Light Armoured Vehicles Find Increased Favour

Armies globally favour the flexibility and mobility of easily transportable wheeled armoured vehicles as rapid deployment and force projection become the name of the game.

By Peter Antill

Australian LAVs at RIMPAC 2016
(Photo by Cpl. Matthew Bickerton)

The drawdown from large-scale ground operations in both Iraq and Afghanistan has led to many countries looking at re-orienting their armed forces away from the doctrine, structure and equipment associated with counter-insurgency operations towards rapid deployment and force projection. One example of this has been the British Army, as highlighted in a 2013 report:

"There is a need to move from the Army's current structure and capabilities that are optimised for Afghanistan, to a more adaptable posture that enables the Army to meet likely future threats."[1]

In terms of acquisition, the move towards procuring (largely) wheeled vehicles that can be rapidly transported by air (if necessary) has impacted procurement and logistics programmes and meant that ground forces have started to move towards greater flexibility and mobility (in terms of both operational deployment to and from theatre, as well as in theatre) than ever before. As a result, the emphasis in armoured fighting

vehicle (AFV) fleets has moved towards a focus on agility, rather than higher levels of armoured protection. Subsequently, light armoured vehicles (LAVs) have found increasing favour with many armed forces. As NATO forces in Afghanistan discovered, such vehicles "not only provide highly flexible solutions for ground operations, they are less expensive to acquire and maintain than heavier armoured vehicles, making them more cost-effective and attractive to governments with pressing budgetary constraints to consider."[2]

As for the market, military ground vehicles remain important for the defence industry, with spending over the next decade forecast to grow (albeit slowly), especially in the west. Here, the emphasis seems to be on spreading programmes out over a longer procurement period and piecemeal upgrading, rather than complete modernisation. This is due to a reduction in the forecast for the speed of Russian armoured vehicle modernisation, with their previously aggressive modernisation plans drastically reduced and the expected production of next-generation vehicles being slower than anticipated.

IHS Jane's 10-year forecast for the military vehicle market from 2016 –2025 sees a compound annual growth rate of 3.1% and an overall market value of $447.9 billion. Europe is anticipated to become the leading regional spender on armoured vehicles from 2016–2025 at $90 billion (of which the UK is set to spend $28.3 billion). The US will spend around $71.9 billion, while China is set to spend $67.9 billion. The rest of the Asia-Pacific region is anticipated to spend around $57 billion, while Russia will spend $20.2 billion.[3]

Despite many countries in the Middle East needing to replace older vehicle fleets, the drop in oil prices in recent years has meant many will look to upgrade existing vehicles rather than acquire new ones. The one probable exception to that is Saudi Arabia, which has been in the process of modernising its forces over the last decade or so.[4]

Platform-wise, it is likely that infantry fighting vehicles (IFVs)—especially wheeled ones—will be preferred over main battle tanks (MBTs), given that they have greater agility, are less expensive in acquisition terms and have greater strategic mobility, and when armed with the latest direct fire and anti-tank guided weapons, can provide a comparable anti-armour capability to a MBT.[5]

While steadily becoming more popular, there still seems to be a trend in the design, development and production of wheeled APCs to opt for the 8x8 configuration, with these vehicles normally armed with a remote weapon station mounting a stabilised 7.62 mm or 12.7 mm (0.5in) machine gun. However, there seems to be another emerging trend, one that sees countries fitting the RWS with a medium-calibre cannon, turning the vehicle into a wheeled IFV or infantry carrier vehicle.

In the past, IFVs were also provided with firing ports and their associated vision devices in the troop compartment for the infantry inside to fire their weapons at external targets. Examples of this include the Soviet/Russian BMP, German Marder 1 and US M2 and M3 Bradley. However, as some of these vehicles have been upgraded, that capability has been removed.[6]

Finally, in terms of technology, the need for greater flexibility now greatly influences vehicle design, with scalable armour, weapon systems and mission suites featuring in almost all new vehicle requirements.[7] The advances in both power and drivetrain technology are improving vehicle mobility, particularly for wheeled AFVs. Two examples of such advances include:[8]

- Suspension – independent suspension axles offer advantages over rigid axles, which includes greater speed off-road, better braking while in a curve, better water-crossing performance, an improvement in the vehicle's centre of gravity and on-road refinement characteristics. Rigid axles can, however, offer lower costs, reasonable low speed off-road mobility, better ground clearance and turning circle characteristics.
- Hybrid Electric Drives (HEDs) – are an increasingly attractive option, with Israel's Ministry of Defence revealing that the Carmel Future Combat Vehicle will use a HED with horizontally-mounted batteries positioned along the hull. With more and more systems requiring electrical power, the use of better batteries and improved switching between different vehicle systems can

General Dynamics Land Systems – Canada's LAV UP 6.0

Rheinmetall's Fuchs is likely to remain in service for years to come *(CC BY 3.0)*

allow vehicles to retain capabilities such as "silent watch" without having to drain power from the base vehicle, enabling it to perform longer in the field.

MAJOR ARMOURED VEHICLE PROGRAMMES:

Canada: The Armoured Combat Support Vehicle programme is underway, with a contract worth $1.1 billion. General Dynamics Land Systems – Canada recently revealed two new variants of the LAV family to meet the requirements of the programme, which is designed to replace the Canadian Army's fleet of M113 armoured personnel carriers and LAV-II Bisons. The two new variants are the LAV 6.0 Combat Support Vehicle – Ambulance (CSV-A) and the LAV 6.0 Combat Support Vehicle – Maintenance and Recovery (CSV-MR).

The Jaguar 6x6

The programme will enter an options analysis phase next year with a contract award scheduled for 2023.[9]

Denmark: In the west, the market leader for wheeled AFVs is still General Dynamics European Land Systems – Mowag, with the latest version of the PIRANHA 5 8x8 APC entering production. Denmark has ordered 309 vehicles with an option on another 141.[10]

France: One of only two major reconnaissance vehicle programmes in NATO (the other being the UK's AJAX vehicle), the Nexter Systems/Renault Trucks Defense/Thales Jaguar 6x6 is due to replace the Nexter AMC-1RC 6x6 and Panhard Defence EAC-90 Sagaie 6x6 armoured vehicles, with 248 currently ordered. It is armed with a two-person turret, mounting a 40 mm case telescoped armament system, the same weapon that is being used in the UK's Warrior Capability Sustainment Programme.[11]

Germany: The Bundeswehr now fields the ARTEC Boxer 8x8 Multi-Role Armoured Vehicle (fitted with a KMW FLW200 RWS), as does the

Royal Netherlands Army (fitted with a Kongsberg Protector RWS). Lithuania has ordered 88 Boxers (which will be known locally as the Vilkas (Wolf)) to be used as an IFV rather than an APC or support vehicle. They will be fitted with the Rafael Advanced Defense Systems Samson MK II remote-controlled turret, armed with an Orbital ATK Armament Systems 30 mm dual-feed cannon and 7.62 mm coaxial machine gun. Rheinmetall Land System's Fuchs 6x6 vehicle will remain in service for years to come, as the company was recently awarded a contract to convert 90 vehicles to the latest 1A8 standard. Additional customers of the Fuchs include the UAE (32 vehicles), Algeria (980 vehicles) and Kuwait (12 vehicles).[12]

Israel: It was expected that Israel would order the General Dynamics Land Systems Stryker to supplement its fleet of M113 APCs, but it has instead developed an indigenous 8x8 AFV known as the Eitan, which is currently undergoing trials.[13]

Italy: The Italian Army was one of the first NATO member countries to recognise the potential of an 8x8 wheeled AFV. The first to enter service was the CIO Centauro 105 mm Mobile Gun System with 400 being delivered. They are due to be replaced by the latest version, Centauro II, launched in mid-2016. Along with Italy, the Spanish Army has received the COI Centauro MGS vehicle (84 in total) to replace its AMX-30E MBTs used by cavalry units.[14]

Malaysia: FNSS Defence Systems' Pars family of 6x6 and 8x8 wheeled vehicles was originally developed by the company as a private venture, but Malaysia is the first customer, ordering 257 vehicles in 12 different configurations. Another undisclosed customer in the Middle East (believed to be Oman) has ordered 150 vehicles in both 6x6 and 8x8 configurations.[15]

Russia: Well-armed compared to many wheeled AFVs, the Russians still field large numbers of their BTR-series of 8x8 APCs. The BTR-80 for example, has a one-man turret armed with an unstabilised 14.5 mm KPVT and 7.62 mm PKTM machine guns, while the BTR-80A has a 30 mm dual-feed cannon and 7.62 mm PKTM machine gun. They are due to be replaced by the Bumerang 8x8 IFV, equipped with a KBP Instrument Design Bureau Ephoch turret and armed with a stabilised 30 mm 2A42 dual-feed cannon, a coaxial 7.62 mm machine gun and two pods on either side carrying two KBP Instrument Design Bureau Kornet-EM laser-guided missiles.[16]

Singapore: With the Singapore Armed Forces coming to the end of a roughly decade-long transformation programme, which sought to develop an advanced and integrated force, they continue to acquire a mixture of indigenous and imported wheeled AFVs. One of these is the Belrex 4x4 Protected Combat Support Vehicle (PCSV), designed to offer improved protection, mobility and situational awareness to the army's combat support and combat service support units.

Centauro II (*Copyright Iveco Oto Melara*)

Saudi Arabia: Already having delivered more than 1,000 LAV 8x8 vehicles to the Saudi Arabian National Guard, it is expected that the Saudis will order between $10 billion and $13 billion worth of vehicles from General Dynamics Land Systems to equip the regular army. French companies Nexter and Renault have also sold vehicles to the kingdom, with the former delivering 73 Aravis 4x4 Mine-Resistant Ambush-Protected (MRAP) vehicles (with potential follow-on contracts taking that up to 200) and the latter supplying 100 VAB 4x4 vehicles worth between $40–$50 million as part of a $3 billion arms deal with the French government.[17]

It is based on the South African Paramount Marauder MRAP vehicle, designed to provide direct logistical support to infantry riding in the 8x8 Terrex APCs (the latest version of which is the Terrex-3) and will come in nine different variants. Another is the Peacekeeper Protected Response Vehicle (PRV), a 6x6 based on the Higuard MRAP platform from Renault Trucks Defense, which has replaced the aging 4x4 Commando V-200 APCs from Textron. Three more are the Ford F550 Combat Ambulance (based on the Ford F550 Super Duty chassis-cab),

Russia's Bumerang 8x8 IFV *(Photo Vitaly V. Kuzmin)*

the Spanish-made 4x4 Vehículo de Alta Movilidad Táctico ST5 high-mobility vehicle (designed to replace the 4x4 Ford Everest Operational Utility Vehicles and possibly the 4x4 Mercedes-Benz 290GD Light Utility Vehicle) and the 4x4 ST Kinetics Spider Light Strike Vehicle.[18]

Slovakia: The Slovak Ministry of Defence is looking to spend $1.3 billion on the procurement of 404 4x4 vehicles and 81 8x8 vehicles between 2018 and 2029, but has yet to decide on the format of the procurement; whether it is a public tender or a direct purchase. The programme is designed to replace legacy vehicles, which date back to when the country was still a member of the Warsaw Pact, such as the OT-64, certain variants of the BMP IFV (such as the BPsV) and the BRDM-2. Contenders for the 4x4 LAV include Denel's RG32M (which Slovakia already has in service) and Israel Aerospace Industry's RAM Mk3. Potential 8x8 vehicles include the KTO Rosomak 8x8 (a license-built version of the Patria Armoured Modular Vehicle) and the Steyr Pandur II 8x8, produced under license by the Czechoslovak group.[19]

Spain: The Spanish have been trialling four PIRANHA 5 8x8 vehicles and are expected to place an order for between 300 and 400 vehicles, with production being carried out locally by General Dynamics European Land Systems – Santa Bárbara Sistemas.[20]

UAE: As well as the Fuchs 6x6 APC, the UAE has also ordered 400 Rabdan 8x8 IFVs, which is based upon the Turkish Otokar Arma 8x8 AFV. This version will be equipped with the complete turret of the BMP-3 IFV, but it is not known whether it will be to the same specification as the current BMP-3 or new-build turrets to a higher specification.[21]

UK: The 2015 Strategic Defence & Security Review outlined a further reorganisation of the British Army under the broad banner of *Joint Force 2025*. Part of this was the creation of two new strike brigades[22], but there has been little detail, as yet. Nominally composed of 5,000 personnel, they will be equipped with both Ajax and an as-yet unspecified Mechanised Infantry Vehicle (MIV), probably in an 8x8 configuration, with likely candidates being the US Stryker/GDLS PIRANHA, French VBCI or German-Dutch Boxer.[23]

US: Both the Army and the United States Marine Corps have a joint programme underway to replace around 55,000 tactical vehicles. One vehicle currently being purchased is the Joint Light Tactical Vehicle from Oshkosh under a $6.7 billion low-rate contract for 16,901 units, with the USMC currently committed to procuring 5,500 units. These vehicles are currently slated to replace a portion of the USMC's 17,000 Humvees.

Pandur II *(Photo: Ministry of Defence and Armed Forces of the Czech Republic).*

PIRANHA III (Copyright GDELS)

While the USMC recently received enough funding to expand this to some 7,241 vehicles, it has indicated a desire to boost this number still further to around 9,091 vehicles.[24] Reports indicate that for the Army, a brigade from each of the 10th Mountain and 25th Infantry Divisions, along with the 173rd Airborne Brigade, will be the first formations to get the new vehicle, as well as the USMC's II Marine Expeditionary Force (MEF).[25]

Another programme that is in its early stages, but progressing well, is the Amphibious Combat Vehicle, which is on track for a final selection and contract award in 2018. Vehicles from both teams led by BAE Systems and SAIC are being tested at facilities across the country.[26]

The US Defense Advanced Research Projects Agency is also running the Ground X-Vehicle Technology (GXV-T) programme, which is looking at enhancing both mobility and agility for future ground vehicles, so that they can traverse 95% of terrain.[27] The US Army is also going to fit some of its Stryker 8x8 ICVs with the Norwegian Kongsberg medium-calibre RWS armed with an Orbital ATK Armament Systems' 30 mm dual-feed cannon and 7.62 mm coaxial machine gun.[28] ■

ABOUT THE AUTHOR

Peter Antill rejoined Cranfield University in June 2009 to create a defence acquisition body of knowledge. This has included various articles, case studies, conference papers, monographs and chapters in edited publications as well as updating teaching material used by the Centre for Defence Acquisition. Peter graduated from Staffordshire University in 1993 with a BA (Hons) International Relations and followed that with an MSc Strategic Studies from Aberystwyth in 1995 and a PGCE (Post-Compulsory Education) from Oxford Brookes in 2005.

FOOTNOTES

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