

# Army Guide monthly



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## Defence Industry

### MTL Group Limited secures significant contract for armoured hulls

Mtl Group has secured a further significant order for fabricated and painted armoured vehicle hulls. MTL Group's customer is a leading manufacturer of armoured vehicles and is globally renowned for producing some of the most advanced vehicles in the defence sector.

Simon Hurst Sales Manager for defence at MTL Group stated "This is a significant multi-million pound export order and MTL was selected as a partner due to its state of the art facility, equipment and hull manufacturing experience. Quality and a competitive offering with the benefit of our Design for Manufacture service gave the customer an enhanced value proposition".

MTL Group has rapidly become the leading global manufacturer of high quality fabricated hulls. Hurst stated "This is the third significant contract for armoured hulls in the last few months and we have more serious enquiries that will hopefully come to fruition in the coming months".

#### Design for Manufacture

MTL Groups Design for Manufacture service takes an OEM's original design and reviews it with the following principles:

- Reduce weight
- Improve protection
- Lower Cost

This service is now being embraced by many leading global OEMs who have successfully benefitted from this process.

Hurst says "We are seeing an increasing trend where many of our customers do not want to employ a large workforce but can simply turn to us when they need to and walk away when they don't. MTL Group's recent investment also includes a large format robot welding cell specifically designed for producing armoured hulls. This new equipment enables not only cost savings but also volume production but most importantly improved quality.



navigate the unpredictable combination of terrain, tactics and threats they face in current and future missions. Oshkosh Defense, a division of Oshkosh Corporation, is ready to meet that need with the Oshkosh Light Combat Tactical All-Terrain Vehicle (L-ATV).

The company is exhibiting the vehicle for the first time in Europe at the DSEI 2013 defence and security exhibition, Sept. 10-13 in London.

The Oshkosh L-ATV can help fill a vital capabilities gap for protection and mobility that global militaries face with their current light-vehicle fleets. Many historical light vehicle fleets, such as the High-Mobility Multipurpose Wheeled Vehicle (HMMWV), Eagles and Land Rovers, are nearing the end of their useful life cycle and were never designed to accommodate the armour and equipment that is needed for modern conflicts.

"The ability to operate on a battlefield with a wide range of threats and terrain is increasingly critical for forces around the globe," said John Urias, Oshkosh Corporation executive vice president and president of Oshkosh Defense. "The L-ATV was specifically designed to fulfil that mission. The platform offers unprecedented levels of protection and off-road mobility to navigate even the harshest environments."

The L-ATV's superior mobility is largely attributable to the Oshkosh TAK-4i intelligent independent suspension system. The TAK-4i system expands on the success of the proven TAK-4® system to deliver more than 50 centimetres of independent wheel travel – a 25 per cent increase over currently fielded vehicles. The TAK-4i system enables the L-ATV to shift power to the wheels that are in contact with the ground to provide control and manoeuvrability on dangerous terrain.

The L-ATV offers advanced troop protection against IEDs and other battlefield threats with a scalable armoured capsule optimized for protection, weight and mobility. The capsule's modular, adaptable design can accept multiple armour configurations, allowing the vehicle to accept future enhancements.

Oshkosh Defense can deliver L-ATV fleets with fully integrated and tested command, control, communications and computer (C4) equipment. This includes factoring the mechanical, electrical and user interfaces into the vehicle design process to optimize overall system performance and the user experience. Oshkosh performs C4 installation in-house, either during the production process or after, to reduce time and costs. Oshkosh integrated C4 systems into the Oshkosh M-ATV, which contributed to the vehicle being designed, produced and delivered at a rate of more than 1,000 per month – all in less than one year.

"We blended the latest design and proven technologies in the L-ATV to create a vehicle with superior performance and reduced sustainment costs," added Serge Buchakjian, senior vice president and general manager of international programs for Oshkosh Defense. "Our global life-cycle support offerings, from training and parts supply to maintenance support and remanufacturing, help keep vehicle fleets at peak

## Exhibitions

### Oshkosh Defense L-ATV Makes European Debut



OSHKOSH, Wis. -- Global military forces require a mobile, protected and lightweight vehicle to

readiness anywhere the mission requires.”

### **Virtual Training Improves Fleet Readiness and Reduces Costs**

In addition to the L-ATV, Oshkosh will display a technology kiosk at DSEI featuring the Oshkosh Virtual Trainer Heavy Expanded Mobility Tactical Truck (HEMTT) module. The Oshkosh Virtual Trainer provides life-like training in a safe, virtual environment, while providing troops the skills they need to perform actual tasks. Oshkosh currently offers the Virtual Trainer for multiple HEMTT configurations and has found it can provide a 20 per cent or more cost savings compared to a traditional classroom-only training approach.

The Oshkosh Virtual Trainer is part of Oshkosh’s Integrated Product Support (IPS) offerings, a comprehensive vehicle-service portfolio designed to optimize fleet readiness and life-cycle costs. Oshkosh IPS offerings include training services, instruction manuals, maintenance and repairs, parts supply, and fleet restoration services. Oshkosh has been executing a successful 20-year service plan for the British Armed Forces’ Wheeled Tanker program since 2003. This has included the development of training manuals, maintenance support and integrated logistics support for the fleet of approximately 350 vehicles.

Oshkosh Defense leadership will be available to discuss vehicles, technologies and training capabilities at DSEI at booth #N4-160 in the ExCeL London Exhibition and Convention Centre.

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### **Exhibitions**

#### **ITT to showcase highly engineered shock absorber technologies at DSEI**

WHITE PLAINS, N.Y. -- ITT Corporation has developed new and updated technologies that are designed to enhance safety and solve complex challenges in the defense industry.

In response to evolving safety challenges, ITT's Motion Technologies business has completely redesigned its M113 Damper and developed the new KONI 93 Series Shock Absorber. These KONI-branded solutions will be showcased at the DSEI Defense and Security Expo in London Sept. 10-13.

"We're no different from the rest of the world in our concern for keeping global defense forces safe day in and day out," said Luca Savi, president of ITT's Motion Technologies business. "Our new KONI innovations respond to increasing defense challenges while finding new ways to keep products cost-effective and modern."

The 93 Series Shock Absorber was developed to respond to the increasing demand for protection from roadside bombs and explosively formed penetrators (EFPs). Adding supplemental armor to heavy-tracked, wheeled vehicles increases the vehicles' weight, putting extra demands on suspension components. The 93 Series Shock Absorber is bigger and stronger, reducing the impact of increased weight on vehicle mobility. The 93 Series performed exceedingly well in product testing,

upholding forces up to 100 kN at speeds of up to 12 meters per second.

Another shock solution comes in the KONI M113 Damper, completely redesigned as a more robust shock absorber able to resist harsh environments. The modern construction of the M113 uses a deflective disc-style piston to make the damping technology more consistent. The damper's seals have been modified beyond the commercial standard to better handle the higher temperatures of many defense environments.

"These new products are the latest additions to one of the widest ranges of defense solutions for land and security as well as special forces," said Chris de Bruin, sales manager, heavy duty and defense shock absorbers at ITT's Motion Technologies business. "Our capability for large production volumes allows us to create and distribute these technologies across the globe."

#### **About ITT's Motion Technologies Business**

ITT's Motion Technologies business is the world's leading manufacturer of shock absorbers for the OEM and after-sales market. Through leading brands such as KONI, the business serves customers in the transportation market.

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### **Exhibitions**

#### **Terrier Demonstrating Innovation in Military Vehicles at DSEI**



BAE Systems’ Terrier® Combat Engineer Vehicle, the most advanced combat engineer vehicle which delivers uncompromising performance from a medium weight chassis, is on display on the BAE Systems stand at DSEI.

The latest vehicle to be accepted into service with the British Army, Terrier has been designed with an integrated electronic architecture which facilitates ‘drive-by-wire’ and remote control making the vehicle highly capable, survivable and adaptable.

Likened to a combat ‘Swiss Army Knife’, Terrier is one of the most versatile, agile and adaptable combat vehicles and can carry out multiple roles in the most demanding battlefield conditions. Typical applications include providing mobility support (obstacle and route clearance), counter-mobility (digging of anti-tank ditches and other obstacles) and survivability (digging of trenches and Armoured Fighting Vehicle slots). With a flying weight of 32 tonnes, which allows it to be transported in the A400M airlifter, Terrier provides strategic air transportability as well as being extremely mobile on the ground on all terrains, reaching speeds of up to 70 kph and with a road range of 600km.

technology can play in protecting troops while also serving as a force multiplier at DSEI 2013 defence and security exhibition, Sept. 10-13 in London.

Terrier is the first combat vehicle with drive-by-wire technology and “special to role” computers which manage the automotive and combat engineer systems respectively allowing electronic signals sent by the vehicle’s computers to perform functions. Physical connections are maintained between the driver and the essential automotive systems for safety and survivability reasons, but the vehicle is capable of being fully controlled via the commander’s joysticks through the drive-by-wire systems and the front loader and the excavator arm hydraulic systems are fully controlled through the databus.

Moreover, the vehicle can be operated by wireless remote control up to 1km away, using a gaming type controller and remote cameras. The remote control interface would be readily recognised by any computer gamer, making this capability easy for new recruits to learn.

David Bond, Managing Director of Combat Vehicles (UK) said: “With Terrier making its first ever appearance at an international defence exhibition, we anticipate plenty of interest from international markets and customers keen to see the benefits of the most up to date technological advancements in armoured vehicle technology as well as confirming our position as the UK’s leading design authority on combat engineer vehicles”

In addition to the Terrier vehicle, BAE Systems has delivered a full suite of integrated logistic support and a complete state of the art training capability including mission and scenario based training using innovative student led exploration to maximise engagement and knowledge retention. Operators and maintainers are trained simultaneously through a combination of high fidelity, full motion simulators, virtual emulations of the vehicle and its systems and hands-on ‘live’ experience. An initial five year programme of Contractor Logistic Support covering fleet management, technical advice, maintenance and logistics support was commenced on 1 April 2013.

Sixty vehicles are being delivered under the programme which are being built in Newcastle.

Oshkosh Defense will be showcasing its TerraMax™ UGV technology at the Company’s booth throughout DSEI and will present “TerraMax UGV: Enabling Advanced Autonomy for Tactical Wheeled Vehicles” at the DSEI Unmanned Theatre, which will feature the latest capabilities and innovations in the unmanned technologies domain.

“Our TerraMax UGV technology has demonstrated a high level of maturity following multiple evaluations with the U.S. military and thousands of miles of successful operation,” said John Urias, Oshkosh Corporation executive vice president and president of Oshkosh Defense. “This technology has the potential to reduce troops’ exposure to threats like IEDs when conducting logistics convoy, route clearance and other missions. Additionally, as militaries seek to improve efficiencies and cope with declining budgets, autonomous vehicles can help optimize the troops needed to carry out missions.”

#### About the TerraMax UGV Technology

The Oshkosh TerraMax UGV technology is engineered as a scalable applique© kit that enables vehicles to carry out planned missions in a supervised autonomous mode or by “shadowing” a lead vehicle. The technology can be integrated on new-production vehicles, including those built by other manufacturers, or retrofitted on existing vehicle fleets.

The Oshkosh TerraMax UGV technology includes:

- A field-ready kit solution
- A robust, multi-modal sensor suite
- Advanced machine-learning
- Operation in GPS-denied environments

“The TerraMax technology is designed to ensure UGVs can be seamlessly integrated into military operations,” said John Beck, chief unmanned systems engineer for Oshkosh Defense. “Our kit design allows vehicles to retain their original payload and performance capabilities. Additionally, TerraMax-equipped vehicles can perform in the same weather conditions and operating environments as manned vehicles.”

The TerraMax UGV operator control unit (OCU) facilitates semi-autonomous commands and remote control or tele-operation. The OCU selectively displays overhead map data and multiple video feeds in a familiar picture-in-picture format. It also can serve as a force multiplier through one-to-many control, allowing a single operator to monitor and supervise coordinated operations of multiple TerraMax-equipped UGVs.

Oshkosh also is transitioning technologies from the TerraMax UGV system to provide active-safety features for the manned operation of vehicle fleets, including electronic stability control, forward collision warning, adaptive cruise control and electric power-assist steering.

## Robots

### DSEI 2013 Unmanned Programme to Feature Oshkosh TerraMax UGV Vehicle Technology



Low-tech, life-threatening threats like improvised explosive devices (IED) have reshaped conflicts and spurred militaries to re-consider how they can protect their land forces. Oshkosh Defense, a division of Oshkosh Corporation, will be showcasing the role unmanned ground vehicle (UGV)

**Exhibitions**

**Supacat launches Light Reconnaissance Vehicle 400 at DSEi 2013**



Supacat is launching the Light Reconnaissance Vehicle 400 (LRV 400) at DSEi 2013 as a low cost, high performance capability for special forces, border patrol, reconnaissance, rapid intervention and light strike roles. Offering light forces supreme levels of all-terrain mobility, the LRV 400 is able to be tactically loaded within a CH-47 Chinook with its full operational payload on board.

The LRV 400 is a militarized variant of Qt Services' successful 'Wildcat' off-road motorsport vehicle, which has a proven record on the Rally Raid circuit and has earned a reputation for rugged reliability and high speeds over rough terrain.

Using a fresh approach, Supacat have teamed with Qt to modify and integrate the COTS vehicle to military standards, thus providing an affordable capability using proven technology. The LRV 400 fills the gap in Supacat's product portfolio between the heavier 'Jackal' surveillance, reconnaissance and patrol vehicle and the smaller All-Terrain Mobility Platform (ATMP).

"The LRV 400 meets the gap in the military market for a light reconnaissance vehicle with an overall capability as close to that of Jackal as possible, but smaller and at less cost by adopting a COTS approach. We've taken motorsports' best of breed in Qt's Wildcat and modified it to military specification using Supacat's proven expertise in developing Jackal," said Jamie Clarke, Head of Marketing & Communications, Supacat. "Supreme performance and tactical CH-47 internal loading have been key targets on this project. The users will be able to drive in and drive out without the need to offload their payload or to conduct any lengthy preparation for flight. When they get there, they will be afforded the very best terrain access and operational capability. Applying motorsport technology to Defence applications is an exciting approach and one that will deliver unrivalled performance".

The LRV 400 has evolved out of customer feedback on a proof-of-concept closed cab demonstrator developed by Supacat and Qt in 2011. Wildcat's tubular space-frame chassis and state of the art suspension are critical to the LRV's performance and rugged reliability. The display vehicle at DSEi is shown in a three crew configuration of commander, driver and gunner but the flexibility of the space-frame design allows the LRV 400 to be easily re-configured to meet different operational

roles.

With a Gross Vehicle Weight of 3500kg, a width of 1.8m and a height of 1.8m (weapon removed or lowered) the LRV 400 is easily air portable in a CH-47 Chinook helicopter. It boasts a maximum speed of 106 mph (170km/h) and a range of 1000km. Payload is up to 1400 kg, depending on customer specification and configuration. It can be fitted with a range of powertrain options - the display vehicle has a Ford 3.2-litre, 5-cylinder diesel engine developing 236 hp and 550 Nm torque coupled to a Ford-supplied 6-speed automatic gearbox and two-speed transfer box however, other engine and transmission options are available.



**Exhibitions**

**OSG Reveals the Front Line of Transparent Armor Technologies at DSEI 2013**

London, United Kingdom -- OSG, a leading global developer and manufacturer at the forefront of transparent armor technologies, reveals its latest line of advanced armored glass at DSEI 2013.

With specific emphasis on providing innovative solutions to the protection, weight, visibility and product life cycle requirements, OSG's new products address major concerns in the development and improvement of defense technologies.

More than three decades of experience in researching, designing and engineering protected glass for ground, naval and aircraft platforms has made OSG synonymous with innovation in this progressive industry.

With its involvement in numerous key projects around the globe, OSG has supplied thousands of armored windshields for the military sector, including the MRAP (Mine-Resistant Ambush Protected) and M-ATV (All-Terrain Vehicle) family of vehicles for the US Army, the British MOD's Husky and other armored vehicles such as the Zetros, Actros, Dingo for the German MOD and the Astra for the Italian MOD.

**Pioneering safety technology**

Several breakthrough transparent armor solutions from OSG are launched at DSEI 2013:

DVW (digital visual window) DVW is the world's first armored windshield with an integrated LCD screen that is suitable for military and commercial platforms. With a military-grade screen fully protected from ballistics, theft or vandalism it displays high-resolution video, text and graphics.

Rock-strike glass This field-proven new technology prevents windshield damage to tactical wheeled vehicles from non-ballistic threats such as rocks and other heavy projectiles. It is an effective alternative to metal grids installed on transparent armor and non-armored windows, withstanding impact at velocities of up to 150m/s.

Silk-light This system provides enhanced protection for civilian and paramilitary vehicles, with an integrated light-driven indicator that displays information

directly onto transparent armor with signaling danger, emergency situations, and driver distress.

**CM Technology** This advancement in ceramic technology improves protection, with excellent weight management and better visibility. Including stronger, lighter windshields and frames which enhances steering capabilities and increases cargo capacity.

**ADI Technology** The innovative no-spall windshield uses non-polycarbonate technology to keep a no-spall (free of glass and shrapnel) environment inside a vehicle. It increases safety and protection, while considerably extending the life cycle of the transparent armor.



## Contracts

### GD Awarded \$118 M for Stryker Double-V Hull Vehicles



General Dynamics Land Systems has been awarded a \$118 million contract by the U.S. Army TACOM Life Cycle Management Command to convert 66 flat-bottom Stryker infantry combat vehicles to a newer, more survivable double-V hull (DVH) design. Deliveries of the vehicles will begin in July 2014 and be completed by February 2015. General Dynamics Land Systems is a business unit of General Dynamics.

The Army partnered with General Dynamics in 2012 and launched a Stryker DVH-exchange pilot program to validate that components from traditional Stryker flat-bottom variants can be quickly refurbished and installed on a new, more survivable double-V hull variant, at less cost than producing a new vehicle. General Dynamics and the Anniston Army Depot in Anniston, Ala., successfully completed the DVH pilot program in April 2013 and delivered 52 Stryker vehicles on time and under budget.

The first brigade of Strykers equipped with double-V hulls was fielded in 2011 to provide Stryker-borne soldiers increased protection from the effects of roadside mines and improvised explosive devices. With MRAP-like or better survivability, the DVH configuration also includes a more rugged suspension system that has greatly improved mobility and reduced operating costs. Two brigades of double-V hull Stryker vehicles were produced between July 2010 and July 2013.

The final assembly work will be performed at the Anniston Army Depot and will help to sustain the jobs of 80 employees who support the program. The contract will also preserve several jobs at General Dynamics' plant in Scranton, Penn.



## Future Technologies

### The future generation armoured wheeled vehicle concept launched at DSEI 2013



Patria's new vehicle concept is built on the success of the market leader Patria AMV, but takes the overall performance of the modern 8x8 armoured wheeled vehicle platform to a new level fulfilling the customer needs of tomorrow.

Patria launched its top notch, armoured wheeled vehicle concept at DSEI 2013 exhibition in London. The new vehicle concept is built on experience and verified solutions based on the Patria AMV, which has been the unrivalled market leader of modern 8x8 AUVs for the last decade with nearly 1400 units contracted, selected by seven different nations and combat proven in real mission environment.

#### Unique features

Patria has decades of experience in armoured wheeled vehicles and the products are under continuous development and fitted with the latest technology. The new vehicle concept has many unique features e.g.

- Flexibility through modularity – It has a modular vehicle architecture allowing easy adaptation to various roles and providing built-in growth potential for future customer requirements.
- Payload efficiency – 13 ton payload at 30 ton gross vehicle weight provides the needed payload capacity without sacrificing the off-road mobility.
- Superior performance – Based on combat proven solution with upgraded power line and a new integrated terrain control system.
- Protected future – Modular, tailorable protection solutions match the threats and can also be easily upgraded in the future.
- Firepower to match – It is an ideal platform for weapon systems up to 120 mm including also Patria Nemo 120 mm - Ready for 21st century soldier – Electrical power output, connectivity and ergonomics are designed for the needs of future soldier systems.

By developing the new armoured vehicle concept Patria provides the best solutions to match the customer needs of tomorrow. The new vehicle concept at DSEI is the first concept vehicle and its extensive testing will be continued after the exhibition.

“The new vehicle concept with very high standards has been provided by us at Patria, a company with the proven track record and solid owners committed to take care of the life-cycle support of its products. The unique technology know-how is a very valuable asset for us in

the future, and based on that we want to provide even better vehicles for our customers in future”, highlights Seppo Seppälä, President, Patria Land Systems and Land Services.



### Defence Industry

## Saab Receives Order for Multispectral Camouflage Systems



Defence and security company Saab has been awarded a contract for Multispectral Static Camouflage Nets from Canadian Department of National Defence (DND). The order amounts to MSEK 54 with the right to exercise several options with for potential additional orders of MSEK 44 over 5 years.

“Saab has an unrivalled leading position in the world within Signature Management technology. We continue to attract and retain new and existing customers around the globe,” says Anders Wiman, Managing Director for Saab Barracuda.

Saab Barracuda’s advanced Camouflage technology products have been exported to more than 50 countries. Saab offers a unique package of camouflage systems and force protection solutions with the purpose to decrease the enemy’s ability to detect and engage. These solutions protect camps, vehicles and personnel against hostile sensors and enemy target acquisition.



### Exhibitions

## Nexter Systems reveals its new 6x6, TITUS®, at the DSEI 2013 exhibition



DSEI, London -- During the DSEI Exhibition, Nexter Systems, a European leader of land defence, unveiled its brand new armoured wheeled vehicle: TITUS®, the versatile armoured vehicle of the XXIst century.

Continuing a famous long lineage of innovating

systems, including Leclerc MBT, VBCI and CAESAR®, all combat proven in many theatres of operation, Nexter Systems combined the best of its experience and technology in TITUS®.

Through its unrivaled level of modularity based on combat missions kits, operational environment kits and a wide family of variants, TITUS® is able to fulfill the full range of missions from Infantry transport to combat missions, combat support and combat service support functions, in any kind of type of commitments likely to occur in a hybrid conflict.

TITUS® offers an exceptional mobility. Protection is also at the core of TITUS® conception. The vehicle is wrapped up with a last generation modular armoured skin, providing a ballistic level 2 to level 4, mines level 4a and 4b, and IEDs blasts up to 150 kg, increased by the original Nexter SAFEPRO® design. Furthermore, to allow the crew of two or three and the full strength squad up to twelve to last a long time on the ground, an important effort of human integration has been done by Nexter. Fire power has not been neglected since TITUS® can be equipped with any kind of Remote Control Weapon Station from 7.62mm to 20mm, and 40mm Grenade Launchers as well, depending on the level of threats and type of missions. TITUS® is fully integrated within the C4I network through last generation vetronics. Nexter Battlefield Management System FINDERS® provides a situational awareness, enhanced by a perimetric camera system, and reconnaissance robot (NERVA® LG), allowing a safe dismounting.



### Army

## More Foxhound vehicles for British Army



Foxhound, designed and built in the UK by General Dynamics Land Systems: Force Protection Europe, first deployed to Afghanistan in 2012 and has proved successful on operations.

Foxhound represents leading edge technology, and the vehicles are agile enough to reach a top speed of 70mph and have a V-shaped hull, providing unparalleled protection against a range of threats for their weight and class.

Since 2010, MOD has invested BJ371 million in Foxhound and the latest order will take the Army’s total fleet to 400 vehicles.

Announcing the contract at the DSEI (Defence Security Equipment International) Conference in London, Minister for Defence Equipment, Support and

Technology, Philip Dunne said:

“Foxhound gives our Armed Forces enhanced mobility, enhanced protection and enables them to operate in a wide range of environments.

“This further BJ23 million investment will bolster the British Army’s capability far into the future and demonstrates our commitment to provide troops with the battle-winning vehicles they deserve.

“There is no better advertisement for the British Defence industry on the international stage than the UK’s Armed Forces using British-built equipment on operations.”



**Contracts**

**General Dynamics Awarded \$188 Million for Abrams Tank Production**



STERLING HEIGHTS, Mich. -- General Dynamics Land Systems has been awarded \$187.5 million for conversion of 44 M1A1 and 40 M1A2 Abrams tanks to the Saudi M1A2 (M1A2S) configuration for the Kingdom of Saudi Arabia. The Foreign Military Sales contract was awarded by the U.S. Army TACOM Life Cycle Management Command on behalf of the Royal Saudi Land Forces.

This new contract continues work started in 2008 to update M1A1 and M1A2 tanks to the M1A2S configuration for the Kingdom of Saudi Arabia. The M1A2S conversion increases the efficiency and capability of the tank.

The work will be performed by current employees at the Joint Systems Manufacturing Center in Lima, Ohio, with an estimated completion date of March 2015



**Contracts**

**German Army Awards Polaris Contract to Supply Military ATVS**



Polaris Industries Inc., the leading manufacturer of off-road vehicles, today announced the company was awarded a contract to provide MV850 ultra-light tactical vehicles to the German Army.

“Defense forces around the world are seeking Polaris Defense Military vehicles to take advantage of our ability to make modifications to our commercial off-the-shelf technology (COTS), insert customer requirements and quickly deliver an end product that meets their needs,” said Rich Haddad, general manager of Polaris Defense. “It is our goal to match the warfighter’s mission requirements with our best value product.”

The highly-mobile MV850 platform, which was built specifically for the U.S. military and allied forces, allows for the transport of military personnel and gear through extreme off-road terrain. It features a 600 lbs./272 kg capacity metal rack system, 11.75 gal/ 4.5 L fuel capacity, blackout lighting with IR light capability and an optional litter mount.



**Defence Industry**

**Oshkosh Defense to Debut New P-19R ARFF at Modern Day Marine**



OSHKOSH, Wis. -- U.S. Marines are responsible for responding to fire and emergency situations on military bases and airfields around the world as part of their mission. Oshkosh Defense, a division of Oshkosh Corporation, is meeting a critical equipment requirement with the new Oshkosh P-19 Replacement Aircraft Rescue and Fire Fighting (ARFF) vehicle, which will be showcased for the first time at Modern Day Marine in Quantico, Va., Sept. 25-27.

The U.S. Marine Corps awarded the P-19R contract to Oshkosh Defense in May. Oshkosh is completing internal testing and is on schedule to deliver three prototypes to the Marine Corps in the coming months for rigorous testing, which will take place next year.

“Firefighting and emergency missions on military bases and airfields are critical to the overall success of Marine Corps operations,” said John Bryant, senior vice president of Defense Programs for Oshkosh Defense. “We designed our P-19R ARFF vehicle to protect Marines in these dangerous situations, and we’re proud to showcase the P-19R’s capabilities for the first time at Modern Day Marine.”

The next-generation Oshkosh P-19R is based on the proven Oshkosh Logistics Vehicle System Replacement (LVS®) platform including the Oshkosh TAK-4® independent suspension system to deliver more advanced on-road and off-road firefighting capabilities to the Marine Corps. The vehicle’s Command Zone™ integrated diagnostics and automation system helps the crew carry out firefighting missions with increased



situational awareness. Oshkosh Defense leveraged the expertise of the Oshkosh Airport Products Group, the industry-leading ARFF vehicle producer, to equip the Oshkosh P-19R with the advanced Striker® firefighting systems.

Oshkosh Defense has supported the Marines' P-19 ARFF fleet for more than 30 years, and the P-19R will replace their current fleet of P-19 vehicles as the vehicles reach the end of their service lives.

Oshkosh Defense leadership will be available to discuss the P-19R, L-ATV, HMMWV Modernization, advanced technologies and full life cycle sustainment services at Modern Day Marine at booth #2404.

Oshkosh JLTV solution on display at Modern Day Marine



OSHKOSH, Wis. -- The U.S. Marine Corps is reshaping its light vehicle fleet to equip Marines with the right mix of protected mobility for future missions. Oshkosh Defense, a division of Oshkosh Corporation, has developed vehicle and upgrade offerings to meet those requirements, including a Joint Light Tactical Vehicle (JLTV) solution that will be showcased at Modern Day Marine in Quantico, Va., Sept. 25-27.

“The last decade of conflict combined with an aging light vehicle fleet has shaped the Marine Corps’ priorities for its future vehicle fleets,” said John Bryant, senior vice president of Defense Programs for Oshkosh Defense. “Chief among those priorities is the JLTV, a transportable vehicle that will allow Marines to operate in rugged, off-road environments, while keeping them safe in high-intensity combat situations.”

The Oshkosh JLTV solution, the Light Combat Tactical All-Terrain Vehicle (L-ATV), delivers unprecedented levels of off-road mobility for a light vehicle. Using the Oshkosh TAK-4i™ intelligent independent suspension system, the vehicle delivers a 25 percent improvement in independent wheel travel over most mobile vehicles currently fielded, giving Marines greater off-road performance across rough terrain. Marines already rely on Oshkosh’s combat-proven vehicles with today’s gold standard in off-road capability, such as the Medium Tactical Vehicle Replacement (MTVR) and MRAP All-Terrain Vehicle (M-ATV).

Oshkosh Defense was down selected for the Engineering, Manufacturing and Development (EMD) phase of the JLTV program in August 2012 and delivered its 22 JLTV prototypes for government evaluations last month ahead of schedule. Oshkosh will provide vehicle training and support for the prototypes as they undergo 14 months of robust military testing.

#### **HMMWV Upgrade Solutions**

In addition to the procuring JLTV, the Marine Corps is seeking to upgrade a portion of its aged High-Mobility Multipurpose Wheeled Vehicle (HMMWV) fleet. Up-arming HMMWVs in recent conflicts has diminished key vehicle capabilities, including off-road performance, ride quality and reliability.

Oshkosh Defense has developed modular and scalable HMMWV upgrade solutions that provide varying levels of capabilities at a range of price points. The upgrades can be provided individually or as more complete solutions for upgrading all critical vehicle systems. Oshkosh’s comprehensive, cost-effective approach

### **Defence Industry**

#### **T-90C To Conquer Peru**



On September 19 a firing range in Peru saw demonstration of the T-90C tank of the Uralvagonzavod produce for Gen. Ricardo Moncada Novoa, Commander-in-Chief Land Forces and 300 officers.

The command authorities of the South American republic were shown the T-90C tank combat and running capabilities by day and at night as well as accuracy of fire with all types of weapons at different ranges from a halt and on the move under conditions of limited visibility and mountainous terrain.

The combat vehicle crew completed all missions successfully having demonstrated high potential of the Russian tank manufactured by Uralvagonzavod.

After the major demonstration one of the Peruvian drivers of the T-55s being in service with the Peruvian Army was offered to “take a drive” of the T-90C tank. After a 5-min briefing, he made a run showing a good skill level and brought the tank to a halt by the Commander-in-Chief. The experiment is a proof that the advanced T-90C tank is as responsive and simple as its predecessor T-55 produced by Uralvagonzavod 40 years ago.

Senior officers of the Peruvian Army appreciated the T-90C tank capabilities and the skill of the tank crew members.

### **Exhibitions**

#### **Oshkosh Defense Answers U.S. Marine Corps’ Light Vehicle Needs**

## Defence Industry

## LM Havoc 8x8 Demos High Levels of Crew Protection in Marine Corps



Lockheed Martin's [NYSE: LMT] Havoc 8x8 Armored Modular Vehicle successfully completed protection systems testing, achieving every test objective during a series of blast tests this summer. Havoc is Lockheed Martin's entry in the Marine Personnel Carrier (MPC) competition.

Havoc completed all threshold and objective protection system testing, with instrumentation indicating that no disabling injuries would have resulted to any of three crew members and nine dismounted Marines, had they been on board during the test events.

"Keeping Marines safe and ready to execute their mission is our top objective, and we have now validated that Havoc will provide the protection our Marines require," said Scott Greene, vice president of ground vehicles at Lockheed Martin Missiles and Fire Control. "Havoc's armor performed just as our advanced protection modeling had predicted."

In March, Havoc successfully concluded amphibious and human-factors "swim" testing, showing its ability to maintain 100 percent operational readiness while completing all surf- and wave-condition testing required by the Marines.

Additionally, Lockheed Martin delivered a U.S. Content report to the Marine Corps demonstrating the company's plan for undertaking significant U.S. production in support of the MPC program. The report included information on Havoc's high degree of commonality with other Marine Corps vehicles, aimed at reducing cost, training requirements and logistics needs.

Havoc is a multi-mission, expeditionary ground combat vehicle that is an evolution of the Patria 8x8 Armored Modular Vehicle, a battle-tested design used by armed forces globally. In cooperation with Plasan Sasa Israel, the team has advanced the design of the vehicle significantly for the Marine Corps. Its configuration allows for a wide range of weapons, sensors and communications options to address evolving mission requirements. Havoc features exceptional mobility and transportability, and can protect its crew against a variety of extreme threats.

Lockheed Martin is the prime contractor and systems integrator for Havoc. The company's award-winning experience in managing performance based logistics programs for ground platforms enables increased system readiness and lower ownership costs.

For more than three decades, Lockheed Martin has

addresses requirements for engine and powertrain, suspension, driveline, hubs and brakes, frame and hull, electrical, cooling, and auxiliary automotive improvements to meet the Marine Corps needs.

For example, Oshkosh has tailored its industry-leading TAK-4® independent suspension system to deliver higher levels of mobility, including a 70 percent off-road profile capability, improved ride quality and a 40 percent increase in the vehicle's maximum speed. The TAK-4 system also gives the HMMWV greater whole-vehicle durability, a restored 2,500-pound payload capacity and a restored ground clearance of 17 inches. Oshkosh also can deliver a modern engine option that's more powerful than the HMMWV's stock engine and provides increased fuel efficiency.

Oshkosh Defense leadership will be available to discuss the company's vehicles, technologies and IPS services at Modern Day Marine at booth #2404.

## Defence Industry

## FMV receives delivery of the first Archer pieces



BAE Systems Bofors delivered the first pieces of the Archer artillery system to FMV Monday, September 23. The acquisition of Archer is a joint Nordic project in collaboration with Norway and a total of 24 pieces was commissioned for the Swedish Armed Forces from BAE Systems Bofors.

- This is a project that delivers one of the best artillery systems. We have had both successes and setbacks in the project, but now the first four pieces of the Archer artillery system could finally be delivered, says Lena Erixon, FMV Director General.
- The fact that we could receive the first pieces now is a result of our Norwegian partners at FLO, the supplier BAE Systems Bofors – and of course FMV who in the situation acted flexible and powerfully. All have helped to get the pieces to the Artillery regiment. They will now be transported to Boden where FMV, FLO and the artillery regiment will continue with both tests and training, says Lena Erixon.

Delivery of the first Archer pieces from Lena Gillström from BAE Systems Bofors to FMV's Director General Lena Erixon took place in Karlskoga, Monday, 23 September at 16.00 pm. Thereafter delivery inspection and transportation to the artillery regiment occurred.

applied its systems integration expertise to a wide range of successful ground vehicles for U.S. and allied forces worldwide. The company's products include the combat-proven Multiple Launch Rocket System (MLRS) M270-series and High Mobility Artillery Rocket System (HIMARS) mobile launchers, Havoc 8x8, Common Vehicle, Light Armored Vehicle-Command and Control, Warrior Capability Sustainment Programme, Joint Light Tactical Vehicle (JLTV) and pioneering unmanned platforms such as the Squad Mission Support System (SMSS).

Lockheed Martin Missiles and Fire Control is a 2012 recipient of the U.S. Department of Commerce's Malcolm Baldrige National Quality Award for performance excellence. The Malcolm Baldrige Award represents the highest honor that can be awarded to American companies for their achievements in leadership, strategic planning, customer relations, measurement, analysis, workforce excellence, operations and results.

