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IN DEFENCE

Moves to boost defence and aerospace spending could be positive for platinum group metal demand

In The Hague Summit Declaration, issued 25 June 2025, the NATO Heads of State and Government committed to spending 5% of GDP annually on defence requirements by 2035 to ensure their individual and collective obligations, in accordance with Article 3 of the Washington Treaty.

As European leaders grapple with heightened geopolitical uncertainty and assume greater responsibility for their nation's defence, moves are underway to strengthen Europe's defence industry, ensuring competitiveness and strategic autonomy. At the same time, the need to maintain technological superiority is driving investment in advanced defence systems. Johnson Matthey has highlighted the potential for additional platinum group metal (PGM) demand due to higher defence spending.

Extensive use

PGMs are used extensively in defence and aerospace applications, from avionics and electronics to lasers and optical systems, including night-vision goggles. They are key components in aircraft engines, with platinum and rhodium used for temperature-sensing and platinum for protective plating on blades. Platinum and iridium are also present in missile nose cones due to their heat resistance.

Platinum is used in catalytic converters for military vehicles and to suppress infrared signatures, reducing vulnerability to thermal imaging and heat-seeking weaponry. It also serves as a catalyst in fuel reforming systems for advanced military power units.

Ruthenium is used for chip resistors and palladium for military-specification capacitors and other components. Rhodium and iridium are also a component in reed switches - small sensors that operate when exposed to a magnetic field. Sensitive equipment or machinery in extreme environments with fire or explosion risks – such as military and aerospace applications – require reed switches that offer high performance and excellent safety.

PGMs are key to hydrogen fuel cell applications which are increasingly being explored for defence and aerospace purposes. In South Korea, defence solutions company Hyundai Rotem, a subsidiary of Hyundai Motor Company, is developing the world's first military tank powered by hydrogen fuel cells.

The NATO Monument in Brussels. Picture credit: misu - stock.adobe.com

Meanwhile, Ukrainian military drone business Skyeton has recently completed a test flight of an unmanned aerial vehicle (UAV) powered by a hydrogen fuel cell.

Following the successful flight, Skyeton is focused on developing a new fuselage architecture tailored for hydrogen integration. The updated UAV design will optimise space and weight distribution for the hydrogen fuel cell system, supporting the future scale production of its hydrogen-powered model.

Hydrogen fuel cell drivetrains, which frequently use PGM-based proton exchange membrane (PEM) technology, are especially suited to UAVs, due to their energy density and light weight. Hydrogen fuel cell UAVs offer an extended flight time and improved operational efficiency compared to traditional battery-powered systems.

In the US, the Department of Defense is exploring a system for the US navy to generate, store, and distribute hydrogen both aboard ship and ashore, creating a tactical 'micro hydrogen supply chain' to include the use of PEM electrolysis to generate hydrogen. The aim is to reduce logistical fuel supply vulnerabilities, enhance energy resilience and extend operational capabilities.

Contacts:
Vicki Barker, Investor Communications, vbarker@platinuminvestment.com
Brendan Clifford, Institutional Distribution, bclifford@platinuminvestment.com
Edward Sterck, Research, esterck@platinuminvestment.com