed from February to April, are worth over Euro 12 million in total.

Rheinmetall's Oberndorf unit is in charge of these projects. The former Mauser plant is the birthplace of the Puma's newly developed main armament, the 30mm MK30-2/ABM automatic cannon. The accompanying array of ammunition includes programmable rounds, enabling the Puma to successfully engage a wide spectrum of targets.

Now being fielded by the Bundeswehr, the Puma IFV provides Germany's mechanised infantry forces with a new principal weapons system, one that represents a whole new dimension in international armoured vehicle design. Setting new standards in every relevant capabilities category, the Puma lends itself to a multitude of operational scenarios and can be deployed in all climate zones. Delivery of the 350 IFVs ordered by the Bundeswehr will be complete by 2020. ||

Pratyush Kumar Elected Chairman of AmCham India



At the 24th Annual General Meeting of the American Chamber of Commerce in India (AmCham India) held on April 22, Pratyush Kumar, President, Boeing

India, was elected as the Chairman of AmCham India. United States Ambassador to India, Richard Verma, was the honorary President of the Chamber. Richard Rekhy, Chief Executive Officer, KPMG in India and Gulshan Kumar Sachdev, Managing Director, Quaker Chemical India Limited, were elected as the Vice-Chairmen of the Chamber.

AmCham India will be celebrating its Silver Jubilee in 2017. Over the past 24 years, it has been at the forefront of supporting growing trade

between the United States and India which topped a record USD108 billion during 2015.

Pratyush Kumar, also well known as Prat Kumar, said, "My goal will be to steer the Chamber towards strengthening the US industry engagement in focus areas of the government of India such as manufacturing, digital connectivity, smart cities, infrastructure build, skill development, entrepreneurship, and innovation. Given India's strong growth outlook and compelling demographics along with converging strategic interests with the United States, the Chamber is well positioned to partner with the Indian and the United States governments to help realize the full potential of Indo-US cooperation in the coming years."

Kumar has been a key contributing member of AmCham India for the

past decade initially serving as the Chair of AmCham India's Infrastructure Committee and subsequently as member of its National Executive Board. He brings two decades of business leadership experience to this role. He is Boeing's most senior in-country leader. Before joining Boeing in 2012, Kumar served in various leadership roles at General Electric (GE) for close to a decade in the United States and in India. He started his career as a consultant with McKinsey & Company in the US. In-between McKinsey and GE, Kumar was an entrepreneur founding a Boston-based biotech company. Kumar earned a bachelor's degree in mechanical engineering from the Indian Institute of Technology (IIT) Delhi and a doctorate in Materials Engineering from the Massachusetts Institute of Technology (MIT). ||

New Directors Take Charge at BEL

Two new directors, Girish Kumar, Director (Bangalore Complex), and Nataraj Krishnappa, Director (Other Units) have taken charge at defence PSU Bharat Electronics Ltd (BEL) on May 1.

Girish Kumar, Director (Bangalore Complex), was Executive Director (Radar) & Unit Head of BEL-Ghaziabad Unit prior to his elevation.

Girish Kumar joined BEL-Ghaziabad as a Probationary Engineer in 1979 after completing his BE (Mech.) from MITS, Gwalior. Over a period of 30 years, he worked in Ghaziabad, Kotdwara and Bangalore Units of the Company and headed Production, Materials Management, Quality Management and Services Divisions.

In August 2009, he was elevated as general manager of BEL's Export Manufacturing SBU. He was transferred to Corporate Office to head Total Quality Management (TQM) in 2010. In June 2011, he was posted as general manager (HR) at BEL-Bengaluru. In July 2012, he moved to Ghaziabad Unit as GM (Radar) & Unit Head. Under his leadership, the Unit



Girish Kumar



Nataraj Krishnappa

was awarded second level in the CII Exim Bank Award for Business Excellence and was also certified for CMMI level 3.

Nataraj Krishnappa, Director (Other Units), was GM (Missile System) at BEL-Bengaluru before his elevation.

Nataraj Krishnappa joined BEL-Ghaziabad on 1 March 1984, after graduating in Mechanical Engineering from the National Institute of Engineering, University of Mysore. In 1986, he was transferred to BEL's Panchkula Unit, where he put in 15 years of service. Panchkula Unit was in its formative stage and he belongs to the first batch of engineers to be posted to the unit. He has worked in various departments responsible for manufacturing and procurement

functions. He headed Product Group-I and has made significant contributions to the manufacture of Communication equipment such as Handheld Radio and STARS V Manpack Radio as well as Encryption products.

In the year 2000, he was nominated for the Six Sigma programme in BEQI and subsequently did a project in optimising the reflow soldering process of the Crypto Card of STARS V Radio. In 2001, he was transferred to Corporate TORQUE and nominated Six Sigma Co-ordinator for the Other Units of BEL. He worked towards institutionalising the Business Excellence journey in BEL.

In June 2008, he was transferred to Military Radar SBU as Project Head of Akash Missile System. Nataraj Krishnappa, who is a PMP from PMI, USA, has successfully used project management concepts while executing the Akash Missile System project. Akash Missile System integrated in the country for the first time is a world-class Surface to Air Missile System that has been inducted into both the Indian Air Force and the Indian Army.

He served as GM (HR) and as GM (Missile System) at BEL-Bengaluru before his elevation as Director (Other Units). ||

'For M-RZR, we don't have any restrictions from the US forces. We can supply them to the Indian forces'

— Managing Director, Polaris India Pvt Ltd, Pankaj Dubey

How was your experience at DefExpo?

This has been the third DefExpo that we have participated, and it has been very fruitful. The reason I feel so is because it was very intense, and the people who came there were the people who really mattered. Defence minister coming to the stall and spending 10 minutes, is something I haven't seen in the previous defence expos. The minister has even driven down on our vehicle. We have been very fortunate because we could meet some of the key army officials including procurement officers and Special Forces officers who were there along with defence minister.

We have specially imported one of our most advanced defence vehicle which is called Dagor (Deployable Advance Ground Off-Road) which was displayed for the first time and we also displayed our Military Razor (M-RZR). RZR is very popular vehicle for operations off-road with high speed. We displayed both these models for the very first time in India.

Both these vehicles — Dagor and M-RZR — are specific to military use? Are there civilian versions of these vehicles?

Dagor is 100 per cent only for defence whereas M-RZR is the militarised version of the normal Razor which is very popular in adventure sports.

Were you able to do any demonstrations in Goa with these two vehicles?

We have made some contacts and planned some demonstrations based on our interactions. Subsequent to the DefExpo, we have couple of more very interesting meetings with the senior officers.

What kind of interest did the Indian Army show in these two vehicles?

We had interaction with very senior army officials in the last six to eight months, from much before the DefExpo where we had shared videos of the product. We didn't have the product in India at that point of time but the interest level from them is very high. And that is the reason we have imported the product and



displayed at DefExpo. The technology for Dagor is highly controlled by the US forces. We had to take permissions from the US government to showcase it in exhibitions. We have informed them that there is an interest from India, and took permissions to display the product here and they had readily accepted because there is a good relation between the two countries.

There is already high interest in the M-RZR vehicle from the Indian market. We will be focussing on that model for India and we would like to give demonstrations to the forces. And based on the interest levels and the orders that we receive, we will see how soon we can provide them and also how well we do the service and after-sale support to these forces.

If Indian Army picks Dagor or M-RZR for its special missions, what kind of licenses and other approvals do you have to take from the US government to sell that product here in India?

For M-RZR, we don't have any restrictions from the US forces. We can go ahead and supply them directly to the Indian forces. In the case of Dagor, we have clearance for demonstration and we just need to inform the US government if the orders come in from Indian forces.

So will these procurements be through the government-to-government route?

It will be the direct order between Polaris India and Indian defence forces. But we will need to take a clearance from US forces as far as Dagor is concerned.

Do you have any 'Make in India' proposals for Dagor and M-RZR?

It depends on the volume of orders that we get from the Indian forces. If we have a volume generation which is sustainable and reasonable for a business to makes sense to do indigenisation, it will be there. For small numbers, it will not be possible. It should make business and economic sense.

We have already put up a factory in India in Jaipur for a different product range where there is a business case, this set up is a joint venture with Eicher. If there is a business case in India related to any of the defence products we have discussed, we will take necessary approvals at the back end and we will produce here in India. But it has to be a proper business case where there is to be a not just one supply order but a much bigger order.

Are you telling it is a small order that you currently have with the Indian Army?

Yes, it is small order that we are executing currently. It is mostly the trial order.

In your assessment, what kind of requirements does the Indian forces have for these all terrain and off-road vehicles?

The requirement is there. In fact, there is a need. But considering the recent past where so many scams have been reported, the government is conscious and the procurements are moving slowly. The government has its own set of rules, regulations, approvals, and they want a clean deal. That is what makes any US company comfortable, especially Polaris, because we would like to

In the last four-five years, my team and I have gone into all the pain points of the Special Forces in the country. We have sent Polaris vehicles over to demonstrate how our forces can become much more efficient in these areas. We have discovered that the potential of our vehicles and the accessories is huge

get involved in markets where there are transparent deals.

Tell us a little about the programmes that are currently underway with defence and paramilitary forces?

We are already supplying vehicles to the Indian Army and Border Security Force. There are six police forces already using our products in the country. In few cases we have got repeat orders. Polaris has launched its flagship products including all terrain vehicles (ATVs), Side x Side vehicles (which consists of Razor and Ranger) and snow scooters in India. We have a variety of products - petrol driven vehicles, electric driven vehicles and we have diesel driven vehicles also.

We are very fortunate that the forces have bought the entire range - snow scooters, all terrain vehicles, side x side. I would say that in terms of the hard work we have done, the base has been established and each of the product range is moving at a different pace. In each of the streams - whether it is snow scooter or an ATV or a Razor or

a Ranger - we have got orders from the Special Forces for testing. This should contribute big in our business.

The M-RZR and Dagor has just been showcased in February and brought to India very recently. Dagor was brought only for showcasing, so it was not available for any rides and by the end of May it has gone back to the US. But M-RZR in India, where the demand and inquiries are also very high, will be available for all the forces to take rides and demos.

In the last four-five years, my team and I have gone into all the pain points of the Special Forces in the country. We have sent Polaris vehicles over to demonstrate how our forces can become much more efficient in these areas. We have gone in to Naxalite areas like Sukhma in Chhattisgarh, and other areas in Ranchi and Jharkhand. We have also visited border areas like Rann of Kutch in Gujarat and other swampy areas. We have discovered that the potential of our vehicles and the accessories is huge. Because what we have is a base platform of the vehicle and you can do a number of things with those vehicles including clearing the road, cleaning the road from snow etc. These are very versatile products, that is why armies world over are using our products during the operations in Afghanistan and Iraq.

How much percentage of your business is on defence side and how much in civil?

Defence and security forces are contributing to around 20 per cent of our Indian business. This is growing a good place and the defence market will be bigger than 20 per cent in the near term.

Do you have any competition?

Unfortunately, we don't have any competition. It's a drawback because if there are more manufacturers, there would be more creative work and business development. Right now, all the creativity is coming from Polaris only. We want somebody to do something different in the market so that there is a healthy competition that paves way for greater innovations and bigger market.

How big are you in the US market for their Special Forces?

We are the largest producers of light tactical vehicles for the US Special Forces. We work very closely with them and that is the reason why products like Dagor have come into existence. Apart from the US, 23 armies in the world are using our products. ||

Civil Aviation Briefs

Boeing awards 777X titanium forging contract to Bharat Forge



Boeing has awarded a contract to Bharat Forge for titanium forgings for the Boeing 777X.

"We are pleased to expand our partnership with Bharat Forge who started supplying titanium forged flap tracks for the Boeing Next-Generation 737 airplane earlier this year. They've demonstrated not only a high level of technical expertise, but also an understanding of the need to meet market requirements for affordability," said Pratyush Kumar, President, Boeing India. "This contract demonstrates our commitment for building a globally competitive aerospace supply chain in India to realise the full potential of the 'Make in India' initiative."

The titanium forgings will be developed and manufactured by Bharat Forge using a closed die forging process. The first two forgings are scheduled to begin shipping to Boeing in late 2016, and will be followed by two more forgings in early 2017.

Bharat Forge completed its first shipment of titanium flap-track forgings for the Next-Generation 737 earlier this year. The company will also supply forgings for the 737 MAX, scheduled to enter service in 2017.

"This second contract is the result of our successful partnership with Boeing and brings to forefront our capabilities in precision manufacturing tech-



niques to offer high-end technology and value in the aerospace sector," said Subodh Tandale, executive director, Bharat Forge. "We are well versed in the stringent process requirements for titanium forgings and have mastered the process. We will be supplying critical wing components for one of the most advanced Boeing aircrafts. This also confirms our commitment to meet the aspirations of the 'Make in India' initiative."

The contract reinforces Boeing's global supply chain strategy to expand its forging supply base through partnering with high performing companies like Bharat Forge. Boeing currently has forging contracts with suppliers in Asia, Europe, Russia, and North America and will continue to add new sources of forgings around the world. ||

P&W PurePower Turbofan Engine to Power Bombardier's C Series order for Delta Airlines



Pratt & Whitney's PurePower Geared Turbofan engine will power Bombardier's largest C Series aircraft order based on an agreement signed by Delta Airlines for 125 aircraft. The order consists of 75 firm aircraft with options for up to 50 more as well as a 15-year services agreement. Pratt & Whitney's PurePower Geared Turbofan engine is the sole-source engine provider for Bombardier's C Series aircraft. Pratt & Whitney is a United Technologies Corp. company.

"Bombardier champions sustainable and leading edge technology and that is why we chose Pratt & Whitney to power our game-changing C Series aircraft family which together received a strong endorsement from the Delta Air Lines order," said Fred Cromer, President, Bombardier Commercial Aircraft. "The C Series aircraft is revolutionising the single-aisle aircraft market and the Pratt & Whitney engine is a big factor and important partner in this success and we look forward to this continued support to our C Series customers."

"Today's historic deal is fantastic for the North American aviation industry, and we send our congratulations to Bombardier and Delta and know that the Pratt & Whitney PurePower engine will deliver unmatched value in terms of fuel burn, noise and emissions," said Rick Deurloo, senior vice president, Sales & Marketing, Commercial Engines, Pratt & Whitney. "Customers continue to believe in the ingenuity of our engine technology – recognising it represents one of the most compelling stories in aviation history." ||

GKN Aerospace recognised in Airbus supplier awards

Three GKN Aerospace aerostructures operations, in Bristol and Cowes in the UK and Munich in Germany, were recognised in Airbus's SQIP (supply chain and quality improvement) awards, at a ceremony in Toulouse in April 2016.

The Filton site achieved 'Accredited Supplier' status for the second year running and has now been an award winner for four consecutive years whilst the Cowes site gained the 'Best Performing Supplier' award and the Munich site gained 'Best Improved Supplier'. All of these awards recognise the consistently high level of performance and commitment demonstrated throughout the year by the teams at these GKN Aerospace sites.

John Pritchard, CEO, GKN Aerospace



- Aerostructures Europe commented, "Working closely with Airbus, we have implemented the SQIP programme within the company and with all our suppliers. As a result we have all achieved - and continue to realise - real

performance benefits. SQIP provides an effective structure within which we can work together to explore, identify and implement solutions and to refine the practices we use to benchmark our activities. We are proud to have the effort and commitment of our teams at these sites - and the excellent levels of performance they have achieved - recognised by Airbus with these SQIP awards."

GKN Aerospace is the most comprehensive Tier 1 supplier to the aerospace industry. Across its international operation the company has been an important supplier to Airbus for well over two decades, with sales to Airbus representing around a fifth of the total GBP2.5 bn annual sales. GKN Aerospace supports almost all Airbus aircraft programmes with products ranging from advanced composite and metallic airframe and engine structures to high-performance cockpit and cabin transparencies. ||

Bell Helicopter announces programme relocations to optimise manufacturing capabilities

Bell Helicopter, a Textron Inc. company, plans to relocate several programmes in order to optimise manufacturing capabilities across multiple Bell Helicopter facilities.

Effective immediately, the Bell 505 Jet Ranger X final assembly in Lafayette, LA, will relocate to the company's Mirabel Assembly and Delivery Center in Canada. In addition, the Lafayette facility will receive the Bell 525 Relentless cabin subassembly, relocating from the Amarillo, TX, facility, and the Northrop Grumman MQ-8C Fire Scout unmanned aerial vehicle (UAV) modification work relocating from the Bell Helicopter facility in Ozark, AL. Neither move is expected to impact the certification of the Bell 525 or Bell 505.

"The relocation of these programmes will enable the company to optimise its manufacturing footprint across multiple sites, while maximising the core capabilities of each facility," said president and CEO of Bell Helicopter Mitch Snyder. "Mirabel is a vital part of Bell Helicopter's long-term growth strategy and this move confirms our commitment to our Mirabel workforce and infrastructure. We also remain committed to Louisiana, where we have received tremendous support from the state and local government."



Bell Helicopter built the first three Bell 505 flight test vehicles at the Mirabel facility and is working closely with Transport Canada to achieve type certification and production certification this year. Once certification is completed, Bell Helicopter will begin production and deliveries out of the Mirabel facility.

"Today's announcement is a good news story of jobs and future growth in the Canadian aerospace sector and of an innovative R&D legacy that will last far beyond the manufacture of this helicopter," said Navdeep Bains, Canada's

minister of innovation, science and economic development.

"We are very pleased the work for the Bell 525 and the MQ-8C Fire Scout is moving to the Lafayette facility," said Governor of Louisiana John Bel Edwards. "Bell Helicopter has played a significant role in boosting the Lafayette economy, and they have proven themselves to be valuable partners in Louisiana. We are proud to continue our relationship with them and look forward to the future success of the new work moving to the Lafayette facility." ||

Civil Aviation Briefs

Bell 505 Jet Ranger X in Sri Lanka signed for by Fairway Holdings

Bell Helicopter, announced that it has signed a letter of intent (LOI) with Fairway Holdings for a Bell 505 Jet Ranger X. This is the first Bell 505 signed for in Sri Lanka. The aircraft will be used for private travel and tourism across multiple destinations around the island.

The agreement was signed with Fairway Holdings in Sri Lanka. "With a vision to further enhance the link between tourism and domestic aviation in Sri Lanka, Fairway Holdings is paving the way for enhanced domestic aviation operations in the country," said Hemaka de Alwis, Chairman of Fairway Holdings. "The Bell 505 combines proven technology with the latest advancements, and we are confident the aircraft will bring added customer satisfaction and endless travel possibilities to our clients."

Fairway Group is a multifaceted corporate entity involved in real estate management and property development, renewable energy projects, manufacturing and trading operations, provisioning



of financial services, pharmaceuticals and most recently the travel & leisure industry. The Fairway Group stands as one of Sri Lanka's leading and fastest growing, dynamic emerging corporations.

"The Bell 505 is ideally suited for travel and tourism, and we are proud that customers around the world continue to recognise its unique qualifications and performance capabilities that bring added value to their operations," said Sameer A. Rehman, Bell Helicopter's managing director of Asia Pacific. "It is an important achievement for Bell Helicopter, as Sri Lanka is emerging as a top travel destination for pristine beaches, world-class resorts and cuisine, and the Bell 505 will provide efficient transportation for discerning travellers. Bell Helicopter is proud to be a part of the growth of Sri Lanka's tourism industry."

With a cruise speed of 125 knots (232 km/h), range of 360 nautical miles (667 km) and useful load of 1,500 pounds (608 kg), the Bell 505 is designed to be safe and easy to fly while providing significant value to the operator. The customer-driven design of the aircraft places safety, performance and affordability at the forefront, blending proven systems with advanced technology and a sleek, modern design. The Garmin G1000H Integrated Avionics Suite provides pilots critical flight information at a glance to maximize situational awareness. Pilot workload is further reduced by the Turbomeca Arrius 2R engine with dual channel Full Authority Digital Engine Control (FADEC).

"We are delighted to sign with Fairway Holdings for the first Bell 505 in Sri Lanka and look forward to building our relationship into the future," added Rehman. ||

at KIAB, a first for this airport since it began cargo operations in 2008. This charge was a cost recovery charge for the provision of Customs' facilities at the air cargo terminals. This waiver will give the cargo operators a competitive pricing advantage that will boost the cargo and courier business at KIAB. This reduction was effective from 1 April 2016.

New cargo initiatives at Bengaluru airport

Bangalore International Airport Limited (BIAL) on April 22 announced that it has launched a skills development programme for cargo handling staff at the Kempegowda International Airport, Bengaluru (KIAB). Under the directive of the ministry of civil aviation (MoCA), BIAL in collaboration with its cargo partner Menzies Aviation Bobba Bangalore Pvt Ltd. (MABB), introduced this initiative with an aim to enhance skill sets for air cargo staff providing a learning platform to develop sound knowledge of the air cargo industry. The event was inaugurated by Renu Singh Parmar, senior advisor, MoCA.

The programme was attended by representatives across the cargo value-chain including airlines, trade cargo handling agencies, ground handlers and officials from other departments. The one-day training programme highlighted the development of a strong cargo community, emphasising key aspects like economic growth of the community and global recognition of the industry amongst others.

In yet another development in the cargo business, Bengaluru Customs have now waived off the Cargo Customs Service Provider (CCSP) charges to cargo custodians (MABB and AISATS)

at KIAB, a first for this airport since it began cargo operations in 2008. This charge was a cost recovery charge for the provision of Customs' facilities at the air cargo terminals. This waiver will give the cargo operators a competitive pricing advantage that will boost the cargo and courier business at KIAB. This reduction was effective from 1 April 2016.

BIAL is committed to creating an ecosystem that supports and propels the growth of not just Karnataka, but the entire South Indian region in the global cargo supply chain. To sustain this growth in the long term, it continues to enhance and build on its world-class infrastructure, standards, best practices and introduce initiatives to ensure that it consistently raises the bar in easing the movement of goods and products to and from South India. In FY 2015-16 KIAB handled 291,920 metric tonnes (MT) and has become one of the top cargo hubs in the country. With a clear objective of developing KIAB as the 'South Indian Cargo Gateway to Global Economies', BIAL continues to make efforts to strengthen its cargo operations. ||



FLIR launches Light Tactical Vehicle with FLIR Portable Radar



FLIR Systems announced the release of two high performance ground surveillance tools for border security and force protection, the LTV-X Light Tactical Vehicle (LTV) and the FLIR Ranger R6SS portable radar at Special Operations Forces Industry Conference (SOF-IC) in Tampa, Florida.

The LTV-X is a rugged, tactical reconnaissance vehicle that can be transported inside a Bell Boeing V-22 Osprey for rapid deployment in support of urgent operational requirements. Featuring multiple

integrated sensors such as the TacFLIR 280-HD multispectral ISR turret and the Ranger R6SS Ground Surveillance Radar, the LTV-X also includes an onboard command and control system that enables full control, exploitation, and dissemination of real-time imagery and target tracking between deployed mobile and fixed assets. The LTV-X also offers near-silent operation when stationary.

"The Ranger R6SS and LTV-X are FLIR's latest innovations in support of mission-critical ground surveillance, force protection, and border security that leverage our unique Commercially Developed, Military Qualified model," said Kevin Tucker, Vice President and General Manager of FLIR Surveillance. "Both products are designed to maximize detection, responsiveness, and reliability in situations that demand the highest performance. We look forward to deploying these new products to the men and women who help keep borders around the world safe." ||

Gulfstream G650ER adds another speed record

Gulfstream Aerospace Corp. on May 18 announced that the Gulfstream G650ER recently claimed another city-pair record, this time linking Sydney to Los Angeles. The 6,620-nautical-mile/12,260-kilometer flight took 12 hours and 40 minutes at an average cruise speed of Mach 0.86.

The record was approved by the US National Aeronautic Association and is pending approval by the Fédération Aéronautique Internationale in Switzerland for recognition as a world record.

"This latest speed record is another demonstration of the G650ER's superior capabilities," said Scott Neal, senior vice president, Worldwide Sales and Marketing, Gulfstream. "The unmatched range and speed of the G650ER enables operators to reach more destinations nonstop quickly and efficiently. No other business aircraft can connect Sydney to Los Angeles faster than the G650ER." ||

Beechcraft Pro Line Fusion-equipped King Air C90GTx awarded FAA and EASA type certifications

Beechcraft Corporation on May 24 announced it has received type certifications from both the Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA) for the new Pro Line Fusion-equipped Beechcraft King Air C90GTx turboprop.

With this achievement, the company has now completed FAA and EASA certifications to include Pro Line Fusion avionics systems as standard equipment on all current production models of the King Air.

"Continuous product improvement and enhancements based on operator feedback is why more than 7,300 Beechcraft King Air turboprops have been delivered to customers around the world," said Kriya Shortt, senior vice president, Sales & Marketing. "Our ongoing strategy of driving new technology into our aircraft in alignment with customers' needs ensures owners and operators get the value proposition, performance and passenger experience they appreciate from the King Air series."

Pro Line Fusion for the King Air



brings one of the most trusted avionics architectures to the first full touch-screen flight display system. The new avionics system changes how operators aviate, navigate and communicate through a one-of-a-kind intuitive flight deck interface. Its three 14-inch displays are interchangeable, high-resolution with touch screen and cursor control. Other performance-enhancing capabilities include:

In addition to the new Pro Line Fusion avionics, the cabin now offers an enhanced passenger experience. With Wi-Fi capability available on all King Air models, the personal device-centric cabin environment allows customers to stay connected and productive throughout their flight experience. Also standard on all three models are electronically dimmable window shades, offering a simple interface that provides clearer views and darker shading at the touch of a button.

More than 7,300 Beechcraft King Air turboprops have been delivered to customers around the world since 1964, making it the best-selling business turboprop family in the world. The worldwide fleet has surpassed 60 million flight hours in its first 52 years, serving roles in all branches of the U.S. military, and flying commercial missions ranging from traditional passenger and cargo transport to electronic and imagery surveillance, air ambulance, airway calibration, photographic mapping, training and weather modification. ||

Civil Aviation Briefs

Cessna Citation Longitude achieves wing and fuselage mate milestone



Cessna Aircraft Company on May 23 announced during the European Business Aviation Convention and Exhibition (EBACE) that it has successfully completed the wing and fuselage mate of the first Cessna Citation Longitude just six months after revealing the new aircraft. This is a significant milestone in the production of this class-leading aircraft, which is on track for first flight this summer and entry into service in 2017.

“Since introducing the new Cita-

tion Longitude to the market only six months ago, the team has been working diligently to meet a development schedule unmatched in the industry, and it’s rewarding to see the aircraft taking shape,” said Scott Ernest, president and CEO, Textron Aviation.

The Citation Longitude is the company’s latest innovation as it continues to invest in its family of larger business jets. The aircraft is designed specifically for maximum passenger comfort and offers

the lowest cabin altitude in its class at 5,950 feet. State-of-the-art cabin technology allows passengers to manage their environment and entertainment from any mobile device, while standard high-speed internet maximises productivity in flight. With seating for up to 12 passengers, the Longitude features a stand-up, flat-floor cabin with a standard double-club configuration and a class leading walk-in baggage compartment fully accessible in flight.

The clean-sheet design of the Longitude integrates the latest technology throughout the aircraft, bringing customers the lowest ownership costs in this category. It features the next evolution of the Garmin G5000 flight deck and is powered by FADEC-equipped Honeywell HTF7700L turbofan engines with fully integrated auto-throttles. The aircraft offers a full fuel payload of 1,500 pounds, a maximum cruise speed of 476 knots and a high-speed range of 3,400 nautical miles. ||

GKN Aerospace wins contracts from Airbus Safran Launchers

GKN Aerospace will develop and manufacture advanced rocket engine sub-systems for the Ariane 6 launch vehicle, under the prime contractor ship of Airbus Safran Launchers, after securing major new contracts.

The contracts cover sub-systems for both the main (VULCAIN 2.1) and upper (VINCI) stage engines for the European Space Agency-led new-generation rocket launcher.

In total GKN Aerospace will provide five complex sub-systems for each Ariane 6 rocket, including four turbine assemblies for the two engines, generating power for the hydrogen and oxygen fuel systems. These turbine assemblies will be manufactured at GKN Aerospace’s engine systems operation in Trollhättan, Sweden.

Among the sub-systems being supplied by GKN Aerospace will be an advanced nozzle (SWAN) for the Vulcain 2.1 engine. This is the first flying nozzle to incorporate technologies such as laser-welded sandwich walls and additively manufactured structural re-



inforcements. By exploiting the company’s expertise in these cutting-edge technologies, GKN Aerospace has developed sandwich nozzle technology that is significantly more robust than earlier versions, can meet increased production rate requirements and has

40 per cent lower manufacturing costs.

Torgny Stenholm, Vice President Services & Special Products GKN Aerospace – Engine Systems, Trollhättan, said: “With the support of the Swedish National Space Board we participated in the initial engine demonstrator programmes which allowed us to work with our customer to prove technologies in operation and at full scale. We have also been able to demonstrate the successful migration of a number of advanced technologies between our space activities and commercial aviation, with valuable benefits for commercial aerospace in weight and cost reduction, and faster production rates. These factors, along with our established expertise in metallic nozzles and space turbines, have resulted in the award of this engine sub-systems contract and we look forward to continuing to make a technological contribution to this key European space programme.”

GKN Aerospace’s space business unit, in Trollhättan, Sweden, has been active in the Ariane programme from its inception in 1974 and has made over 1,000 combustion chambers and nozzles as well as over 250 turbines for the Ariane rocket to date. ||