INDO DEFENCE 2016 EXPO & FORUM

SHOW DAILY 3

Friday 4 November 2016

At the Opening Ceremony (from left to right): Brigadier General Jan Pieter Ate, Director of Technology and Defence Industry Indonesia MoD; General (Rtd) Ryamizard Ryacudu, Minister of Defence; Admiral Supandi, Chief of Staff of the Indonesian Navy; Jusuf Kallas, Vice-President of Indonesia; Tjahjo Kumolo, Minister of Interior; and Marshal Agus S, Chief of Staff of the Indonesian Air Force

Until the next time

As the present seventh edition of Indonesia's tri-service exposition and forum is nearing completion, it can already be hailed as a great success and the country will be looking forward to exceeding participation in 2018. The Indonesian Ministry of Defence (MoD) has reported a total of 844 companies taking part this year, an increase of about 25 per cent compared with the previous event two years ago. Official delegations also increased considerably, up to 175 from 30 countries.

According to Brigadier General Jan Pieter Ate, a senior official at the MoD's Directorate General of Defense Potential, which co-hosts the exhibition, 573 of these companies are from abroad while the rest are local. "The growth in the numbers is equal across both local and foreign companies," said the Brigadier General, adding that the participation of international military firms in Indonesia's defence procurement programmes will help to bolster the technical capabilities of local industries. The Indonesian Armed Forces has a number of significant modernisation programmes planned across all its three branches.

The growing number of exhibitors at the Indo Defence exhibition is a reflection of growing defence spending in the country. Figures released by IHS Markit in October indicate that Indonesia will have the fifth fastest growing defence budget in the world between 2016 and 2025, with an annual compound growth rate of 4.7 per cent, equating to a spend of more than $20 billion on procurement activities over the period.

IHS Jane's

The Marder Medium Tank RI for Indonesia has big improvements over earlier versions

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Anti-submarine warfare rocket and launcher system to counter the threat in littoral waters

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Numerous Indonesian companies are involved in a flourishing UAV technology sector

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UBAH ANCAMAN MENJADI **TARGET SASARAN**

GENERASI BARU: **RBS 70 NG VSHORAD**

Saat ini pasukan tempur sangat bergantung pada akurasi dan fleksibilitas alutsista yang mereka miliki. Sistem RBS 70 NG VSHORAD yang portabel, dengan kemampuan sasaran 24 jam, telah dikembangkan untuk memenuhi medan tempur paling menantang dari kapal laut sampai operasi darat.

Layar tampilan yang terintegrasi, termasuk alat bantu operator yang paling canggih, seperti pelacak otomatis dan penanda sasaran visual. Semua ini dikombinasikan dengan presisi yang tinggi dan penunjuk laser untuk menghasilkan sistem pertahanan udara berbasis darat dengan kemampuan yang tak tertandingi.

Dengan lebih dari 20 pengguna teknologi ini di seluruh dunia, RBS 70 secara operasional terbukti dan cocok untuk digunakan dalam berbagai kondisi ataupun dalam situasi peperangan elektronik.

Dengan filosofi ***thinking edge*** dari Saab yang memperkuat kapabilitas operasional, maka pasukan tempur akan mencapai target sasarannya.

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Trucks for export

Tata Motors LPTA 715 (4x4) General Service truck (left) and the LPTA 2038 (6x6) high mobility vehicle

BY CHRISTOPHER F FOSS

Indian company Tata Motors (Hall D, Stand 228) is displaying two of its latest production cross-country military trucks, the LPTA715 and the LPTA 2036.

The Tata LPTA 715 (4x4) is being shown in the Troop Carrier General Support (GS) role, with a two-door fully enclosed cab and the cargo area at the rear fitted with bows and a tarpaulin cover. According to Tata, it has delivered more than 50,000 to the Indian Army and normally delivers 3,000 units a year.

The second vehicle being shown is the LPTA 2036 (6x6) High Mobility Vehicle (HMV), with the Indian Army placing a contract for 1,800 units. This is fitted with a forward control cab equipped with a heating, ventilation and air conditioning (HVAC) system for maximum crew comfort. It is powered by a Cummins diesel developing 370hp coupled to a manual transmission, and a central tyre pressure system is fitted for improved cross-country mobility. To of the rear of the cab is a hydraulically operated mechanical handing crane, and a front-mounted self-recovery winch is also fitted.

The company is also moving into the armoured fighting vehicle domain and has built a single example of the Kestrel (8x8) infantry fighting vehicle (IFV) to meet the potential requirements of the Indian Army. It is the first vehicle of its type to be designed and built in India in cooperation with the Indian Defence Research and Development Organisation.

Kestrel has a hull of all-welded steel armour with an applique passive armour package and is fully amphibious. Gross vehicle weight is scalable from 22.5 up to 26 tonnes and it typically has a crew of two and ten dismounts. A wide range of weapon systems can be mounted on the roof, such as the complete turret of the Russian BMP-2, which is used by the Indian Army.

ILSV to enter production

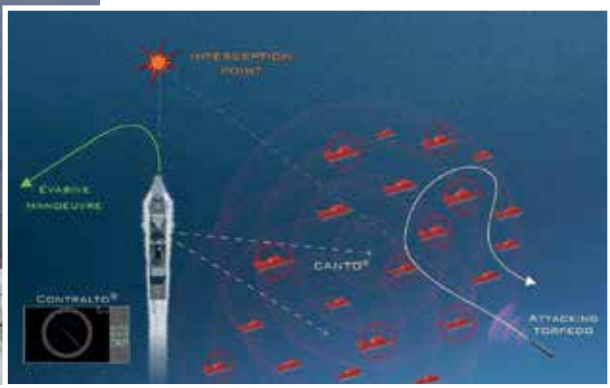
The Indonesia Light Strike Vehicle (ILSV) will enter production is 2017 with an undisclosed customer placing an initial contract for 20 units. Prime contractor for the ILSV is Pt Jala Berikat Nusantara Perkasa (Hall D, Stand 244) and the vehicle is based on a Toyota Land Cruiser (4x4) chassis fitted with an all-welded monocoque steel hull.

The ILSV example being shown at Indo Defence 2016 is in the right-hand drive configuration and outfitted for the armoured personnel carrier (APC) mission. In addition to the commander and driver seated to the rear of the protected diesel engine compartment, space is provided for six dismounts to the rear. Each of these are provided with individual blast-attenuating seats that fold up when not required. Crew and dismounts can rapidly enter and leave via two doors in either side and a larger single door at the rear.

Firing ports and associated vision devices are provided in the rear troop compartment and there is a mounting on the roof for a 7.62mm machine gun.

Standard equipment includes an air conditioning system and a front- mounted electrically operated winch for self-recovery operations. Gross vehicle weight is typically around 2,755kg with the 175hp engine giving a maximum road speed of up to 100km/h.

The first example of the ILSV shown in 2014 had an open compartment towards the rear, but the vehicle shown at Indo Defence 2016 has the fully enclosed body.



***Main picture*: C-Guard live firing from the frigate HDMS *Iver Huitfeldt*. *Below*: CANTO acoustic countermeasures concept of operations**

Standing Guard

BY RICHARD SCOTT

Terma (Hall D, Stand 004) has successfully demonstrated the integration of an anti-torpedo countermeasure into its C-Guard shipborne soft-kill weapon system.

Already in service on board the Indonesian Navy's (TNI-AL) four Diponegoro-class corvettes, and shortly to enter service on board the TNI-AL's two new PKR frigates, the C-Guard system was originally designed to deploy 130mm chaff and infrared countermeasures to decoy anti-ship missile threats. The system combines 130mm launchers with a command and control subsystem using advanced algorithms to compute optimum decoy placement and an evasive course to steer.

Terma has now worked with DCNS to jointly develop a semi-automatic torpedo defence embodiment for C-Guard utilising the CANTO anti-torpedo decoy. This solution also uses the 130mm C-Guard launchers to launch the CANTO decoy through the embedded CONTRALTO reaction software module.

In May 2016, Terma, DCNS and Chemring Countermeasures successfully conducted joint operational trials of this new torpedo defence functionality. The trials, facilitated by the Royal Danish Navy (RDN) and the Danish Defense Acquisition and Logistics Organization, were performed from the RDN frigate HDMS *Iver Huitfeldt*.

According to Terma, this test success means C-Guard is now "the first and currently the only" 130mm decoy launching system fully integrated with the CONTRALTO module and the CANTO 130mm expendable anti-torpedo countermeasure.

More than 150 C-Guard systems have been sold to date.

Aside from Indonesia, variants of the system have also been sold to Australia, Denmark, Chile, the Netherlands, Norway, Romania and the USA.

Submarine ESM success

Aselsan, a Turkish Armed Forces Foundation company, is continuing to develop its capability in submarine electronic warfare (EW) on the back of recent contracts for the Turkish Naval Forces Command and export.

The company's first-generation ARES-2NS submarine electronic support measures (ESM) is already in service on board two modernised Ay-class Type 209/1200 submarines, and has been specified for the six Type 214 boats being procured under the New Type Submarine Project.

Aselsan (Hall A, Stand 083) has subsequently developed the second-generation ARES-2SC ESM system. Covering the 2-18GHz frequency band, the ARES-2SC ESM system intercepts, detects and identifies radar signals, and provides high direction-finding accuracy.

As well as a dedicated ESM mast antenna, the ARES-2SC system features a separate omnidirectional radar warning receiver (RWR) antenna designed for installation on periscopes.

Company officials told the *Show Daily* that Aselsan is now developing a third-generation submarine EW system that will combine the functions of radar ESM and communications ESM in a single antenna. It is expected that this solution will be offered for the forthcoming modernisation of the Turkish Naval Forces' four Preveze-class Type 209/1400s.

In addition, Aselsan has recently been selected to provide the ARES-2SC system as part of the upgrade of the Pakistan Navy's Agosta 90B submarines. In this case, it will provide the main ESM to STM (as prime contractor), while it will separately supply the periscope-mounted RWR antenna to Airbus DS Optronics for mounting on a new search periscope.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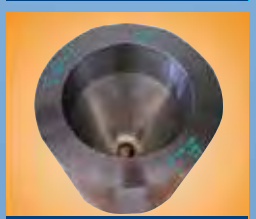
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Defense Acquisition Program Administration

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China pushes SAM

CHRISTOPHER F FOSS

China Aerospace Long-March International (Hall B, Stand 038) is expanding its product range of surface to air missiles (SAM) with the introduction of the FB-10, which is described as a "mobile light air defence missile system".

The system is integrated onto a 6x6 cross-country truck chassis to give it a high level of mobility. Mounted on the rear platform is the turntable-type launcher with four missiles in the ready-to-launch position either side. The surveillance radar is mounted on the turntable on the top at the rear and can be lowered to reduce the overall height for travelling. The optical sensor pod is mounted between the two banks of four missiles.

According to the prime contractor, the infra-red fire-and-forget missiles can engage targets flying at an altitude from 15m to 5,000m and with a maximum interception range of 10km. Reaction time is quoted as just nine seconds with a single shot kill probability of 0.8.

A typical FB-10 battery would consist of six units linked together to enable target information to be rapidly exchanged and with one of the six units acting as overall command and control unit.

Radar upgrade

Local electronics group PT Len (Hall D, Stand P002-BUMNIS) has disclosed details of an upgrade implemented for the legacy DA 05 surveillance radars fitted on board three of the Indonesian Navy's six Ahmad Yani-class frigates. Built by what was Hollandse Signaalapparaten, the DA 05 is a medium-range S-band radar used for surveillance and target indication. The PT Len upgrade replaces the original magnetron transmitter with a 5kW solid-state power amplifier, and introduces digital signal processing while retaining the existing antenna and waveguide. Key features of the modernised DA 05 radar include frequency agility, 1,000 selectable channels, moving target indication, and automatic plot extraction and multi-hypothesis tracking. The entire unit has been re-architectured using COTS electronics.

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Marder Medium Tank RI is cost-effective solution

BY CHRISTOPHER F FOSS

Rheinmetall Landsysteme of Germany has brought its latest Marder Medium Tank RI (Republic of Indonesia) to Indo Defence 2016.

The Marder 1 infantry fighting vehicle (IFV) was in production for the German Army between 1971 and 1975 and the latest 1A5 IFV will remain in service for some years. The company has already sold surplus upgraded Marder 1A3 IFVs to Chile and Indonesia. The Medium Tank RI is essentially an upgraded Marder 1A3 platform fitted with an Italian Oto Melara (today Leonardo) HITFACT three person turret. The most significant improvement to the platform is the raised roof line to provide more internal volume, upgraded MTU diesel engine, which now develops 690hp, upgraded suspension for improved mobility, and a modular armour package.

The HITFACT turret is armed with a 105mm rifled gun fitted with a thermal sleeve, fume extractor, muzzle brake and muzzle reference system. A 7.62mm machine gun (MG) is mounted co-axial with the main armament and if required, a 7.62mm MG could be mounted on the roof. HITFACT is a well-proven turret and is already installed on the Centauro (8x8) mobile gun system currently deployed by Italy, Jordan and Spain. The turret is fitted with a computerised fire control system (FCS) coupled to stabilised commander's and gunner's sights, which both have day/thermal channels and a laser rangefinder.

The Marder Medium Tank RI would not engage other main battle tanks; its primary role is to support mounted and dismounted infantry using its 105mm gun, which can fire a wide range of ammunition natures.

Rheinmetall believes that its Marder 1 Medium Tank RI is a cost-effective solution for Indonesia, because vehicles could be delivered about two years after contract award and the Indonesian Army is already familiar with the basic Marder 1A3 platform.

The same upgraded platform used for the Marder 1 Medium Tank RI is also used for other applications and has been shown in the armoured personnel carrier (APC) configuration fitted with a Kongsberg remote weapon station (RWS) armed with a .50 M2 HB MG.

Thailand's First Win for Malaysia

Chaiseri Defense of Thailand (Hall A, Stand 254) is delivering a batch of 20 of its latest First Win (4x4) light armoured vehicles (LAV) to DEFTECH in Malaysia, where they will be fitted with local equipment and delivered to the Malaysian Army.

In addition to being used as an armoured personnel carrier (APC), the First Win is being marketed by Chaiseri Defense for a wide range of other applications such as armoured reconnaissance and an infantry fighting vehicle.

The Royal Thai Army has taken delivery of a batch of 21 First Win LAVs and is expected to place a contract for an additional 15 vehicles. The Thai Ministry of Justice Department of Special Investigation has taken delivery of 18 vehicles.

The Thai Police has a requirement for the First Win, and their versions are expected to be powered by a Cummins 250hp diesel engine rather than the 300hp engines fitted to current production vehicles.

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SDRs for Philippine Coast Guard

BY RICHARD SCOTT

The Philippine Coast Guard has selected Rohde & Schwarz (Hall A, Stand 117) to provide secure communications and radio monitoring equipment to enhance the reconnaissance, pursuit and communications capabilities of its 10 new Japanese-built Multi-Role Response Vessels (MRRVs).

The Rohde & Schwarz scope of supply includes both M3SR Series 4400 and Series 4100 software-defined radios, which ensure secure voice and data communications. The M3SR Series 4400 radios provide continuous AM and FM transmission coverage in the VHF and UHF frequency range from 100-512MHz. The M3SR Series 4100 radios deliver reliable and easy to set up shortwave communications.

An automatic message-handling system is also part of the package. The MRRVs will have situational awareness through the Map Track, email, chat and file transfer features of the Postman III software.

Postman III enables efficient data transmission over radio networks by supporting IP-based applications. It has been optimised for communications over HF and VHF/UHF radio networks with variable data rates. Furthermore, because it is IP-based, it can interface with standard IP infrastructures such as LAN/WAN and satcom.

The DDF205 monitors radio emissions from 8kHz to 6GHz and covers direction finding of signals ranging from 20MHz to 3GHz. The DDF205 combines the new, highly integrated EB500 monitoring receiver with the accurate correlative interferometer DF method. This unique combination offers precise radio direction finding with sensitive radio monitoring capabilities. The DDF205 is compact and has low power consumption. It also features wideband DF antennas and the ability to be powered from a DC source.

The first MRRV, BRP *Tubbataha*, arrived in the Philippines in August 2016. The 44m-long vessels are being built by Japan Marine United Corp at its Yokohama Shipyard. Rohde & Schwarz subsidiaries in the Philippines and in Japan have worked together to co-ordinate the integration of the equipment package on the MRRVs.

Second landing ship tank in build

Having delivered the landing ship tank (LST) KRI *Teluk Bintuni* to the Indonesian Navy (TNI-AL) last year, shipbuilder PT Daya Radar Utama (Hall A, Stand P020) is now working on additional orders for military logistics vessels. The company confirmed to the *Show Daily* that it has recently received an order from the Ministry of Defence to build two 99m-long Landing Craft Utility vessels for the Indonesian Army (TNI-AD). Delivery is planned from the end of 2018.

In addition, PT Daya Radar Utama is working on the build of the second LST for the TNI-AL. While derived from *Teluk Bintuni*, the absence of a hangar means the design is slightly smaller with regard to both length and beam. First steel was cut in June 2016, with handover planned for early 2018.

Sealift vessel for Philippines

Indonesian shipbuilder PT PAL (Hall D, Stand DP403) has launched the future BRP *Davao del Sur*, the second Tarlac-class strategic sealift vessel (SSV) for the Philippine Navy, from its Surabaya shipyard.

Being built under a $92 million contract from the Philippines Department of National Defense in June 2014, the two SSVs – the design of which is based on the Indonesian Navy's Makassar-class landing platform dock – are the largest ships ever acquired by the Philippine Navy. They are also the first warships to be exported from Indonesia.

The first SSV, BRP *Tarlac*, was delivered to the Philippines in May this year and was commissioned into the navy on 1 June.

Sister ship *Davao del Sur* was launched on 29 September. PT PAL expects to deliver the ship by the end of May 2017.

The 123m-long SSVs have a full load displacement of 11,580 tonnes, and are capable of transporting an embarked military force of more than 600 troops.

Truk untuk ekspor

BY CHRISTOPHER F FOSS

Perusahaan India Tata Motors (Hall D, Stand 228) memamerkan dua truk militer lintas- negara produksi terbarunya, LPTA 715 dan LPTA 2306. LPTA 715 milik Tata diperlihatkan sebagai *Troop Carrier General Support* (GS), dengan dua pintu dan bagasi di bagian belakang yang dilengkapi busur untuk mengikat kain terpal sebagai penutupnya. Menurut Tata, telah dikerahkan lebih dari 50.000 unit ke tentara India dengan pengiriman kurang lebih 3.000 unit per tahunnya. Kendaraan kedua yang diperlihatkan adalah LPTA 2036 (6x6) *High Mobility Vehicle* (HMV) yang telah dikontrak tentara India sebanyak 1.800 unit. Kendaraan ini dilengkapi dengan ruang kontrol depan yang dipasang pemanas, pendingin ruangan dan ventilasi untuk kenyamanan para awaknya. Mesin disel Cummis dengan 370hp dan transmisi manual yang menggerakan kendaraan ini, ditambah roda ditengah untuk meningkatkan mobilitas kendaraan tersebut. Dibelakangnya terdapat derek hidrolik dan mesin derek *self-recovery* di depannya.

Perusahaan Tata juga berwewenang atas *armoured fighting vehicle* (APV) dan telah membuat sebuah contoh kendaraan *infantry fighting vehicle* (IFV), Kestrel (8x8) untuk memenuhi kebutuhan para prajurit India. Ini merupakan kendaraan pertama dari tipenya yang didesain dan dibuat di India, bekerjasama dengan Defence Research and Development Organisation.

Kestrel memiliki ruang lambung berlapis baja dan amfibi. Berat kotor kendaraan ini kurang lebih 22.5 hingga 26 ton dan dapat dinaiki oleh dua pengemudi dan sepuluh prajurit. Bermacam-macam senjata dapat dinaikkan ke atas atapnya seperti; kubah yang dilengkapi dengan BMP-2 Rusia yang selama ini dipakai tentara India.

Tata Motors LPTA 715 (4x4) truk General Service (kiri) dan LPTA 2038 (6x6) kendaraan high mobility

ILSV siap diproduksi

Indonesia Light Strike Vehicle (ILSV) akan diproduksi di tahun 2017 setelah klien rahasia menyetujui kontrak untuk 20 unit. Kontraktor utama ILSV; PT. Jala Berikat Nusantara Perkasa (Hall D, Stand 244) dan kendaraan ini dibuat bedasarkan model Toyota Land Cruiser (4x4) chassis yang dipasang ruang lambung monokok baja (monocoque steel).

Contoh ILSV yang dipamerkan di Indo Defence 2016 merupakan kendaraan dengan setiran di kanan dan konfigurasi lengkap untuk *misi armoured personnel carrier* (APC). Selain kepala komando dan pengemudi dapat duduk di kompartemen mesin disel yang aman, ada pula enam ruang untuk penumpang lainnya dibelakang. Masing-masing ruang ini dilengkapi dengan kursi ledak yang dapat dilipat ketika tidak dipakai.

Para awak dapat keluar masuk lewat dua pintu di sisi masing-masing atau lewat satu pintu besar di belakang.

Tempat untuk menembak dan perlengkapan pengintaian dapat dipasang di kompartemen prajurit yang dibelakang beserta senapan mesin 7.62mm dipasang diatas atapnya.

Peralatan standar yang ada termasuk pendingin ruangan (AC), dan mesin derek otomatis di depannya. Berat kotor kendaraan ini kurang lebih 2,755kg dengan mesin 175hp yang memberi kecepatan maksimum hingga 100km/jam.

Contoh ILSV pertama yang diperlihatkan di tahun 2014 memiliki sebuah kompartemen terbuka yang mengarah ke belakang, akan tetapi kendaraan yang dipamerkan di Indo Defence 2016 tertutup dengan lapisan baja.

Light and versatile

Czech company Ceska Zbrojovska (Hall A, Stand 227), a long-standing small arms manufacturer, is introducing the latest weapon of its well-established CZ brand, the new fully ambidextrous CZ Bren 2 assault rifle, to the Southeast Asian market. Retaining the best features of its predecessor, the CZ 805 Bren, the Bren 2 was designed to meet the most demanding requirements of special units and armed forces operating anywhere in the world.

Available in 5.56x45mm NATO calibre, the rifle is aimed at users who require a light, versatile and absolutely reliable weapon under extreme conditions. The weapon is based on the well-proven gas system with a three-position adjustable regulator of the piston mechanism.

Low weight and compact dimensions for quick and comfortable handling and a non-reciprocating cocking handle during shooting are among its stated advantages.

It is available in two variants. The A1 assault rifle model weighs 3.05kg and has a 279mm barrel, measuring 798mm with its foldable telescopic butt fully extended. In contrast, the 2.95kg A2 carbine is equipped with a 203mm barrel and measures 725mm at full stretch. For close quarters combat the butt-stock can be folded sideways, with the assault rifle and carbine shortened to 570mm and 497mm respectively.

The Bren 2 also features an enlarged fire selector with single and automatic fire modes – eliminating the two-round burst mode of the earlier model – with a rate of fire of approximately 850 rounds per minute. Barrel life is rated at 20,000 rounds before replacement.

Four MIL-STD-1913 rails enable a range of accessories to be mounted, with foldable iron sights mounted on the monolithic upper rail while the three and nine o'clock rails can be removed if necessary. A new three-pronged suppressor is also included, which has been designed to reduce muzzle flash and noise.

Following successful trials, deliveries to launch customer Army of the Czech Republic (ACR) are beginning this week.

Marder Medium Tank RI merupakan solusi hemat

BY CHRISTOPHER F FOSS

Rheinmetall Landsysteme dari Jerman telah membawakan Marder Medium Tank RI (Republik Indonesia) terbarunya ke Indo Defence 2016 kali ini.

Marder 1 infantry fighting vehicle (IFV) pernah diproduksi untuk tentara Jerman pada tahun 1971 dan 1975, dan 1A5 IFV terbarunya akan tetap dioperasikan hingga beberapa tahun. Perusahaan ini telah mendapat untung dalam penjualan Marder 1A3 IFV yang sudah diupgrade ke Chili dan Indonesia. Medium Tank RI sebenarnya merupakan penggabungan *platform* Marder 1A3 yang telah diupgrade dengan kubah tiga orang HITFACT dari Italian Oto Melara (sekarang dinamakan Leonardo). Yang paling menonjol dari *platform* tersebut yaitu atap yang ditinggikan untuk membesarkan volume internal, mesin disel MTU yang sudah diupgrade, peningkatan suspensi untuk mobilitas dan ruang senjata.

Kubah HITFACT dipersenjatakan dengan senapan rifle 105mm yang dilengkapi dengan pegangan thermal, pencabut asap, *muzzle break* dan *muzzle reference system*. Sebuah senapan mesin 7.62mm dipasangkan diatas alat perang utama dan apabila diperlukan, senapan mesin 7.62mm ini juga dapat dipasangkan diatas atap kendaraan. Kubah HITFACT sudah terbukti bagus dan telah diinstal di mobile gun Centauro (8x8) yang dikerahkan oleh Italia, Jordania dan Spanyol. Kubah tersebut dilengkapi dengan komputer *fire control system* (FCS), ditambah dengan tempat pengintai untuk komando dan penembak yang telah dipasang jaringan *day/thermal* beserta laser pelacak.

Marder Medium RI tidak dapat digunakan bersama tank tempur lainnya; peran utama tank ini adalah untuk mendukung tentara angkatan darat dalam penembakan dengan senapan 105mm ke segala arah.

Rheinmetall yakin bahwa Marder 1 Medium Tank RI merupakan solusi hemat biaya untuk Indonesia, karena kendaraan ini dapat dikirim dalam kurun waktu kurang lebih dua tahun setelah kontrak disetujui dan tentara Indonesia sudah cukup familiar dengan platform dasar Marder 1A3.

Platform yang telah diupgrade ini juga dipakai untuk kebutuhan lainnya dan konfigurasi yang dipasang dengan sebuah 50 M2 HB MG dari Kongsberg *remote weapon station* (RWS), telah dicoba di *armoured personnel carrier* (APC).

Kemenangan pertama Thailand bagi Malaysia

Chaiseri Defense of Thailand (Hall A, Stand 254) mempersembahkan 20 kendaraan *light armoured vehicles* (LAV) First Win (4x4) terbarunya kepada DEFTECH di Malaysia, dimana disana dipasangkan dengan perangkat lokal dan diserahkan untuk tentara Malaysia.

Selain sebagai *armoured personnel carrier* (APC), First Win dipromosikan Chaiser Defense untuk aplikasi lain seperti misi perlindungan mata-mata dan sebagai kendaraan tempur para prajurit.

Prajurit Kerajaan Thailand telah mengirim 21 First Win LAV dan berharap dapat menambah kontrak untuk 15 kendaraan tambahan. Thai Ministry of Justice Department of Special Investigation telah menerima 18 kendaraan.

Kepolisian Thailand memiliki kebutuhan sendiri untuk First Win, dimana versi mereka diharapkan dapat memakai mesin disel Cummis 250hp dan bukan mesin disel 350hp yang diproduksi saat ini.

ADS-B Out update

Swiss company RUAG Aviation (Hall D, Stand 178) has announced that it has earned European Aviation Safety Agency (EASA) Supplemental Type Certification (STC) for the Automatic Dependent Surveillance Broadcast Out update as mandated by both EASA and the Federal Aviation Administration (FAA). The upgrade solution was purpose-developed to be fast and economical, and can be implemented with minimum downtime. The STC is available for upgrades to Dassault Falcon 2000 and 2000EX platforms working on Rockwell Collins' GPS 4000S and ProLine 21 or ProLine 4, and is DO260B certified for meeting the 2020 compliance date.

The ADS-B Out is a precise satellite-based surveillance using GPS technology to broadcast an aircraft's position, and other aircraft data, to other ADS-B capable aircraft and Air Traffic Control (ATC) centres.

ADS-B Out update in Falcon 2000 cockpit

RUAG is an authorised service centre for most major OEMs and is a partner to the Swiss Armed Forces and other international air forces.

Intelligent sight

US company Steiner Optics (Hall A, Stand 069) is promoting its new 6x40 Intelligent Combat Sight (ICS), which integrates a laser rangefinder and a ballistic calculator into a rugged and compact tactical weapons sight. The ICS greatly increases accuracy and first round hit probability for infantry soldiers and tactical operators using small calibre weapons, yet is simple to operate and requires minimal training. Also on show is the M830r Laser Range Finder 1535 nm, which combines a Steiner binocular with a powerful class-1, eye-safe laser, plus a SUMR reticle for targeting redundancy in case of battery failure, for measuring sizes and distances of objects and for out-of-range targeting.

Pembangunan tangki kapal kedua

Setelah pengiriman *landing ship tank* (LST) KRI Teluk Bintuni ke Angkatan Laut Indonesia (TNI-AL) tahun lalu, perusahaan pembuat kapal PT Daya Radar Utama (Hall A, Stand P020) saat ini sedang mengerjakan order tambahan untuk pembuatan kapal logistik bagi kebutuhan militer. Perusahaan ini telah dikonfirmasi oleh *Show Daily* bahwa baru-baru ini telah menerima order dari Kementrian Pertahanan untuk membangun dua kapal *Landing Craft Utility* sepanjang 99m untuk TNI Angkatan Darat Indonesia, Pengiriman direncanakan akan dimulai pada akhir tahun 2018.

Di sisi lainnya, PT Daya Radar Utama saat ini sedang mengerjakan pembangunan LST kedua untuk TNI-AL. Walaupun berasal dari Teluk Bintuni, dengan tidak adanya hangar, maka desain lambung kapal dibuat lebih kecil. Pemotongan baja yang pertama dilakukan pada bulan Juni 2016 dengan rencana penyerahan dilakukan pada awal tahun 2018.

Kapal angkut untuk Filipina

Pabrik perkapalan Indonesia PT PAL (Hall D, Stand DP403) telah meluncurkan BRP Davao del Sur; Tarlac-clas strategic sealift vessel (SSV) kedua untuk Angkatan Laut Filipina dari Surabaya. Dibangun dengan kontrak kerja senilai 92juta dolar AS dari Philipines Department of National Defense pada bulan Juni 2014, kedua SSV - didesain seperti *landing platform* Angkatan Laut Indonesia di Makassar, merupakan kapal terbesar yang pernah diakuisisi oleh Angkatan Laut Filipina.

SSV pertama, BRP Tarlac dikirim ke Filipina pada bulan Mei tahun ini dan mulai dioperasikan pada tanggal 1 Juni. Kapal pasangannya, Davao del Sur diluncurkan pada tanggal 29 September. PT PAL diharapkan dapat mengirim kapal tersebut pada akhir bulan Mei 2017.

SSV sepanjang 123m ini beratnya mencapai 11,580 ton dan mampu mentransport tentara militer lebih dari 600 prajurit.

SDR untuk penjaga pantai Filipina

BY RICHARD SCOTT

Penjaga pantai Filipina telah memilih Rohde & Schwarz (Hall A, Stand 117) untuk menyediakan sistem komunikasi yang aman dan alat pengawas radio agar dapat meningkatkan misi mata-mata, pengejaran dan kapabilitas komunikasi 10 kapal Multi-Role Response Vessels (MRRV) yang diproduksi di Jepang.

Pencakupan suplai dari Rohde & Schwarz merangkup dua software-defined radio yaitu M3SR Series 4400 dan Series 4100, yang dapat mengamankan suara dan data komunikasi. Radio M3SR Series 4400 memberikan liputan transmisi AM dan FM yang berkelanjutan di frekuensi VHF dan UHF yang berkisar dari 100-512MHz. Sedangkan radio M3SR dapat membuat komunikasi dengan gelombang pendek yang mudah dan terpercaya.Sistem penerima pesan otomatis juga termasuk di dalamnya.

MRRV memiliki pelacakan situasi lewat fitur Map track, email, chat dan file transfer dengan software Postman III. Postman III dapat memberikan data yang efisien lewat jaringan radio dengan menggunakan aplikasi IP-based. Perangkat ini telah dioptimalkan untuk berkomunikasi lewat jaringan radio HF dan VHF/UHF dengan variasi hitungan data. Dikarenakan ini merupakan aplikasi IP-based maka perangkat ini dapat dikombinasi dengan infrastruktur IP yang standar seperti LAN/WAN dan satcom.

Emisi radio DDF205 dari 8kHz ke 6GHz dan meliput sinyal dari segala arah sejauh 20MHz hingga 3GHz. DDF205 mengkombinasi monitor penerima EB500 terbaru dan yang telah diintegrasi dengan metode *interferometer* DF yang akurat. Kombinasi unik ini memberikan kapabilitas pencarian arah radio yang sensitif. DDF205 ini compact dan hemat tenaga, juga dilengkapi dengan antena *wideband* DF dan bisa digerakkan dari tenaga DC.

MRRV yang pertama, BRP *Tubbataha*, sampai di Filipina pada bulan Agustus 2016. Kapal sepanjang 44m dibuat oleh Japan Marine United Corp di pabrik perkapalan yang terletak di Yokohama. Perusahaan subsidi Rohde & Schwarz yang berada di Filipina dan Jepang juga telah bekerjasama untuk integrasi segala perlengkapan di MRRV.

Melawan ancaman kapal selam

BY RICHARD SCOTT

Berkembangnya kemajuan teknologi kapal selam di pesisir pantai menjadi masalah bagi banyak angkatan laut di wilayah regional. Untuk melawan ancaman-ancaman tersebut, Roketsan (Hall A, Stand 043) dari Turki bekerjasama dengan Aselsan, telah mengembangkan misil *anti-submarine warfare* (ASW) generasi terbaru dan sistem peluncurnya.

Didesain untuk melawan target di kedalaman antara 15m hingga 30m, misil ASW dapat ditembakkan dengan *single* atau *salvo mode* dari peluncur *six-barrel* yang dibuat oleh Aselsan. Jarak tembakan berkisar di 500m dan 2000m.

Kepala pendorongnya memuat 12kg bahan peledak IM. Besarnya ledakan dapat dikontrol terpisah dengan menggunakan *time-setting fuze*. Sistem pengontrol ledakan mendapatkan data dari sistem tempur dan ruang navigasi kapal. Menurut Roketsan, sistem tersebut dapat melawan sasaran yang dilacak oleh spesifik sonar secara otomatis.

Kapal patroli angkatan laut Turki P1200 telah dilengkapi dengan misil ASW yang baru. Masing-masing kapal dinaikkan sebuah peluncur *six-barrel* buritan kapalnya.

Pengembangan senjata

BY DAVID DONALD

Dislitbangau (Dinas Penelitian dan Pengembangan TNI Angkatan Udara Republik Indonesia) disororti karena memamerkan bermacam-macam senjatanya. Institusi ini mendesain rangkaian senjata untuk penyebaran udara bagi pesawat asli negara Barat dan Rusia, agar dapat dicocokkan di inventaris yang sudah terdaftar dalam tempat penyimpanan data.

Jajaran bom termasuk P-250, P-500-L dan BTN-250 untuk pesawat Rusia seperti Su-27/30, dan BT-125/250/500; sedangkan bom umum dimuat untuk pesawat negeri Barat seperti pesawat F-016 dan Hawk. Senjata ini persis seperti Mk 80. Keseluruhannya disempurnakan dengan senjata BLA.

Dislitbangau juga telah mengembangkan bom yang ada penunjuk GPS, BP-250 X1 yang diambil dari senjata free-fall BT-250. Bom yang dilengkapi dengan penunjuk ini terdapat sayap dan ekor berisi GPS receiver, pengontrol, baterai dan sirip yang bisa bergerak. Senjata ini memiliki standar NATO agar dapat dibawa oleh pesawat F-16 dan Hawk, walaupun senjata ini masih dalam pengerjaan yang dilakukan bersama TNI Angkatan Udara Republik Indonesia.

Skipper UUV telah lolos

Di pameran Indo Defence 2016 kali ini ada prototipe Skipper, *unmanned underwater vehicle* (UUV) yang dikembangkan oleh perusahaan lokal LABINLEK (Laboratorium Induk Elektronika Pengembangan Ilmu dan Teknologi) di Surabaya.

UUV ini mempersembahkan empat *vectorable thrusters* dan sayap besar untuk meningkatkan stabilitas, yang telah berhasil diuji coba untuk Angkatan Laut Indonesia pada bulan Juli tahun ini. Awalnya ini digunakan sebagai target torpedo mini.

Countering the submarine threat

BY RICHARD SCOTT

The proliferation of advanced submarines in littoral waters is becoming an increasing concern to many regional navies. To counter this threat, Turkey's Roketsan (Hall A, Stand 043) has developed a new generation anti-submarine warfare (ASW) rocket and launcher system in cooperation with Aselsan.

Designed to be effective against targets between 15m and 300m depth, the ASW rocket can be fired in single or salvo modes from the stabilised six-barrel launcher developed by Aselsan. Firing range is between 500m and 2,000m.

The warhead contains a 12kg high explosive IM charge. Detonation depth can be controlled remotely by using a time-setting fuze. The associated fire control system takes inputs from the ship combat system and navigation suite. According to Roketsan, the system can perform automatic target engagement on a specified sonar track.

Turkish Naval Forces' P1200 patrol boats are already equipped with the new ASW rocket launcher system. Each vessel mounts a single six-barrel launcher on its aft deck.

Weapons development

BY DAVID DONALD

Dislitbangau, the Indonesian air force's research and development institute, is highlighting its work with a range of weapons and systems being shown on its external display. The institute has designed a series of weapons for aerial deployment by aircraft of both Western and Russian origin, to match the types in the air force inventory.

The range of bombs includes P-250, P-500L and BTN-250 for Russian aircraft such as the Su-27/30, and BT-125/250/500 general-purpose bombs for Western aircraft such as the F-016 and Hawk. They are low-drag weapons similar to the Mk 80 series. They are complemented by full-size and ballistic-representative training weapons in the BLA series.

Dislitbangau has also developed a GPS-guided smart bomb, the BP-250 X1, based on the BT-250 free-fall weapon. The guided bomb has a wing kit and a tail guidance section containing GPS receiver, guidance control, battery and moveable fins. The weapon has NATO-standard lugs for carriage by F-16s and Hawks, and while still in the development phase is in limited service with the air force.

Skipper UUV breaks cover

An unusual exhibit in the Indo Defence 2016 exhibition arena is this prototype Skipper tactical unmanned underwater vehicle (UUV), developed locally by LABINLEK (Labolatorium Induk Elektronika Pengembangan) Surabaya.

The UUV features four vectorable thrusters and large wing surfaces for improved stability, and was successfully demonstrated to the Indonesian Navy in July this year. Its initial application is as a mini-mobile torpedo target equipped with a noise maker payload.

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Mission

The Project 12061E Murena-E air cushion landing craft is designed to take landing assault units and combat materiel from equipped/non-equipped shores, large-displacement landing craft and transports and land them onto non-equipped shores or in shallow littoral waters, as well as to patrol coastal and naval base/port water areas.

Features

The Project Murena-E features improved structural and seakeeping qualities thanks to the use of advanced anticorrosive alloys, extruded profiles and panels, as well as a powerful propulsion plant.

The Project Murena-E air cushion landing craft can carry either two infantry combat vehicles, or two armored personnel carriers, or three light armored vehicles, or two amphibious tanks, or one medium battle tank, or 130 fully equipped troops.

While sailing on cushion the ship can be operated and its weapons employed at wave height of up to 1.5 m and wind velocity of up to 12 m/s.

Basic specifications

Displacement, full load, t	about 150
Basic dimensions, m:	
length, on air cushion	31.3
beam, on air cushion	14.6
height overall, empty afloat	10.5
Main propulsion plant	two MT-70M main engines gas turbine
Electrical power unit	two Volvo Penta diesel generators
Propulsors	two AV-96 air propellers
Full speed, knots	not less than 55
Range, with 24-tonne load at 50 knots, n. m.	not less than 200
Endurance, days	1
Complement	12

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UAV expertise c


SDO 50V2

BY DAVID DONALD

Unmanned air vehicle technology is flourishing in Indonesia, with a number of local companies and institutions displaying their systems at Indo Defence. Unmanned technology is an area that has been earmarked by the government for investment, and while companies are benefiting from development programmes for defence, security and civilian applications, the sector's future is being assured through initiatives for university students to develop technological know-how that could be brought to bear commercially. Universities are further able to provide commercial systems for agencies that cannot afford others. A selection of the UAV exhibitors is presented below.

With an impressive display of unmanned technology, **Bhinneka Dwi Persada** (Hall A, Stand 205) has been developing UAVs since its transformation from a trade/distribution company into an engineering-based entity. The range includes the Rajawali 330 fixed-wing and 350 rotary-wing UAVs, which are based on the designs of Swiss-Swedish UAV house UMS Skeldar. The Rajawali 720 is a larger fixed-wing vehicle with an endurance of more than 24 hours.

Bandung-based **Global Inovasi Informasi Indonesia** (GIII) is showing a range of its air vehicles (Hall A, Stand P008), including the Laron series of quad-copters, and Ai450, Murai, Malinau, and Mandau fixed-wing UAVs. Malinau is the largest of them, with a 40kg maximum take-off weight and an endurance of up to eight hours. The company has also developed the GTD series of aerial target drones.

Rajawali 720

PT Indo Pacific Communication and Defence (IPCD, Hall D, Stand 234) is displaying the Tactical 240 co-axial rotor UAV, the hand-launched Tactical UAV and the Surveyor ramp-launched air vehicle. IPCD also offers a medium-altitude long-endurance UAV based on the optionally piloted version of the LH-10 Ellipse aircraft, and is delivering one to the Indonesian air force for evaluation.

In the outside display, the LSU-02, 03 and 05 are on show, developed by **Lapan**, the national institute of aeronautics and space. Earlier this year, the LSU-02 was used to update mapping data for parts of Indonesia's coastline. LSU-05 is the latest and largest air vehicle, with a maximum take-off weight of 120kg (265lb). The company is also showing a model of the LSA-MALE, an unmanned version of the Ecarys motor glider.

Lapan LSU-05

PT Dirgantara Indonesia (PTDI) is showing a model of the Wulung UAV on its stand. PTDI builds the aircraft in co-operation with PT Len, the national electronic institute that provides communications and control systems, and in association with PUNA, the unmanned division of BPPT, the agency for the assessment and application of technology. Sriti is a short-range bungee-launched UAV developed by **BPPT** being shown in the outside display area. With a two-hour endurance the vehicle is intended primarily for maritime use, including the patrol of fisheries. The naval engineering college, **STTAL**, is showing a small UAV known as Ganesa XI and based on the shape of the Cessna 182 light aircraft.

UAVs figure prominently in the displays of university projects. In the outside display, the **Aksantara Institute of Technology** in Bandung is showing a range of vehicles, including those for racing, surveillance and a vertical take-off vehicle trialling a fire extinguisher concept. The display

on show

also includes vehicles from **Lampung University**.

Universitas Gadjah Mada (Hall B, Stand P002) is showing its Elang Caraka UAV and Savinna unmanned surface vehicle. The Institut Teknologi Bandung (Hall B, Stand P001) is showing its Beta family that have been commercialised through **PT Bentara Tabang Nusantara** (Beta Surveillance Solutions). The Beta XLR fixed-wing aircraft is being used for oil and gas exploration, while the Beta Minibee is a 4kg vehicle designed to be operated by a single soldier in the field.

Meanwhile, Indonesia's rescue service, **Basarnas**, has been employing UAVs for some time, and is displaying an example on Stand P123 in Hall D. The service is using the SwissDrones Operating SDO 50V2 vehicle, a vertical take-off UAV with intermeshing rotors.

Beta Minibee

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Programme of events

Indo Defence, Indo Aerospace, Indo Marine 2016 Expo & Forum

Friday 4 November 2016

09.00 – 16.00	Seminar Indo Marine by NACE	Hall F, Seminar Room
10.00 – 13.00	Russian Pacific Fleet Site Visit	Sea Port Tanjung Priok Pier 2, shuttle and information at Trademart Building
10.00 – 17.00	Exhibition open for trade visitors and professionals only	Halls A, B, D and F, and Outdoor Space
10.45 – 17.00	Courtesy calls (scheduled appointments)	CC Room, Hall B and Mezzanine Floor, Hall D Levels 2 and 3
11.00 – 16.45	Technical Product Presentations	Theatres 1, 2 and 3, Hall B
11.30 – 16.30	Live Product Demonstrations	Outdoor Space

Saturday 5 November 2016

10.00 – 16.30	Exhibition open to the public	Halls A, B, D and F, and Outdoor Space Entrance Fee IDR50,000
10.45 – 11.45	Public coaching by APDI	Hall F, Seminar Room
11.30 – 14.30	Live Product Demonstrations	Outdoor Space
16.30	Exhibition closes	

Sea, Air and Land Live Demonstration Schedule

Friday 4 November 2016

TIME	NAME OF EXHIBITOR	THEME OF DEMONSTRATION	MARK
13.15 – 13.30	KEMENDIKBUD	Pencak Silat Cempaka Putih "SMK Kelautan dan Perikanan Puger Jember-Jatim"	Land Demo
13.45 – 14.00	JALA BERIKAT NUSANTARA	ILSV tactical vehicle	Land Demo
14.15 – 14.30	TEHNIKA INA	Gaz Tiger Gunner (4x4 tactical vehicle)	Land Demo
14.45 – 15.00	TNI AD		
15.15 – 15.30	TNI AL		
15.45 – 16.00	APDI	Drone Parade	Air Demo
16.15 – 16.30	PINDAD		

Saturday 5 November 2016

TIME	NAME OF EXHIBITOR	THEME OF DEMONSTRATION	MARK
11.15 – 11.30	KEMENDIKBUD	Pencak Silat Cempaka Putih "SMK Kelautan dan Perikanan Puger Jember-Jatim"	Land Demo
11.30 – 11.45	GLOBAL INOVASI INFORMASI INDONESIA	Murai and Laron (UAVs)	Air Demo
11.45 – 12.00	JUPITER AEROBATIC TEAM	Aerobatic Show	Air Demo
13.15 – 13.30	APDI	Drone Parade	Air Demo
13.45 – 14.00	JALA BERIKAT NUSANTARA	ILSV tactical vehicle	Land Demo
14.15 – 14.30	TEHNIKA INA	Gaz Tiger Gunner (4x4 tactical vehicle)	Land Demo
14.45 – 15.00	PINDAD		
15.15 – 15.30	IOF	Indo Defence Rock Crawling	Land Demo
15.45 – 16.00	IOF	Indo Defence Rock Crawling	Land Demo

Technical Product Presentations

THEATRE 1, HALL B

11.00 – 11.45

AMPED FIVE Video Forensic System, presented by Matthew Cook, Omni Integer Pte Ltd

13.00 – 13.45

Magnetic Risk Management, presented by Philippe Novelli, ECA Group

14.00 – 14.45

Modernisasi Sitem Pertahanan, presented by Miftah Salam, PT SEMBADA KARYA MANDIRI

15.00 – 15.45

Advanced simulation solutions for Pacific area armies, presented by Krylov Mikhail, PF Logos

16.00 – 16.45

FCC (Firing Control Computer)/Aldabak (Alat Pengendali Tembak), presented by Davy Lityo, Wahana Sarana Baladika

THEATRE 2, HALL B

11.00 – 11.45

Emirates Special Vehicles – Titanium Falcon and Titanium 200, presented by Abu Bucker, Emirates Special Vehicle

13.00 – 13.45

New signal acquisition modules, IP, standards and VPX solutions for radar, SDR and SIGINT applications, presented by Zhao Heng, Dynamic C4 Pte Ltd

14.00 – 14.45

Long-range drone coaching clinic, presented by Akbar Marwan, APDI

15.00 – 15.45

Modifikasi drone coaching clinic, presented by Rahmat Dharmawan, APDI

16.00 – 16.45

Cyber threats awareness, presented by Andreas Linde, PT Putra Elang Angkasa Raya

THEATRE 3, HALL B

11.00 – 11.45

Tanfoglio, Komodo and Meopta, presented by Massimo Tanfoglio, Danan Triharjo and Martin Ondracka dan Zdenek Pavel, Tanfoglio Indonesia Jaya

14.00 – 14.45

TATA Motors Defence land systems and mobility solutions, presented by Mr Noronha, Pranav Singh and Prajwal Vasisht, TATA Motors Ltd

15.00 – 15.45

High-reliability connector solution, presented by Keith Goh, Harwin (Iconnexion Asia Pte Ltd)

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