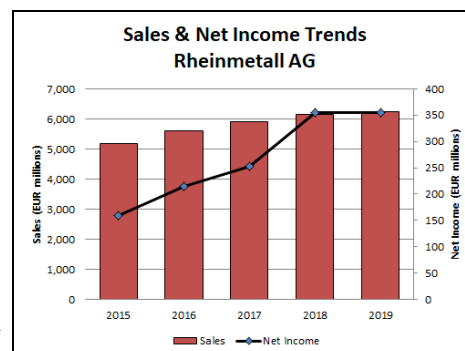


Rheinmetall AG

Outlook

- Rheinmetall's diversity has served it well during the COVID-19 pandemic
- While its automotive operations suffered in the first half of 2020, defense remained resilient maintaining its growth trend
- In August 2020, Hungary became launch customer for Lynx KF41 Infantry Fighting Vehicle with a \$2 billion order for 218 vehicles
- The Lynx may get another shot at U.S. Army's Next-Generation Combat Vehicle as program was rebooted in mid-2020



Headquarters

Rheinmetall Aktiengesellschaft
Rheinmetall Platz 1
Postfach 104261
40033 Düsseldorf, Germany
Telephone: + 49 211 473 01
Website: www.rheinmetall.com

The Rheinmetall Group is a cluster of medium-size industrial firms built around four core areas of business: machinery, automotive components, office systems, and defense technology. Rheinmetall Berlin is the group parent, running its industrial concerns as relatively independent corporate sectors. The parent firm, located in Düsseldorf, turned 100 years old in 1989. Historically, the name Rheinmetall is associated with defense technology, but the diversified firm has increased its exposure in the machinery and automotive components markets. In addition to increasing their

penetration into various civilian markets, Rheinmetall companies are steadily increasing their penetration of the international (non-European) market.

Rheinmetall is probably best known for its defense technology products. The corporate sector, known as Rheinmetall Defence, is heavily involved in this area. The firm produces tank-related weapon systems, including tank cannon, turrets, and related control systems. It also develops and manufactures artillery systems for light combat vehicles, including automatic cannon and cannon ammunition of all types. The company makes pyrotechnics and components for naval weapon systems and develops test and measurement systems for its products and the defense-related products of other firms. Test and measurement services are increasingly being offered to non-defense industries as well.

Structure and Personnel

Armin Papperger
Chief Executive Officer and
Chairman, Corporate Sector Defence
Helmut P. Merch
Finance and Controlling (Chief Financial Officer)
Peter Sebastian Krause

Defence, Human Resources
Dr. Alexander Sagel
Defence, Weapon and Ammunition
Susanne Wiegand
Defence, Electronic Solutions

Rheinmetall AG

Product Area

Rheinmetall AG has a large and diversified line of products as both an OEM and Tier I. The firm is best known for its production of tank cannon and ammunition, turrets, and self-propelled artillery systems. In addition, it is involved in a number of retrofit and modernization programs. The group is also involved in the automotive industry through its Rheinmetall Automotive AG subsidiary (formerly Kolbenschmidt Pierburg GmbH or KSPG Automotive). The Rheinmetall Group manages its divisions and subsidiaries as follows (some subsidiaries operate in multiple divisions):

1. Rheinmetall Defence
 - 1.1 Vehicle Systems
 - 1.1.1 Rheinmetall Landsysteme GmbH
 - 1.1.2 American Rheinmetall Vehicles LLC
 - 1.1.3 Rheinmetall MAN Military Vehicles GmbH
 - 1.1.4 Rheinmetall MAN Military Vehicles Australia Pty Ltd
 - 1.1.5 Rheinmetall MAN Military Vehicles Nederland BV
 - 1.2 Weapon and Ammunition Systems
 - 1.2.1 American Rheinmetall Munitions, Inc
 - 1.2.2 Nitrochemie AG
 - 1.2.3 Rheinmetall Denel Munition (Pty) Ltd
 - 1.2.4 Rheinmetall Laingsdale (Pty) Ltd
 - 1.2.5 Rheinmetall Protection Systems GmbH
 - 1.2.6 Rheinmetall Waffe Munition GmbH
 - 1.2.7 Rheinmetall Waffe Munition Arges GmbH
 - 1.2.8 RWM Italia SpA
 - 1.2.9 RWM Schweiz AG
 - 1.2.10 RWM Zaugg AG
 - 1.3 Electronic Solutions
 - 1.3.1 AIM Infrarot-Module GmbH
 - 1.3.2 American Rheinmetall Systems LLC
 - 1.3.3 benntec Systemtechnik GmbH
 - 1.3.4 Contraves Advanced Devices Sdn Bhd
 - 1.3.5 Oerlikon Contraves Pte Ltd, Singapore
 - 1.3.6 RFEL Ltd
 - 1.3.7 Rheinmetall Air Defence AG
 - 1.3.8 Rheinmetall Electronics GmbH
 - 1.3.9 Rheinmetall Dienstleistungszentrum Altmark GmbH
 - 1.3.10 Rheinmetall Italia SpA
 - 1.3.11 Rheinmetall Norway AS
 - 1.2.12 Rheinmetall Singapore Pte Ltd

- 1.3.13 Rheinmetall Soldier Electronics GmbH
- 1.3.14 Rheinmetall Technical Publications GmbH
2. Rheinmetall Automotive AG

Rheinmetall Defence. Headquartered in Ratingen, Germany, Rheinmetall Defence is involved in the advanced development of military technology. Rheinmetall Defence is composed of the following three divisions:

Vehicle Systems. *Rheinmetall Landsysteme GmbH* produces and retrofits military vehicles, such as the Wiesel 2, Leopard 2, and PzH 2000 self-propelled howitzer. The division arose from the merger in 2000 of MAK-SYSTEM GmbH, KUKA Wehrtechnik GmbH, and Henschel Wehrtechnik GmbH. Rheinmetall Landsysteme also supplies technology for detecting and classifying nuclear, biological, and chemical hazards. *American Rheinmetall Vehicles* specializes in combat vehicle platforms and provides next generation products to the U.S. Department of Defense. *Rheinmetall MAN Military Vehicles GmbH* (RMMV) is a joint company between Rheinmetall (51 percent) and MAN Nutzfahrzeuge AG (49 percent). *Rheinmetall Defence Nederland B.V.* offers an integrated service packages for military vehicles and is a shareholder in the Boxer consortium ARTEC.

Weapon and Ammunition Systems. *American Rheinmetall Munitions* (ARM), the U.S. subsidiary of RWM GmbH, produces training and combat ammunition for the U.S. Marine Corps and Special Operations Forces. *Nitrochemie AG* develops and manufactures propellants for military and civil sector requirements. *Rheinmetall Denel Munition (Pty) Ltd* (RDM) is jointly owned by RWM GmbH (51 percent) and Denel (Pty) Ltd. RDM specializes in the development, design, and manufacture of large- and medium-caliber ammunition. *Rheinmetall Laingsdale (Pty) Ltd* develops and produces precision mechanical components. The *Rheinmetall Waffe Munition GmbH* unit was formed by the merger of Rheinmetall W&M GmbH, Mauser-Werke Oberndorf Waffensysteme GmbH, Buck Neue Technologien GmbH, Pyrotechnik Silberhütte GmbH, and the Nico group. The Rheinmetall Waffe Munition range of products and services includes large- and medium-caliber weapons and ammunition, charge systems, protection systems / pyrotechnics, and simulation and training systems.

Rheinmetall AG

RWM Italia SpA's principal activities are the development and manufacture of countermine systems, medium- to large-caliber ammunition, and warheads. *RWM Schweiz AG*, formerly Oerlikon Contraves Pyrotec, specializes in the development and manufacture of medium-caliber ammunition for land, air, and naval applications, including anti-aircraft rounds. *RWM Zaugg AG* is a manufacturer of safety fuse systems for medium- and large-caliber ammunition, as well as missiles.

Electronic Solutions. *AIM Infrarot-Module GmbH* specializes in the development and manufacture of electronic components equipped with infrared technology. *American Rheinmetall Systems*, formerly Vingtech Corp of the U.S., provides mechanical and electro-optical components. *Benntec Systemtechnik GmbH* provides training with electronic media. *Contraves Advanced Devices* provides products for the land, naval, and air forces of Malaysia and partner countries in the region. *Oerlikon Contraves Pte Ltd, Singapore* offers solutions for air traffic management, airport safety and security, and reliable airport systems. *RFEL Ltd* develops high-speed, real-time digital signal processing technology. *Rheinmetall Air Defence AG* (formerly Oerlikon Contraves) produces close-range air defense systems, including radar fire control units, automatic cannon, ammunition, and guided missile launchers. The former STN Atlas Elektronik forms the basis of the *Rheinmetall Electronics* operation. The unit's product range extends from reconnaissance systems, fire control systems, and command and control solutions via air defense modules to unmanned aerial

vehicles (UAVs), such as reconnaissance and target acquisition drones. *Rheinmetall Dienstleistungszentrum Altmark GmbH* (RDA) provides operational support of the Combat Training Center located in the Altmark training area. *Rheinmetall Italia SpA* focuses on the field of short- and very short-range defense systems. *Rheinmetall Norway AS*, formerly Vinghøg AS, products range from night vision goggles, target acquisition systems, and day cameras to 40mm fire control systems and weapon improvement and weapon mount products. To meet the requirements of an exponentially growing aerospace industry, specifically in Asia, Rheinmetall established its Aviation related competence center at *Rheinmetall Singapore Pte Ltd*. *Rheinmetall Soldier Electronics GmbH* is the group's specialist for infantry equipment, especially laser-aiming devices. *Rheinmetall Soldier Electronics GmbH* specializes in products and services for infantry, primarily laser-aiming devices. *Rheinmetall Technical Publications* supplies civil and military customers with logistics engineering and technical publications services.

Rheinmetall Automotive AG. This is the parent company of Rheinmetall's Automotive sector. The Group has three brands: Kolbenschmidt, Pierburg, and Motorservice. Products include carburetors, fuel injection systems, components for carburetors and fuel injection systems, pollution control devices, exhaust gas measuring systems, components for fuel supply and air management, and flow meter systems for liquids and gases. The unit also develops and manufactures pistons, engine blocks, and plain bearings.

Facilities

The following is contact information for the headquarters of some of the major Rheinmetall operations.

Rheinmetall AG, Corporate Sector Defence, Rheinmetall Pl 1, 40476 Düsseldorf, Germany. Telephone: + 49 211 473 01.

Website: www.rheinmetall-defence.com

Rheinmetall Landsysteme GmbH, Heinrich-Ehrhardt-Str 2, 29345 Unterluess, Germany. Telephone: + 49 5827 80-02. Rheinmetall Landsysteme GmbH, founded after the merger of MAK-SYSTEM, Henschel, and KUKA, develops and produces tracked and wheeled vehicles for the German Army and allied armed forces.

Rheinmetall Waffe Munition GmbH, Heinrich-Ehrhardt-Str 2, 29345 Unterluess, Germany. Telephone: + 49 5827 80 01. This is the headquarters of Rheinmetall Waffe Munition GmbH.

Rheinmetall Waffe Munition Arges GmbH, Kaufing 31, 4690 Schwanenstadt, Austria. This subsidiary produces 40mm ammunition and hand grenades.

RWM Schweiz AG, Birchstrasse 155, 8050 Zurich, Switzerland. Telephone: + 41 44 316 4414. Formerly called Oerlikon Contraves Pyrotec AG, this facility specializes in the development and manufacture of medium-caliber ammunition for land, air, and naval applications, including anti-aircraft rounds.

Gesellschaft für Intelligente Wirksysteme mbH (GIWS), Kupferstrasse 4, 90478 Nuremberg, Germany. Telephone: + 49 911 462626 0. An equally owned joint venture between Rheinmetall Defence and Diehl Munitionssysteme, GIWS produces "smart" ammunition equipped with sensors and electronics.



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American Rheinmetall Defense, Inc, 11180 Sunrise Valley Dr, Suite 240, Reston, Virginia 20191 USA. This is headquarters for Rheinmetall Defense's U.S.-based operations. These units include American Rheinmetall Munition Inc, American Rheinmetall Systems LLC, and American Rheinmetall Vehicles LLC.

American Rheinmetall Munitions Inc, 125 Woodstream Blvd, Ste 105, Stafford, Virginia 22556 USA. Telephone: + 1 (703) 221-9299. This operation produces training and combat ammunition for the U.S. Marine Corps and Special Operations Forces. Combat grenades and smoke grenades for vehicle protection are also part of the company's product range.

American Rheinmetall Systems LLC, 15 Morin St, Biddeford, Maine 04005 USA. Telephone: + 1 (207) 571-5850. Products include fire control systems, laser-aiming devices, laser range finders, and weapon improvement packages.

American Rheinmetall Vehicles LLC, 7205 Sterling Ponds Court, Sterling Heights, Michigan 48312 USA. This unit offers both tracked and wheeled combat vehicle platforms to the U.S. Department of Defense.

Rheinmetall Canada Inc (formerly Oerlikon Contraves Canada), 225, Blvd du Séminaire Sud, Saint-Jean-sur-Richelieu J3B 8E9 Québec, Canada. Telephone: + 1 (450) 358-2000. Rheinmetall Canada is a systems integrator specializing in the design, assembly, integration, testing, and delivery of complete systems solutions in the areas of C3I, weapons and sensors, and transportation technology systems. Major products include the ADATS missile system.

Website: <http://www.rheinmetall.ca>

Nitrochemie Wimmis AG, Niesenstrasse 44, 3752 Wimmis, Switzerland. Telephone: + 41 33 228 1000. This company develops and manufactures propellants for the military and civil sectors.

Rheinmetall Air Defence AG (formerly Oerlikon Contraves AG), Birchstrasse, 155, CH-8050 Zurich, Switzerland. Rheinmetall Air Defence is engaged in the development, production, and sale of anti-aircraft weapon systems (guns and missiles), as well as medium-caliber ammunition.

Rheinmetall Electronics GmbH, Brüggeweg 54, 28309 Bremen, Germany. Telephone: + 49 421 457 01. Products include network-enabled capabilities, reconnaissance systems and sensors, C3I systems, fire control units, UAVs, simulation and training systems, aviation systems, and test systems.

Rheinmetall Norway AS, Steinklossveien 14 3133 Duken, PO Box 143, 3106 Nøtterøy, Norway. Telephone: + 47 3338 2350. Rheinmetall Nordic AS is a supplier of electro-optical products and systems solutions.

Rheinmetall Soldier Electronics GmbH, Bodenseeallee 3, 78333 Stockach, Germany. Telephone: + 49 7771 81-0. This facility manufactures laser-aiming devices and laser light modules in the visible and invisible (infrared) spectrum for handguns and rifles.

Rheinmetall Automotive AG (formerly KSPG Automotive), Karl-Schmidt-Strasse, 74172 Neckarsulm, Germany. Telephone: + 49 7132 33 0. This is the parent company of Rheinmetall's Automotive sector.

Website: www.rheinmetall-automotive.com

Corporate Overview

Rheinmetall AG is the stock-exchange-listed management holding company of the Rheinmetall Group. From its Düsseldorf headquarters, it exercises control over the two independent corporate sectors headed by Rheinmetall Defence (defense technology) and Rheinmetall Automotive (automotive components).

New Products and Services

Lynx for Hungary. In September 2020, Hungary ordered 218 Lynx infantry fighting vehicles under a contract worth more than EUR2 billion. The contractual agreement, which has now been signed in Budapest, encompasses 218 Lynx KF41 infantry fighting vehicles and nine Buffalo armored recovery vehicles. The contract includes additional products and services such as simulators, training, and instruction, plus an initial

supply of spare parts as well as maintenance support. The Lynx IFVs will be equipped with a manned 30mm Lance turret, likewise developed by Rheinmetall. During a first phase of production, Hungary is to receive 46 Lynx infantry fighting vehicles as well as nine Buffalo armored recovery vehicles, all built in Germany; delivery is to be complete by the start of 2023. In the second production phase, an additional 172 Lynx vehicles built in Hungary will meet in full the needs of the country's armed forces. To this end, the Hungarian government and Rheinmetall agreed in August 2020 to establish a joint venture responsible for creating a Lynx production line in Hungary.

German HX2 Truck Orders. In June 2020, Rheinmetall MAN Military Vehicles (RMMV) signed a EUR2 billion contract for military trucks for the

Rheinmetall AG

Bundeswehr. Under this fourth contract order, the company will deliver up to 4,000 swap body systems, many of which will feature armored driver's cabs. Running from 2021 to 2027, the contract represents around EUR2 billion in sales.

In December 2019, the Bundeswehr ordered another 1,000 trucks from RMMV in a contract worth almost EUR400 million. The order is the third from a framework contract signed in July 2017 encompassing over 2,200 state-of-the-art military trucks, which the Bundeswehr is purchasing as part of its Unprotected Transport Vehicles (UTF) project. The contract, which runs for a period of seven years, encompasses a total of 2,271 vehicles. The new vehicles from the Rheinmetall HX2 family are set to replace the old KAT I generation of trucks made by MAN, some of which have been serving for 40 years. The HX2 family comes in variants ranging from 4x4 to 10x10, which are configured for a multitude of different missions: cargo trucks and heavy-duty recovery vehicles, tankers, and system platforms as well as folding-road and bridge-laying systems. As a first step, 558 vehicles were ordered in 2017. A further order of 252 vehicles followed in May 2019, and another 60 in November 2019.

Marder MRO Contract. In December 2019, Rheinmetall was awarded a EUR100 million contract to extend the service life of the Marder infantry fighting vehicle for the Bundeswehr. Under the contract, the drivetrain of 71 Marder 1A5 vehicles will be replaced. Rheinmetall will be supplying the German military with a total of 78 conversion kits as well as vehicle tool kits and special tools, logistical support, an initial store of spare parts, and training and instruction. Work on the contract will run through 2023.

U.K. Boxers. In November 2019, the Artec consortium, led by Rheinmetall and Krauss-Maffei Wegmann (KMW), signed a contract with the U.K. Ministry of Defence (MoD) to produce more than 500 Boxer 8x8-wheeled armored vehicles for the British Army. The total current value of the order is approximately EUR2.6 billion (GBP2.3 billion). Delivery of the vehicles is expected to start from 2023.

MELLS AT Missile. In November 2019, Rheinmetall and its joint venture partners Diehl Defence and Rafael won an order to supply the Bundeswehr with the MELLS antitank guided missile. Rheinmetall is tasked with supplying key components to Eurospike, the company that manufactures the MELLS multirole lightweight guided missile system. For Rheinmetall, this represents an order intake of over EUR30 million. Delivery began in 2020 and will continue through 2023.

Hungary AFV Systems. In September 2019, Rheinmetall was selected to produce the main armament

and fire control technology for 44 Leopard 2 main battle tanks as well as the main armament, fire control technology, and chassis for 24 PzH 2000 self-propelled howitzers. The package also encompasses 13 HX and TGS logistic trucks. The contract is valued at EUR300 million. Deliveries will begin in 2021 and run through 2025. Rheinmetall is partnered with Krauss-Maffei Wegmann (KMW) to carry out the project. In December 2018, KMW won an order from the Hungarian armed forces for 44 new Leopard 2A7+ tanks and 24 new PzH 2000 self-propelled howitzers.

RSG60 Mortar. In August 2019, Rheinmetall announced the new RSG60 60mm mortar for infantry and special forces. Depending on the ammunition and charges, the standard version can attain ranges of up to 3,200 meters. Equipped with a barrel 30 centimeters longer, the range increases by around 500 meters. The commando variant of the RSG60 has a range of around 2,000 meters.

Munition Contracts. In June 2019, Rheinmetall and the Dutch procurement authority Defence Materiel Organisation (DMO) renewed their partnership agreement for the supply of ammunition through the end of 2030. Rheinmetall said in a statement that this agreement holds the prospect of order volume worth several hundred million euros during the ten-year period.

In April 2019, Rheinmetall was awarded a EUR109 million contract to supply the German Bundeswehr with artillery ammunition. The contract encompasses the supply of over 32,000 rounds, with an option for a further 11,000 worth around EUR37 million. Rheinmetall Waffe Munition will produce the DM121 155mm artillery ammunition in its Unterluesch facility.

In November 2018, the Bundeswehr has awarded Rheinmetall a EUR21.4 million contract for tank ammunition. The order is for some 13,000 rounds of 120mm x 570 DM88 ammunition. The DM88 is an advanced practice round made specifically for the Leopard 2 main battle tank.

In October 2018, the U.S. Marine Corps placed a \$59 million contract with Rheinmetall for 40mm practice ammunition. The ammunition, specifically the 40mm x 53 MK281 MOD3 High Velocity Practice Day/Night Marking Cartridge, will be produced in Camden, Arkansas, and shipped from American Rheinmetall Munitions. Rheinmetall's MK281 is a non-dud- producing, non-toxic training cartridge fired from a MK19 machinegun.

Mission Master UGV. In May 2019, Rheinmetall launched the Rescue model of its Mission Master

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unmanned ground vehicle (UGV). The Mission Master is a modular UGV that facilitates recovery of injured troops without compromising the operators' safety, along with many other dangerous, dirty, and dull (DDD) tasks.

Another variant is the Mission Master – Surveillance, which is designed to carry out observation and reconnaissance. This model is equipped with long-range EO/IR cameras, a 5-metre telescopic mast, radar, laser rangefinders (LRF), and GPS heading systems for 360-degree surveillance.

Cargo and weaponized versions of the Mission Master have also been developed.

Plant Expansion/Organization Update

Australian Tech Center Formed. In April 2018, Rheinmetall Defence Australia (RDA) announced plans to establish a Technology Center for Light-weight Applications (TECLAB) to support the LAND 121 (military trucks) and LAND 400 (Boxer) programs. The center will collaborate with local industries and agencies to develop technologies to improve the two programs.

Australia and New Zealand Units Consolidated.

In August 2017, Rheinmetall integrated its operations in Australia and New Zealand into a single operational unit, Rheinmetall Defence Australia (RDA). The integrated business will include the existing operations of Rheinmetall Defence Australia, Rheinmetall MAN Military Vehicles Australia, Rheinmetall Electronic Solutions Australia, and Logistic Solutions Australia.

Rheinmetall Defence Electronics Renamed. In June 2017, Rheinmetall Defence Electronics GmbH began trading under the name Rheinmetall Electronics GmbH. The company said the name change was undertaken to reflect the unit's business expansion outside the defense sector.

Rheinmetall Defence Polska Formed. In August 2016, Rheinmetall founded a new company, Rheinmetall Defence Polska, in order to strengthen the group's presence in Eastern Central Europe. A subsidiary of Rheinmetall Landsysteme GmbH with locations in Warsaw and Gliwice, Rheinmetall Defence Polska will serve as a partner to the local defense industry, providing the Polish armed forces with technical and logistical support and helping them with the development of logistic concepts. In addition, the new subsidiary will work closely with the company Zakłady Mechaniczne Bumar-Łabędy SA (ZMBL) in modernizing Poland's fleet of Leopard 2 A4 main battle tanks.

Vehicle Systems Unit Formed. In January 2016, Rheinmetall consolidated its military vehicle activities into a new Vehicle Systems division. The new unit is composed of Rheinmetall Landsysteme GmbH (RLS), Rheinmetall MAN Military Vehicles GmbH (RMMV), and Rheinmetall Defence Polska. The resulting unit is focused on the production and support of tracked and wheeled military vehicles and turrets. Under the new structure, Rheinmetall Defence consists of three divisions: Vehicle Systems, Electronic Solutions, and Weapon and Munition.

Rheinmetall Simulation Australia Formed. In October 2012, Rheinmetall Defence expanded its presence in Australia with the formation of a new subsidiary, Rheinmetall Simulation Australia Pty Ltd. Rheinmetall Simulation Australia provides advanced simulation-based training products and services to the Australian armed forces in the maritime, air, and land environments.

Oerlikon Contraves Name Changed. In September 2009, Oerlikon Contraves Deutschland GmbH was renamed Rheinmetall Soldier Electronics GmbH. The company, which has belonged to the Rheinmetall Group since 1999, develops and manufactures special components for infantry applications. Earlier, in January 2009, Oerlikon Contraves AG was renamed Rheinmetall Air Defence AG. The company offers an array of air defense products, ranging from stationary cannon-based systems to mobile-guided missile-supported solutions, together with sensor technology and associated networking solutions.

NICO-Pyrotechnik Merged. In August 2006, Rheinmetall subsidiary NICO-Pyrotechnik merged with Rheinmetall Waffe Munition GmbH. The unit now operates as Rheinmetall Waffe Munition GmbH – Branch Nico Trittau.

Rheinmetall Schweiz AG Inc. In July 2006, Rheinmetall formed Rheinmetall Schweiz AG in Zurich as the focal point for the firm's operations in Switzerland. Through Rheinmetall Schweiz AG, customers now have a single point of contact that represents Rheinmetall Defence's divisions' complete capabilities and coordinates Rheinmetall's activities in the Swiss market.

New Homeland Security Unit. In April 2005, Rheinmetall created a new Homeland Security unit. The operation offers system solutions for both internal security and civil defense missions.

Rheinmetall AG

Rheinmetall DeTec Now Rheinmetall Defence.

In mid-2005, Rheinmetall began reporting the name of its defense operations as simply Rheinmetall Defence and officially as Rheinmetall AG, Corporate Sector Defence.

Oerlikon Contraves Pyrotec Name Changed.

In March 2005, the name of medium-caliber ammunition manufacturer Oerlikon Contraves Pyrotec was changed to RWM Schweiz AG. The change followed the 2004 restructuring of Rheinmetall Defence's Weapon and Munition division. At the time, Oerlikon Contraves AG, the air defense branch of the Rheinmetall Defence family of companies, was unaffected by this name change.

Rheinmetall Waffe Munition Formed.

In April 2004, Rheinmetall Defence initiated a consolidation program in its Weapon and Munition division. Reacting to changing market conditions, Rheinmetall Defence reorganized this division by merging Rheinmetall W&M GmbH (the previous parent company) with a number of other components to form the new company Rheinmetall Waffe Munition GmbH. Other companies consolidated into this new entity included Mauser-Werke Oberndorf Waffensysteme GmbH, Buck Neue Technologien GmbH, and Nico Pyrotechnik GmbH. The Rheinmetall Waffe Munition division consists of four segments that mirror the unit's core competencies: large-caliber ammunition, medium-caliber ammunition, propellants, and protection systems and pyrotechnics. Also functioning under the new structure are Switzerland's RWM Schweiz AG and the German-Swiss Nitrochemie group.

Rheinmetall Landsysteme GmbH Founded.

In August 2000, Rheinmetall Defence combined its once independently operating subsidiaries Henschel Wehrtechnik GmbH, Kassel, KUKA Wehrtechnik GmbH, Augsburg, and MAK-SYSTEM GmbH into a new unit dubbed Rheinmetall Landsysteme GmbH.

Mergers/Acquisitions/Divestitures

Provectus Robotics Acquired. In July 2019, Rheinmetall Canada acquired Provectus Robotics Solutions, a developer of robotic systems and software. The Provectus software package enables key robotic capabilities, permitting the transformation of virtually any ground vehicle into a robotic platform featuring autonomous driving functions. Unmanned ground vehicles from Provectus have been used in a variety of applications, including bomb disposal operations, crowd monitoring/crowd control, and space research as well as to secure territory. Terms were not announced.

Website: <https://provectus-robotics.com/>

IBD Deisenroth Engineering Acquired. In March 2019, Rheinmetall took over the operational assets of IBD Deisenroth Engineering GmbH of Lohmar, Germany. IBD is a supplier of passive protection systems, principally for military vehicles. The company had annual sale of about EUR35 million and employs 120 personnel. Terms were not announced.

Sydac Acquired. In October 2012, Rheinmetall acquired the defense operations of Australia-based Sydac Pty Ltd. Sydac provides simulation-based products and services in Australia. Its defense business has some 20 employees and boasted sales of around AUD6 million for 2012. The operation is now part of Rheinmetall Simulation Australia. Terms were not announced.

Rheinmetall Takes Over EM Digital.

In September 2012, Rheinmetall Defence took over the stabilized weapon platform activities of Britain's EM Digital. The new subsidiary, Rheinmetall Advanced Stabilised Platforms of London, produces an extensive range of stabilization technology products. RASP's prime focus is the development and production of naval weapon stations and platforms. Rheinmetall holds a 51 percent stake in the company, the remainder of which is owned by Seawood Ltd.

Defense Munitions International. In April 2012, General Dynamics Ordnance and Tactical Systems and Rheinmetall Defence formed a tank ammunition joint venture company named Defense Munitions International LLC. DMI develops and markets new and existing 120mm kinetic energy and multipurpose cartridges for the U.S. and international tank ammunition markets.

Controlling Stake in ADS GmbH Acquired.

In February 2011, Rheinmetall took operational control of ADS GmbH by increasing its stake from 25 percent to 75 percent. Based in Lohmar, Germany, the company develops active defense systems for military vehicles. These systems are based on the hard-kill principle, in which directed energy detects and destroys incoming projectiles immediately before they reach their target. Terms were not disclosed.

Verseidag Ballistic Protection Acquired.

In January 2011, Rheinmetall purchased the remaining 49 percent stake of Verseidag Ballistic Protection GmbH from Jagenberg AG. Verseidag is now wholly owned by Rheinmetall. Verseidag products provide the occupants of civilian and military vehicles with protection from ballistic threats and bomb blasts. This acquisition enables Rheinmetall to supply makers of military land vehicles and the civilian auto industry with a full range of protection technology. Terms were not disclosed.

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Società Esplosivi Industriali Acquired. In December 2010, Rheinmetall and France's EPC Group took over the defense business operations and assets of Società Esplosivi Industriali SpA. Rheinmetall continues to pursue SEI's defense activities, which include developing and manufacturing ammunition under the name RWM Italia Munitions Srl. According to Rheinmetall, the acquisition is strategically significant because of the Italian company's prominence as an international supplier of aircraft ammunition and underwater defense systems, areas in which Rheinmetall is seeking an expanded role. In FY09, SEI's 115 employees generated sales of around EUR20 million. Terms of the deal, first announced in March 2010, were not disclosed.

Laingsdale Engineering Acquired. In October 2010, Rheinmetall acquired Laingsdale Engineering Pty Ltd of Maitland from South African company Tellumat Pty Ltd. Laingsdale Engineering develops and produces precision mechanical components. Rheinmetall Waffe Munition GmbH holds a 51 percent stake in Laingsdale Engineering, with Rheinmetall Denel Munition Pty Ltd holding the remaining 49 percent share. Laingsdale employs 180 people and had 2009 sales of about EUR10 million. Terms were not disclosed.

Simrad Optronics Acquired. In July 2010, Rheinmetall completed its takeover of Simrad Optronics ASA of Nøtterøy, Norway, in a deal valued at NOK591 million (EUR75.4 million). Simrad Optronics produces components for remote-control weapon stations and electro-optical devices and performs weapon system upgrades for a global client base. In 2009, the company's 200 employees generated sales of approximately NOK624 million (EUR80 million).

Denel Munition Stake Acquired. In September 2008, Rheinmetall Defence completed its acquisition of a majority stake in South Africa's Denel Munitions. Rheinmetall Defence acquired a 51 percent stake in Denel Munitions; the remaining 49 percent stayed with Denel. The company has been renamed Rheinmetall Denel Munition Pty Ltd. Terms were not disclosed. The deal was first announced in February 2008.

LDT Laser Display Stake Acquired. In May 2008, Rheinmetall Defence took over a 51 percent stake in Jenoptik subsidiary LDT Laser Display Technology GmbH. According to Rheinmetall, the deal widened its lead as the world's foremost supplier of simulators for flight crew instruction and training. Terms were not disclosed.

Stork PWV Takeover. In March 2008, Rheinmetall took over Stork PWV BV from Stork PWV's parent company, Stork NV of the Netherlands. The takeover reinforced Rheinmetall's role in the Boxer program, one

of the largest armored vehicle projects in Europe. Rheinmetall currently holds a 14 percent stake as a joint venture partner in ARTEC GmbH, the company that developed the Boxer armored vehicle for the German and Dutch armed forces. The takeover, which included Stork PWV's share in ARTEC, increased Rheinmetall's interest in ARTEC to 64 percent. Terms were not disclosed.

Telerob Stake Divested. In September 2007, Equitrust AG, a unit of Nordcapital Holding GmbH & Cie KG, acquired Telerob GmbH, a Hamburg, Germany-based manufacturer of remotely controlled robots, from Rheinmetall AG in a leveraged buyout transaction. Terms were not disclosed.

Zaugg Elektronik Acquired. In July 2007, Rheinmetall purchased Zaugg Elektronik AG of Lohn-Ammannsegg, Switzerland, for an undisclosed amount. Zaugg Elektronik produces fuses for medium- and large-caliber ammunition.

Chempro Stake Acquired. In January 2007, Rheinmetall acquired a 51 percent stake in Chempro GmbH of Bonn, Germany, and increased its stake in ADS Gesellschaft für aktive Schutzsysteme mbH of Lohmar, Germany, for an undisclosed amount. Chempro and ADS both specialize in protection systems for military vehicles.

AIM and Arges Acquired. In May 2005, Rheinmetall Defence Electronics purchased a 50 percent stake in AIM Infrarot-Module GmbH of Heilbronn, Germany. The operation was to be run as a joint venture with Diehl. AIM is a manufacturer of infrared sensors. Around the same time, Rheinmetall took over medium-caliber ammunition specialist Arges mbH of Schwanenstadt, Austria. Terms of the transactions were not disclosed.

Teaming/Competition/Joint Ventures

Airbus DS Airborne Solutions. In January 2012, Airbus Defence and Space and Rheinmetall agreed to fold Rheinmetall's unmanned aerial system (UAS) activities into a joint venture known as Airbus DS Airborne Solutions GmbH. Airbus Defence and Space holds 51 percent of the shares and Rheinmetall Electronics, 49 percent. The firms will cooperate on tactical UASs, medium-altitude UASs, and cargo-loading systems.

ARTEC GmbH. This is an industrial group formed to develop and produce the Boxer family of next-generation armored vehicles. ARTEC is currently composed of Rheinmetall Landsysteme GmbH and Krauss-Maffei Wegmann GmbH (Stork of the Netherlands was a partner but was acquired by Rheinmetall in 2008). The U.K. was a group member

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via Alvis Vickers (now BAE Systems), but withdrew from the program in 2003. In December 2006, a procurement contract was placed with the ARTEC consortium for 472 Boxer vehicles. The German Bundeswehr will procure 272 vehicles, while the Royal Netherlands Army will receive 200 vehicles (see **Program Activity** for more details on the Boxer program).

In April 2018, the U.K. rejoined the Boxer program with the intent of procuring the vehicle for the British Army beginning in 2023. In November 2019, the Artec consortium signed a contract with the U.K. Ministry of Defence (MoD) to produce more than 500 Boxer 8x8-wheeled armored vehicles for the British Army. Rheinmetall BAE Systems Land (RBSL) will be one of the primary vehicle manufacturers in the U.K. undertaking the fabrication of the armored vehicle structures together with the assembly, integration, and test of the complete vehicles at its Telford facility.

Website: www.artec-boxer.com

Autonomous Combat Warrior. In February 2020, Rheinmetall launched its first Australian research and technology program. Under the Autonomous Combat Warrior (ACW) program, Rheinmetall's Australian, German, and Canadian development teams will work alongside research teams from Defence Science and Technology (DST) group, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Queensland University of Technology (QUT), and the Royal Melbourne Institute of Technology (RMIT). The aim is to develop advanced sovereign robotics and automated vehicle technologies. This will create a local automated military vehicle capability.

Challenger 2 Upgrade. In August 2016, Rheinmetall submitted its bid for the U.K. Ministry of Defence's contract to upgrade the British Army's Challenger 2 tanks. The Challenger 2 Life Extension Project (LEP) will see the main battle tanks in service until 2035. The LEP aims to upgrade some 227 tanks and replace most of the electronics, including the sighting systems. Rheinmetall has teamed with several U.K. companies, including Supercat, Thales UK, and BMT. Other bidders include BAE Systems, with General Dynamics UK, Leonardo, Moog, QinetiQ, and Safran; CMI Defence, in partnership with Ricardo; Lockheed Martin with Elbit Systems; and Ruag Defence.

In December 2016, BAE Systems and Rheinmetall Landsysteme GmbH each received \$28 million contracts to develop upgrades for the Challenger 2 LEP. Under their respective contracts, Rheinmetall and

BAE Systems will conduct technical studies with the Challenger 2 in order to produce digital models whereby appropriate upgrades can be determined. The total value of the Challenger 2 Assessment Phase is \$65 million.

The July 2019 formation of Rheinmetall BAE Systems Land made the new joint venture the sole contender for the LEP. The MoD has delayed a decision to 2021 to further study modernization and address obsolescence issues. In addition, according to U.K.'s Army 2020 Refine force structure effort, the number of tanks to be modernized may be reduced to an estimated 150.

Contraves Malacca. In July 2010, Rheinmetall Defence and Boustead Heavy Industries Corp Sdn Bhd of Kuala Lumpur, Malaysia, entered into a strategic agreement for the joint ownership of Contraves Advanced Devices Sdn Bhd in Malacca. Under the agreement, Boustead Heavy Industries would take a 51 percent stake in Rheinmetall subsidiary Contraves Advanced Devices. Rheinmetall would retain a 49 percent share in Contraves Advanced Devices and control of operational management. Contraves Advanced Devices fabricates advanced electronic components.

Website: <http://www.contraves.com.my/>

Day & Zimmerman. In December 2016, American Rheinmetall Munitions and Day & Zimmermann (D&Z) established a joint venture company to develop medium-caliber ammunition for the U.S. market, including 25mm ammunition for the F35 Joint Strike Fighter. Rheinmetall Day & Zimmermann Munitions (RDZM) is 50-50 owned and operates out of Rosslyn, Virginia.

Diehl. In February 2003, Rheinmetall W&M GmbH and Diehl Munitionssysteme GmbH & Co KG signed an agreement to work closely in the domain of military and civil high-power microwave applications. Under this deal, the two companies are able to offer a wide range of applications from a single source.

EuroSpike. In June 2004, Diehl BGT Defense, RDE, and Rafael signed an agreement establishing a new company, EuroSpike GmbH, to serve as the prime contractor for the EuroSpike family of missiles for European customers. As part of the effort to market and establish the logistics infrastructure in Europe, Rafael, Diehl, and RDE established the EuroSpike consortium in 1997. The cooperation between the parties had significant success in terms of receiving and managing several contracts. EuroSpike GmbH company shareholders are Diehl BGT Defense (40 percent), RDE (40 percent), and Rafael via ERCAS BV (20 percent).

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ERCAS BV is a Dutch holding company owned 100 percent by Rafael. EuroSpike GmbH is located in Roethenbach (Pegnitz), Germany.

Website: www.eurospike.com

FülInfoSys Heer. This is a joint venture established between Krauss-Maffei Wegmann and Rheinmetall Landsysteme for performance of work under the German FülInfoSys Heer program. FülInfoSys Heer is a collection of C4 communications and computing services linking all combat, combat support, and service support elements of land forces from division headquarters down to the squad commander.

GIWS. In 1988, Diehl BGT Defense and Rheinmetall Defence formed an equally owned joint venture in the area of intelligent munitions. The venture was named Gesellschaft für Intelligente Wirksysteme mbH.

Website: www.giws.de/

Helicopter Flight Training Services. Founded in December 2004, this is a consortium owned equally by CAE, Airbus Helicopters, Thales, and Rheinmetall Defence. In January 2009, HFTS officially inaugurated the world's first NH90 full-mission simulator in its newly built facility in Bückeburg, Germany, adjacent to the German Army Aviation School. HFTS planned to design, build, and operate three NH90 simulator training centers.

In December 2019, as part of the HFTS team, Rheinmetall will modernize flight simulators for the German Army Aviation Corps' NH90 helicopters. Awarded to HFTS, the complete contract encompasses operation, service, and maintenance of the simulators through to 2027.

Website: www.hfts.eu

Hungarian Lynx Joint Venture. In August 2020, Rheinmetall and Hungary announced plans to create a Hungarian joint venture to produce Lynx infantry fighting vehicles. Rheinmetall will hold a majority stake in the joint venture company. Hungary will make a material investment in the project in the form of a newly constructed production facility. The resulting center of excellence for the development, production, and maintenance of armored vehicles will create an important nucleus for the Hungarian defense industry, the company said. The joint venture will assist in the production of 218 Lynx infantry fighting vehicles Hungary ordered under a EUR2 billion contract in September 2020.

IAI. In June 2007, Israel Aerospace Industries and Rheinmetall Defence agreed to cooperate in the development of a reconnaissance and strike system network using loitering munition assets of the latest

generation for operational ground forces. As the first program under the arrangement, the companies planned to develop a weapon system for standoff-capable engagement of single and pinpoint targets (German abbreviation: Wabep), as desired for procurement by the Bundeswehr.

In June 2004, Rheinmetall Electronics and IAI/MBT Missiles Division, Israel, signed an agreement to jointly offer an upgrade kit, dubbed LAHAT, for the Leopard 1/2 main battle tank. The LAHAT is a precision-guided, gun-fired missile for 105mm/120mm guns and launchers. The upgrade extends the effective range of the tank to over 6,000 meters, providing precision-kill capability against armored targets.

Kongsberg. In October 2010, Rheinmetall Defence and Kongsberg signed a framework agreement for cooperation in the remote weapon station product area. Rheinmetall and Kongsberg entered into this agreement to promote the Kongsberg Protector family of RWSs and increase the level of integration between the product lines of the two companies.

LAND 400 Phase 2. In July 2016, Rheinmetall Defence was downselected for the Risk Mitigation Activity (RMA) on Australia's LAND 400 Phase 2 – Mounted Combat Reconnaissance Capability program. Rheinmetall is offering the Boxer 8x8 fitted with a Lance turret and outfitted with Northrop Grumman's C4ISR architecture. The company is facing a competing bid from a BAE Systems/Patria team with its AMV35 vehicle. The LAND 400 program aims to replace the country's fleet of aging Australian Light Armored Vehicles (ASLAV) and M113AS4 Armored Personnel Carriers beginning in 2020. In March 2018, Australia selected Rheinmetall's Boxer Combat Reconnaissance Vehicle as the winner. The win is valued at AUD5 billion (USD3.3 billion) for a total of 211 vehicles.

LAND 400 Phase 3. In September 2019, Rheinmetall's Lynx KF41 Infantry Fighting Vehicle and Hanwha AS21 Redback were downselected for Australian's LAND 400 Phase 3 – Mounted Close Combat Capability program. This effort will see the replacement of aging M113 armored personnel carriers (APCs) with up to 450 vehicles slated for procurement. The program is valued at AUD15 billion (USD11 billion). The two competitors now progress to a 12-month Risk Mitigation Activity (RMA) phase. BAE Systems' CV90 and General Dynamics Land Systems' Ajax vehicles were eliminated from the competition.

LAND 8116. This is an Australian effort to acquire 30 new self-propelled artillery systems, along with support vehicles and related systems. Rheinmetall and Hanwha are expected to face each other once again following the

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terminated LAND 17 – Artillery Replacement project, which was canceled in 2012. Hanwha will propose its K9 tracked SPH, while Rheinmetall will offer a variant of the PzH2000, produced in cooperation with KMW.

Land Vehicle Crew Training System. In June 2020, Rheinmetall and Lockheed Martin teamed to bid for the Canadian Army's Land Vehicle Crew Training System (LVCTS) program. Rheinmetall Canada will take the lead in a partnership that includes Lockheed Martin Canada, Rheinmetall Electronics, and Lockheed Martin Training and Logistics Solutions in Orlando, Florida. The LVCTS solution will enable the Canadian Army to conduct training at the individual, crew, platoon, and higher echelon levels using high- to medium-fidelity reconfigurable trainers, as well as standard trainee workstations combined with a virtual environment and a comprehensive instructional system.

Main Ground Combat System. In May 2020, the joint Franco-German Main Ground Combat System (MGCS) program got underway with the release of an initial architecture study. The MGCS is a project by France and Germany to replace their currently deployed Leclerc Tank and Leopard 2 main battle tanks. In December 2019, Krauss-Maffei Wegmann (KMW), Nexter Systems, and Rheinmetall AG formed a working group, or ARGE (Arbeitsgemeinschaft), to pursue the effort. Under the System Architecture Definition Study - Part 1 (SADS Part 1), the three partners will assess various aspects of different concepts: technical feasibility in the projected timeframe allotted for the program, ability to fulfill the operational needs of both armies, efficiency, and compatibility with national "systems of systems" (SCORPION for France and Digitization of Land-Based Operations [D-LBO] for Germany). Workshares in the SADS Part 1 are to be distributed 50:50 between France and Germany. The first phase is expected to run 18 months. The new tank is scheduled to enter service in 2035.

MBDA. In August 2019, Rheinmetall and MBDA Deutschland agreed to collaborate in the high-energy laser effectors domain. The two companies intend to construct, integrate, and test a laser demonstrator for the German Navy's corvette K130.

Moreni. In November 2016, news reports indicated Rheinmetall and Romanian state-owned Uzina Automecanica Moreni (UAM) had established a new joint venture, Romanian Military Vehicle Systems. The venture will produce 8x8 armored personnel carriers to replace Romania's aging TAB vehicles, a local variant of the BTR-70.

Polska Grupa Zbrojeniowa (PGZ). In February 2016, Rheinmetall, in cooperation with PGZ and ZM Bumar-Labedy, were selected to upgrade 128

Polish Leopard 2 MBTs. Under an order worth about EUR220 million, the team will modernize the Leopard 2A4s to the Leopard 2 PL standard, which corresponds to the German Leopard 2 A5 and A6. Rheinmetall will build the first dozen or so units then transfer the technology to Bumar-Labedy to handle the remainder of the upgrade production.

In May 2015, Rheinmetall MAN Military Vehicles signed a cooperation agreement with Poland's Polska Grupa Zbrojeniowa SA and PGZ subsidiary Obrum for a new amphibious vehicle for the Polish military. Rheinmetall and its Polish partners have agreed to develop a 6x6 wheeled armored vehicle oriented to the requirements of the Polish Army's light armored reconnaissance vehicle procurement effort. RMMV and PGZ plan to create a sales joint venture, laying the groundwork for marketing the vehicle, and possible derivatives, internationally.

Projekt System und Management GmbH. In July 2002, Krauss-Maffei Wegmann and Rheinmetall Defence formed Projekt System und Management GmbH to develop the Puma armored vehicle (formerly called the Panther). Each company holds a 50 percent stake in PSM, which is headquartered in Kassel, Germany.

In July 2017, PSM was awarded several contracts worth EUR370 million to upgrade the German Army's Puma vehicles. The contracts will see the development of a new turret-independent secondary weapon system, installation of advanced visualization and display technology in three vehicles, training and logistics for the Multifunktionale Selbstschutzsystem (MUSS) self-protection system, and 11 turret trainers.

Website: www.psm-spz.com

PT Pindad. In September 2014, Rheinmetall Denel Munition and Indonesian company PT Pindad followed up on the Memorandum of Understanding (MoU) they had assented to in August of that year by signing a teaming agreement on ammunition. Under the initial arrangement, RDM agreed to produce a range of ammunition, including 105mm artillery shells, for the Indonesian military and other armed forces in the region. The agreement also laid the basis for a project to build a 168-hectare ammunition plant in Malang, East Java. In addition, the new teaming agreement will see further cooperation in ammunition manufacture and training of PT Pindad personnel.

Raytheon Technologies. In September 2019, Raytheon and Rheinmetall Defence officially established a joint venture to offer the Lynx Infantry Fighting Vehicle (IFV) for the U.S. Army's Optionally Manned Fighting Vehicle (OMFV) competition. The

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U.S.-based joint venture is called Raytheon Rheinmetall Land Systems LLC. Textron joined the team earlier in the year; if selected as the winner, it would have built the vehicle at its Slidell, Louisiana, facility. Scheduled for fielding in 2026, the Next-Generation Combat Vehicle was to be optimized for urban combat and rural terrain. The new system was expected to replace the Bradley fighting vehicle currently in service. The team was to offer the Lynx Infantry Fighting Vehicle paired with Raytheon weapons, sensors, and system integration services. However, in October 2019, *Defense News* reported that the U.S. Army had disqualified the Lynx from the competition, leaving General Dynamics Lands Systems as the sole entrant. Then, in January 2020, the U.S. Army canceled the solicitation for the program outright. The service stated it would revisit the requirements and acquisition strategy. By July 2020, the U.S. Army was looking for industry feedback before putting up its latest attempt at procuring an OMFV. Raytheon and Rheinmetall Defence first announced their teaming for the OMFV program in October 2018.

In March 2018, Raytheon and Rheinmetall teamed to offer a complete ground-based air defense system for Germany. The two companies propose to integrate Rheinmetall's Nah- und Nächstbereichsschutzsystem (NNbS) short- and very short-range air defense system with Raytheon's longer-range Patriot Advanced Capability (PAC 3) air defense system. In 2015, Lockheed Martin and MBDA were selected for Germany's Taktisches Luftverteidigungssystem (TLVS) tactical air defense system, based on MEADS. Should that effort run into trouble, Raytheon and Rheinmetall hope to have a shot with their off-the-shelf offer.

In February 2017, Raytheon and Rheinmetall signed a Memorandum of Understanding to cooperate globally on defense technology. Under the MoU, the companies will seek areas of cooperation in air defense, combat vehicles, weapons, cybersecurity, and training systems.

RGR Armament. In April 1997, Rheinmetall, Nexter (Giat), and BAE Systems (Royal Ordnance) formed a joint venture, RGR Armament, to develop a 140mm smoothbore gun for the Future Tank Main Armament. Based in Germany, the joint venture built six prototypes of a 140mm smoothbore gun and its associated APFSDS-T ammunition for trial purposes. The 140mm smoothbore gun is called the NPzK-140. In addition to this testbed program, the joint venture formed the basis for extended cooperation in future technologies for tank guns and ammunition.

Rheinmetall BAE Systems Land. In July 2019, Rheinmetall and BAE Systems formally launched their U.K.-based joint venture (JV) for military vehicle design, manufacture, and support – known as Rheinmetall BAE Systems Land (RBSL). In

January 2019, BAE Systems sold a majority stake in its Land UK tank and combat vehicle division to German competitor Rheinmetall for GBP28.6 million. Rheinmetall has a 55 percent stake in the new joint venture, with BAE Systems retaining 45 percent. The joint venture is based at BAE Systems' facility in Telford, Shropshire. The deal does not include Land UK's munitions and technology interests. RBSL will play a major role in the delivery of the British Army's new Boxer 8x8 mechanized infantry vehicle (MIV) and the Challenger 2 upgrade, while also providing support to the British Army's in-service bridging and armored vehicle fleets.

Website: <https://rbsl.com/>

Rheinmetall BMC Defence Industry. In August 2016, Rheinmetall, Turkey's BMC, and Malaysia's Etika Strategi launched a Turkey-based armored solutions joint venture. The venture, Rheinmetall BMC Defence Industry Inc, intends to focus on wheeled and tracked armored vehicles. Its initial efforts are likely to be concentrated on Turkey's indigenous MBT program, the Altay. According to news reports, the Altay program involves the production of 1,000 tanks, with an initial batch of 250. However, in 2019 Rheinmetall pulled out of the venture.

Rheinmetall Fraen Fuzes. In May 2019, Rheinmetall and Fraen Corporation formed a U.S. joint venture called Rheinmetall Fraen Fuzes LLC (RFF). The venture will develop and produce military fuzes. The Düsseldorf, Germany-based technology group will hold a 51 percent share in the new company, with Fraen holding the remaining 49 percent. The joint venture is collocated with Fraen headquarters in Reading, Massachusetts.

Website: www.rffllc.com

Rheinmetall MAN Military Vehicles. In January 2010, the joint venture between Rheinmetall and MAN Nutzfahrzeuge AG became operational. RMMV, in Munich, is a comprehensive supplier of wheeled tactical vehicles capable of meeting the needs of militaries for protected and unprotected transport, command, and multifunctional vehicles. Rheinmetall holds a 51 percent stake in the company, with MAN Truck & Bus SE holding the remaining 49 percent. RMMV employs around 1,500 workers. In mid-2019, Rheinmetall announced it would acquire MAN's stake in RMMV's Tactical Vehicles division. The move is aimed at consolidating Rheinmetall's position in tactical wheeled vehicles. The military truck portion of the venture will remain jointly held, with Rheinmetall holding a 51 percent stake, and MAN holding the remaining 49 percent.

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Rheinmetall MKEK Technologies. In May 2015, Rheinmetall and Turkey's MKEK signed an MoU paving the way for extensive cooperation between the two groups. The partners plan to establish a joint venture in Turkey with the mission of developing new products in the field of weapon systems and munitions. The operation is known as Rheinmetall MKEK Technologies.

Rheinmetall NIOA Munitions. This is a joint venture between Rheinmetall Waffe Munition GmbH (51%) and NIOA (49%). Australian-owned NIOA is a supplier of weapons and munitions to the Australian Defence Force. In March 2020, the joint venture was selected to produce and export ammunition for the F-35 Joint Strike Fighter program.

Rohde & Schwarz. In October 2018, Rheinmetall and Rohde & Schwarz formed a joint venture to bid for work under the Bundeswehr's Digitization of Land-based Operations (D-LBO) command modernization effort. This effort supersedes two previous projects, the Mobile taktische Kommunikation (MoTaKo) and Mobiler taktischer Informationsverbund (MoTIV). The venture is called Rheinmetall-Rohde & Schwarz – Military IT and Communications Solutions (RRS-MITCOS). Rheinmetall will hold a 74.9 percent share in the new company, with the remaining 25.1 percent to be held by Rohde & Schwarz. Rheinmetall will be responsible for the command systems, the cross-functional operator interface, and the complete vehicle integration process. Rohde & Schwarz will be in charge of the complete architecture, including IT and cyber security, as well as the IP-based system solution for military voice and data transmission, including incorporation of components and solutions from other contractors.

Schwerer Transporthubschrauber (STH). Announced in December 2017, this is a German program to acquire a new heavy-lift helicopter to replace CH-53G models currently in service. A Rheinmetall/Sikorsky team is offering the CH-53K King Stallion against a rival bid from Boeing with the CH-47F Chinook. The program, which will replace 45 to 60 helicopters, is valued at about EUR4 billion (\$4.72 billion). In October 2019, Rheinmetall and Sikorsky announced plans to construct a CH-53K Helicopter Logistics and Fleet Management Center at Leipzig/Halle Airport should their bid win the competition. In January 2020, Sikorsky and Rheinmetall submitted their proposal.

However, in September 2020, the German Defense Ministry opted to scrap the competition due to cost concerns.

ST Engineering. In September 2019, Rheinmetall and ST Engineering signed a Memorandum of Understanding (MOU) to investigate opportunities to jointly develop, build, and sell defense protection systems and tracked military vehicles.

Steyr Mannlicher. In January 2017, Rheinmetall and Steyr Mannlicher joined forces to manufacture and market the RS556 modular assault rifle. Rheinmetall and Steyr Mannlicher are offering the assault rifle as a jointly produced product made in Germany, with a German value added share of 60 percent. Among other things, the two partners have their sights set on the German market.

Strike Shield. In December 2019, the U.S. Army awarded an \$11 million contract to the team of Rheinmetall Protection Systems and Unified Business Technologies (UBT) for testing of the StrikeShield Active Protection System (APS). Testing was scheduled to begin in October 2020 at Redstone Test Center in Huntsville, Alabama. The Army's Vehicle Protective Systems (VPS) program office will evaluate StrikeShield as part of a larger effort to characterize APS performance against a wide variety of anti-armor threats. Rheinmetall and UBT have teamed for U.S. active protection programs since 2015.

Supashock. In July 2017, Rheinmetall acquired a 49 percent stake in the Australian firm Supashock. The Rheinmetall Defence-Supashock partnership will develop and manufacture a revolutionary military suspension and integrated intelligent load handling system for Rheinmetall's range of military trucks.

Teledyne Brown Engineering. In December 2004, Rheinmetall Electronics and Teledyne Brown Engineering Inc formed an alliance to market a family of UAVs to the U.S. government. Under Teledyne Brown's lead, the Prospector system was developed for the U.S. market based on the KZO, a German UAV. A second system, Thunder, based on Rheinmetall's TAIFUN unmanned combat aerial vehicle system, was also adapted and marketed. The UAVs were to be produced at Teledyne Brown's manufacturing facilities in Huntsville, Alabama.

Thales. In January 2020, Rheinmetall and Thales signed an agreement to support future developments, qualification, and production of the 70mm (2.75 in) guided and unguided rockets solutions for helicopters as well as potentially other new platforms in Germany. Rheinmetall Waffe Munition GmbH will lead marketing efforts towards the German customers.

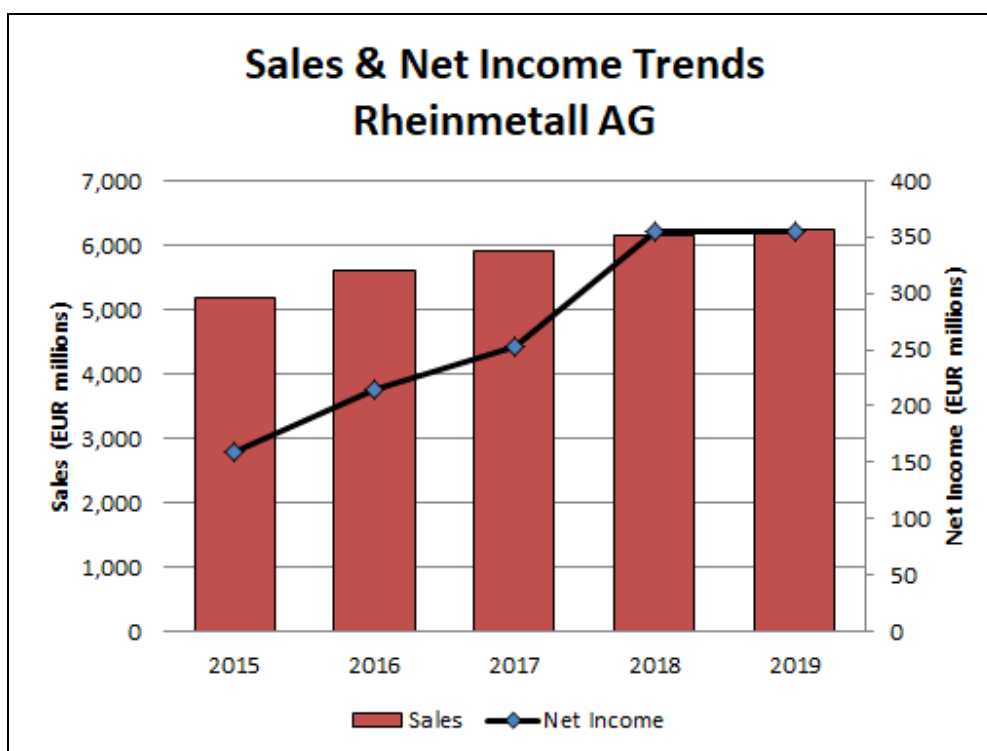
Rheinmetall AG**Financial Results/Corporate Statistics**

The Rheinmetall Group posted sales of EUR6.3 billion for 2019, up 1.7 percent from 2018 sales of EUR6.1 billion. The group posted net income of EUR354 million, unchanged from 2018. Latest-year statistics are provided in the following table. U.S. dollar figures were translated as of December 31, 2019, at the rate of EUR1 = USD1.11986.

Rheinmetall (ETR: RHM)

(EUR millions)	2015	2016	2017	2018	2019	(USD) 2019
Net Sales	5,183	5,602	5,896	6,148	6,255	7.005
Net Income	160	215	252	354	354	396
R&D Expenditures*	73	74	109	143	145	162
Backlog*	6,422	6,656	6,416	8,577	10,399	11.645
Long-Term Debt	759	220	572	704	880	985
Shareholder's Equity	1,492	1,686	1,836	2,022	2,125	2.380
Debt-to-Equity Ratio	.51	.13	.31	.35	.41	-
Employees	22,640	23,044	23,726	24,949	25,767	-

* Defense only.



Rheinmetall AG**Industry Segments**

The following data are the net sales and income of each of Rheinmetall AG's corporate sectors for the past five years.

SALES	2015	2016	2017	2018	2019
(USD millions)					
Defense	2,591	2,946	3,036	3,221	3522
Automotive	2,592	2,656	2,861	2,930	2736
Other Consolidation	-	-	-1	-3	-3
TOTAL	5,183	5,602	5,896	6,148	6255
OPERATING INCOME	2015	2016	2017	2018	2019
(USD millions)					
Defense	90	147	174	254	343
Automotive	216	223	249	262	184

Segment Details

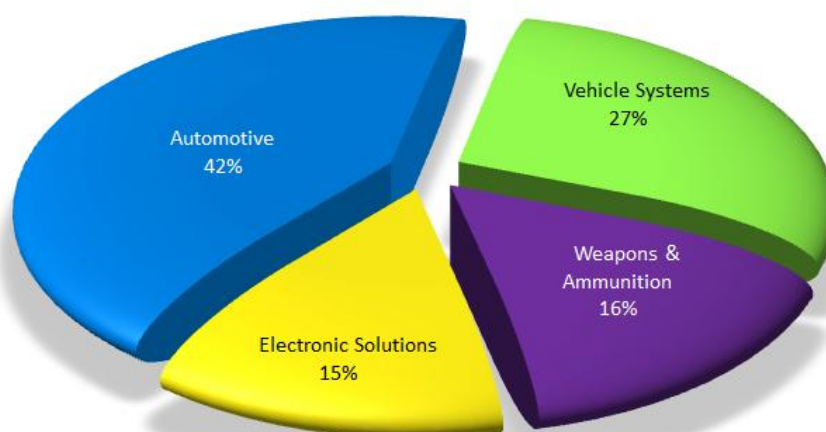
Below is a breakdown of key financial data for the company's major business segments and geographic regions for the past four years.

DEFENSE	2015	2016	2017	2018	2019
(EUR millions)					
Sales Total	2,591	2,946	3,036	3,221	3,522
Vehicle Systems	1,195	1,392	1,480	1,568	1,787
Weapons & Ammunition	881	1,112	1,175	1,056	1,018
Electronic Solutions	759	745	691	839	948
Others/Consolidation	-244	-303	-310	-242	-231
Operating Income Total	90	147	174	254	343
Vehicle Systems	3	29	53	108	150
Weapons & Ammunition	74	108	117	121	123
Electronic Solutions	26	25	20	47	75
Others/Consolidation	-13	-15	-16	-22	-6
Backlog Total	6,422	6,656	6,416	8,577	10,399
Vehicle Systems	-	3,577	3,021	5,030	6,722
Weapons & Ammunition	-	1,817	1,692	2,122	2,308
Electronic Solutions	-	1,579	1,914	2,117	2,188
Others/Consolidation	-	-211	-317	-692	-819
Order Intake Total	2,693	3,050	2,963	5,565	5,186
Vehicle Systems	1,006	956	941	3,616	3,326
Weapon & Ammunition	908	1,171	1,089	1,559	1,204
Electronic Solutions	947	1,015	1,077	1,060	1,001
Others/Consolidation	-168	-92	-145	-670	-344

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DEFENSE	2015	2016	2017	2018	2019
(EUR millions)					
Employees Total	10,476	10,002	10,251	10,948	12,100
Vehicle Systems	-	2,797	2,983	3,258	4,091
Weapon & Ammunition	-	4,211	4,343	4,753	4,893
Electronic Solutions	-	2,927	2,845	2,856	3,013
Others/Consolidation	-	68	80	81	104
AUTOMOTIVE	2015	2016	2017	2018	2019
(EUR millions)					
Sales	2,592	2,656	2,861	2,930	2,736
Operating Income	216	223	249	262	184
Employees	11,979	10,835	11,166	11,710	11,405

**2019 Sales by Segment
Rheinmetall AG**



Rheinmetall AG

GEOGRAPHIC SALES	2015	2016	2017	2018	2019
(USD millions)					
DEFENSE					
Germany	833	781	867	1,118	1,434
Rest of Europe	568	493	528	597	693
Americas	176	177	203	171	113
Asia	777	862	652	644	594
Other Regions	237	633	786	692	688
AUTOMOTIVE					
Germany	528	530	556	586	515
Rest of Europe	1,238	1,260	1,299	1,267	1,173
Americas	416	440	564	564	542
Asia	307	334	418	492	486
Other Regions	103	92	24	22	20
TOTAL	5,183	5,602	5,897	6,151	6,258

Major Competitors

In the defense market, Rheinmetall's competitors include the military vehicle and ordnance operations of BAE Systems, Diehl, Hanwha Techwin, General Dynamics, KNDS (Krauss-Maffei Wegmann + Nexter Defense Systems), Northrop Grumman, Patria, Thales, and Textron.

Strategic Outlook

Rheinmetall's diversity has served it well during the COVID-19 pandemic. While its automotive operations suffered in the first half of 2020, defense remained resilient, maintaining its growth trend. Overall, the Rheinmetall Group posted a year-on-year reduction in sales and operating earnings in the first half of 2020.

"Our Defence sector, with its strong performance, is Rheinmetall's anchor of stability during the crisis," said Armin Papperger, CEO of Rheinmetall. "In the Automotive sector, we, like the rest of the global automotive industry, were affected by the massive production declines and general market weakness in the second quarter in particular. With strict cost management, however, we were able to significantly limit the effects of the crisis."

As it looks ahead, Rheinmetall Defence will continue to place greater emphasis on international markets while simultaneously fulfilling the modernization needs of the German armed forces. Through joint ventures and acquisitions, Rheinmetall has bolstered its operations by forming national hubs in various regions. These hubs offer the full range of the company's products as accepted domestic suppliers. So far, Rheinmetall has established hubs in the U.S., U.K., Canada, South Africa, Scandinavia, Australia, and the Middle East.

In addition, several major programs have helped boost Rheinmetall's defense operations. One such initiative is

the storied Boxer program being developed by the ARTEC consortium, of which Rheinmetall is a member. After struggling for years, the Boxer vehicle finally entered production in 2009 under a combined German-Dutch procurement objective of 472 vehicles. The program has had several wins of late. In March 2018, the Australian Defence Force selected the Boxer Combat Reconnaissance Vehicle (CRV) as the winner in its \$3.3 billion LAND 400 Phase 2 competition. The ADF will procure 211 Boxer CRVs. A month later, the U.K. Ministry of Defence announced it would rejoin the Boxer program via the Organisation for Joint Armament Cooperation (OCCAR).

This agreement certainly helped pave the way for the formation of the Rheinmetall BAE Systems joint venture in July 2019. The new venture will play a major role in the delivery of the British Army's new Boxers and the Challenger 2 upgrade, while also providing support to the British Army's current armored vehicle fleets.

The company's latest infantry fighting vehicle (IFV), the Lynx KF41, is also being marketed strongly around the world. Unveiled at Eurosatory 2016, the Lynx is a modular family of vehicles developed with existing technologies. The vehicle's relatively off-the-shelf design results in a system that is lower in cost than vehicles such as the Puma IFV, which is currently being procured by the German Bundeswehr. Delivering

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German engineering at a competitive price point could make the Lynx attractive on the export market.

The vehicle scored its first export win in August 2020 when Hungary became the launch customer for the Lynx KF41. Hungary ordered 218 vehicles for more than \$2 billion. The deal follows an earlier acquisition of Leopard 2 tanks.

Other export opportunities for the Lynx KF41 include the Australian Defence Force's LAND 400 Phase 3 program and a Czech requirement to replace BVP-2s. In October 2019, the Lynx was reportedly disqualified

from the U.S. Army's Next-Generation Combat Vehicle program, which will replace the Bradley. However, as of mid-2020, the Army is again restarting its Bradley replacement effort and the Lynx may yet get another chance to compete for the U.S. Army's Optionally Manned Fighting Vehicle (OMFV) procurement.

Overall, Rheinmetall's management has been successful in responding quickly to shifting market dynamics. Through acquisitions, teamings, and new market initiatives, the firm is well positioned to be a formidable competitor in the years ahead.

Prime Award Summary

Unavailable.

Program Activity

The following are the various business activities of the Rheinmetall Group:

- Defense technology
- Ordnance systems
- Navigation and guidance displays for combat vehicles, artillery systems, and spacecraft
- Launchers and turrets for artillery systems and combat vehicles
- Controls and structures for ordnance and spacecraft
- Military vehicles
- Defense electronics
- Unmanned vehicles

Military Vehicle Programs

Armored Multipurpose Vehicle

In May 2008, Rheinmetall Defence and Krauss-Maffei Wegmann launched a joint program to develop a highly protected new 4x4 vehicle family in the 5- to 9-ton weight class. The first of the four-wheel-drive armored multipurpose vehicles (AMPVs) entered serial production in late 2011. Responding to the Bundeswehr's current GFF ("protected command and role-specific vehicle") procurement program, Rheinmetall and Krauss-Maffei Wegmann have decided to develop a family of GFF 1/2 class vehicles that will fully comply with user requirements. The two defense contractors are financing the development project on their own. The vehicle family encompasses two series: the AMPV1 and AMPV2. The agile AMPV1 is the smaller of the two and is "an ideal" liaison vehicle. A higher level of protection and a heavier payload are the primary characteristics of the bigger AMPV2.

Boxer

The Boxer (formerly Multirole Armored Vehicle) program is a private development effort funded by defense contractors in anticipation of German, Dutch, and British requirements. The vehicle is manufactured by a Dutch-German consortium, with Krauss-Maffei Wegmann, Rheinmetall Landsysteme, and Stork Group forming the foundation of ARTEC GmbH. In March 2008, Rheinmetall took over Stork PWV BV from its parent company, Stork NV, of the Netherlands.

In December 2006, the German and Dutch ministries of defense finally signed a \$1.59 billion procurement contract with ARTEC for 472 Boxer vehicles. The German Bundeswehr ordered 272 vehicles, and the Royal Netherlands Army ordered 200. Under the plan, each nation will run its own production line and develop an export capability after delivery of its initial procurement lot of vehicles. The first vehicle was delivered in September 2009. In November 2014, Germany approved the procurement of an additional 131 Boxer vehicles. This would increase the Bundeswehr procurement objective to 403 vehicles from the previous 272.

In August 2016, the Lithuanian Ministry of Defense awarded ARTEC a procurement contract worth \$435 million for 88 Boxer vehicles. Deliveries under this contract are expected to run through 2021. Production is ongoing.

In April 2018, the U.K. rejoined the Boxer program and may procure 500-900 vehicles under its Mechanized Infantry Vehicle program.

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In August 2018, Australia awarded Rheinmetall an order for 211 Boxers worth a total of EUR2.1 billion (AUD3.3 billion). The selection of Boxer was announced in March. Delivery will run through 2026.

In November 2019, the U.K. awarded ARTEC a procurement contract worth \$3.62 billion for over 500 Boxers in at least five variants. The bulk of the British order will be built in-country at Telford by the Rheinmetall BAE Systems Land joint venture. Deliveries are to commence in 2023. Production work at the Telford plant is to begin in 2024.

LAND 121

In July 2013, RMMV Australia was selected to provide some 2,500 protected and unprotected medium and heavy vehicles under a EUR1.1 billion contract. Under this order, which forms part of Phase 3B of Australia's LAND 121 (Overlander) modernization program, Rheinmetall MAN Military Vehicles Australia (RMMVA) will be supplying trucks in a number of different weight classes in various configurations. These include medium- and heavy-weight recovery vehicles, heavy-duty logistical vehicles, and integrated load-handling systems, as well as medium-size cargo bed variants with cranes, fuel and water modules, and tipper bodies. The first vehicles of LAND 121 Phase 3B were delivered in 2016, with the contract due for completion in 2020.

In September 2018, RMMVA won a EUR430 million order for "more than a thousand additional military trucks and modules." The latest purchase forms part of Australia's LAND 121 Phase 5B project. Delivery will run from 2019 to 2024.

Leopard 2 Upgrade

In September 2017, Rheinmetall was awarded a EUR118 million contract to upgrade 104 Leopard 2 tanks. The contract represents Rheinmetall's portion of the EUR760 million contract awarded to Krauss-Maffei Wegmann (KMW) in May. Under the Rheinmetall contract, the company will be transforming 68 Leopard 2A4, 16 Leopard 2A6, and 20 Leopard 2A7 main battle tanks, bringing them up to the A7V standard. In addition, Rheinmetall will be supplying the new L55A1 gun for the 68 Leopard 2A4 MBTs to be modernized. Deliveries are set to begin in 2020 and are expected to run through 2023.

Lynx

Rheinmetall presented its new Lynx infantry fighting vehicle at Eurosatory 2016, held in June. The new IFV comes in two versions: the KF31 and KF41 (KF stands for *Kettenfahrzeug*, which is German for "tracked vehicle"). Weighing up to 38 tons, the Lynx KF31 can seat three crew and six personnel. The Lynx KF41 is

slightly larger and can carry three crew and eight personnel. Both vehicle classes can be configured for other roles, including command and control, armored reconnaissance, repair and recovery, and ambulance. The Lynx features a Rheinmetall LANCE turret armed with a stabilized, externally powered, airburst-capable automatic cannon (either 30mm or 35mm). The KF31 also had an anti-tank missile launcher holding two Spike LRs (Long Range).

In September 2019, Rheinmetall's Lynx KF41 Infantry Fighting Vehicle and Hanwha AS21 Redback were downselected for Australian's LAND 400 Phase 3.

In October 2019, the Raytheon Rheinmetall Land Systems joint venture submitted the Lynx Vehicle for the U.S. Army's Optionally Manned Fighting Vehicle (OMFV) competition. While vehicle was disqualified from the competition, the program was canceled, and a new effort started in mid-2020. This may give the Lynx another chance to compete.

In August 2020, Hungary became first export customer with an order for 218 vehicles for more than \$2 billion.

Puma

In July 2009, Rheinmetall received a \$4.65 billion order for serial production of 405 Puma infantry fighting vehicles for the Bundeswehr. Projekt System und Management GmbH, a 50-50 joint venture of Rheinmetall Landsysteme and Krauss-Maffei Wegmann, heads the program. In December 2010, the first two production-standard Puma vehicles were delivered to the Bundeswehr. However, in July 2011, the German Ministry of Defense reduced its Puma procurement order to 350 vehicles due to budget cuts. According to reports, PSM will deliver approximately 50 Puma vehicles to the Bundeswehr per year at the height of production. The contract is scheduled for completion by 2020. After delivery of the initial 350-vehicle Bundeswehr order, the Puma program will become increasingly dependent on the export market. Although a resurgent Russia and other international pressures may spur European states to restore some defense funding in the coming years, lingering economic malaise is likely to limit the Puma's sales potential in Europe, particularly given the vehicle's relatively high unit cost.

TPz Fuchs/M93A1 Fox

The Transportpanzer Fuchs is a multipurpose armored personnel carrier that also has been configured as a radar vehicle, command and communications vehicle, ammunition and cargo carrier, and ambulance. Since the completion of the United Arab Emirates order for 34 vehicles in 2007, serial production of the TPz Fuchs 2 has occurred only on an as-needed basis. Rheinmetall

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continues developing and promoting the TPz Fuchs line for export and offers retrofit and modernization programs. Ongoing modernization and retrofit programs will keep the TPz Fuchs viable for years to come, as the Bundeswehr continues to modernize its existing Fuchs inventory, bringing older models up to the latest standard.

Wiesel

The Wiesel is an air-portable armored vehicle for use by German airborne brigades for reconnaissance, anti-tank, air defense, anti-personnel, and other missions. Porsche AG, Stuttgart, Germany, developed the Wiesel. It was initially produced by MAK-SYSTEM Gesellschaft mbH. This firm is now a component of Rheinmetall Landsysteme. Wiesel 1 production of 345 vehicles to meet the Bundeswehr requirement was completed in 2006. The expanded-capacity Wiesel 2 is now the production-standard vehicle and is produced on an as-needed basis.

Ordnance and Munition Programs

RWM Schweiz AG (formerly Oerlikon Contraves Pyrotec), part of Rheinmetall Weapon and Munition, manufactures medium-caliber gun systems. Air defense artillery systems are a particular strength, as the company offers fully integrated air defense systems, including complete fire control suites. RWM Schweiz is also a supplier of ordnance systems for use on board armored vehicles and ships. In addition, the firm manufactures anti-tank and anti-aircraft missiles.

Ammunition

RWM Schweiz is the main producer of ammunition for the wide range of Oerlikon cannon. Although this ammunition is extensively licensed worldwide, Swiss production accounts for a significant proportion of all RWM Schweiz-pattern ammunition produced in Europe.

Bordkanone 27

This automatic 27mm cannon is the primary cannon armament for the Tornado and JAS 39 tactical fighter aircraft, as well as for the German AlphaJet inventory. The cannon has been selected as the armament for the Typhoon and Gripen fighter aircraft. It was offered by both competing teams for the Joint Strike Fighter, but ultimately was not selected. Mauser-Werke Oberndorf, which has been absorbed into Rheinmetall Defence, developed this weapon.

DM702 SMART 155

This is an anti-tank submunition-dispensing projectile developed and manufactured by Gesellschaft für Intelligente Wirksysteme mbH, an equally owned joint venture of Diehl and Rheinmetall Defence. Initial

Operational Capability was achieved in 2001. The 155mm DM702 SMART 155 anti-tank round production run for British procurement reached completion in 2013. While renewed Bundeswehr procurement is possible, no new orders have been forthcoming thus far.

Gun Systems

Rheinmetall Air Defence manufactures cannon systems for anti-aircraft, anti-tank, airborne, and naval applications. A sampling of the company's range of cannon products includes:

GAI-B01 20mm anti-aircraft and ground support weapon

GAI-D01 20mm towed air defense gun

GBF-AOA DIANA twin 25mm towed anti-aircraft gun

GDF towed twin 35mm anti-aircraft system

GDP-B03/C02 twin 35mm anti-aircraft gun

Weibull anti-aircraft gunnery training system

GAD-AOA 20mm gun turret system

GAD-BOA 20mm turret system for light vehicles

GBD-AOA 25mm turret system

GBD-BOB 25mm turret system with integrated BGM-71 TOW missile launcher

GBD-COA 25mm turret

GDD-AOE 35mm turret system for light armored vehicles

GDD-BOE 35mm turret system for light armored vehicles

RWK-014 81mm artillery rocket launch system

A.41A 20mm naval gun

GAM-B01/C01 20mm naval gun system

GBM-A01 25mm naval gun system

GBM-B1Z Sea Zenith four-barreled close-in weapon system (CIWS)

GCM-A03 twin 35mm naval anti-aircraft gun system

GDM-A/C twin 35mm naval anti-aircraft gun system

GAH-A02/03 20mm cannon for helicopters

GBH-A01 25mm cannon for helicopters

KCA 30mm cannon for fixed-wing combat aircraft

The KBA/KBB series of 25mm-caliber automatic cannon are used for anti-aircraft and general armament purposes on a variety of land- and sea-based platforms.

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NBS MANTIS

In May 2009, Rheinmetall was selected to supply a new air defense system for the Bundeswehr. The NBS (Nächstbereichs-Schutzsystem) MANTIS (Modular, Automatic, and Network-Capable Targeting and Interception System), formerly titled NBS-C-RAM (counter-rocket, artillery, and mortar), is a "very short-range protection system." The system is a major milestone in the Bundeswehr's SysFla program, which is progressively upgrading Germany's air defense capabilities. The NBS MANTIS is specifically designed to defeat the threat that rocket, artillery, and mortar attacks pose to Bundeswehr units deployed in hazardous areas of operation, such as Afghanistan. An NBS MANTIS system consists of an operations/fire control center, two sensor units, and six 35mm automatic guns. The Bundeswehr received two MANTIS systems on November 26, 2012. The systems remain in service.

Panzerhaubitze 2000

This is a tracked 155mm self-propelled artillery system. This system was developed and is manufactured by the "northern" team – consisting of Wegmann & Co and Krupp Maschinenbau Kiel, also called WECO. Wegmann is considered the prime contractor. Under a separate contract, Rheinmetall Defence developed the 52-caliber cannon. The Bundeswehr production run (185 units) is complete; serial production for export orders continues. In April 2013, Qatar ordered 62 Leopard 2A7 main battle tanks and 24 PzH 2000 systems in a contract worth \$2.46 billion. Deliveries of these 24 new-production PzH 2000s reportedly commenced in 2015 and ran through 2017. The system's high unit price continues to severely limit its export sales potential. Currently, PzH2000 program activity focuses on modernization and retrofit of existing systems.

Rh 120/M256 120mm Tank Gun

The Rh 120/M256 is a 120mm smoothbore tank gun. Rheinmetall began developing this gun in the early 1960s. The current program is an outgrowth of the 1975 Tripartite (Germany, the U.K., and the U.S.) Tank Main Armament Evaluation Group, formed to determine an optimum future tank cannon system. In Germany, serial production of the Rh 120/44 is ongoing to support export orders for the Leopard 2. While the Rh 120/44 is no longer being produced in Switzerland, it is in serial production in Japan and the U.S., and production is underway in South Korea.

Final development of the new 55-caliber version, the Rh 120/55, is complete, and the components of the gun

are in production in Germany. Evaluations of this longer version of the Rh 120 – the M256E1 – were completed in February 2001 in the United States. Preparations for license production of the Rh 120/55 in Spain have been completed. An estimated 14,000 Rh 120 and M256 tank guns have been manufactured.

Electronic Programs

Rheinmetall Electronics (formerly STN Atlas Elektronik) is active in the development and manufacture of command, control, and reconnaissance systems; fire control units; automatic test systems; and flight, land, and maritime simulation systems.

Argus Soldier System

In August 2018, the Canadian Armed Forces exercised options under the Integrated Soldier System Project (ISSP) to procure an additional 1,256 Rheinmetall Argus soldier systems, which will be delivered in 2019. This order is worth CAD22 million (EUR14.3 million). The Canadian government initially contracted with Rheinmetall for its Integrated Soldier System (ISS) in 2015. The final production phase of the Argus soldier system is now underway, with 1,632 units slated for delivery by the end of 2018.

Gladius (IdZ-ES) Future Soldier System

In June 2017, Rheinmetall was awarded a gross value of EUR370 million (net value: EUR310 million) to supply enough Future Soldier – Expanded System (IdZ-ES) soldier systems to equip 68 infantry platoons – about 2,460 soldiers. The modular IdZ-ES, also known as Gladius, brings dismounted infantrymen into the network-enabled warfare loop. Troops on the ground detect, recognize, and identify targets, which they can either engage themselves or use to call in additional fire support. The IdZ-ES has been in service with German troops in Afghanistan since 2013. A new Gladius 2.0 version was launched in September 2017.

Unmanned Vehicle Programs

BREVEL

Eurodrone GIE, a joint venture company involving Matra of France (now Airbus Defence and Space) and STN Atlas Elektronik (now Rheinmetall Electronics), was established in 1989 for the purpose of developing the BREVEL remotely piloted vehicle to meet the French ALT and German KZO requirements. The ALT and KZO were designed for reconnaissance/surveillance needs. Germany placed a production order for the BREVEL in 1998 to meet its KZO requirement. In November 2005, Rheinmetall Electronics delivered the first KZO system to the Bundeswehr.

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