Mercedes-Benz Unimog-based Armoured Vehicles

protected security





A large variety of armoured vehicle designs such as Armoured Personnel Carriers (APC) or Internal Security Vehicles (ISV) in service worldwide and meanwhile proven in battle are either based on Unimog chassis' or incorporate components of the Unimog as much as possible. The sturdy design of the Unimog in general directly invites manufacturers of armoured and protected vehicles to take the Mercedes-Benz chassis for their products. The first of these vehicles was the UR-416 powered by a water-cooled Daimler-Benz OM 352 6-cylinder diesel engine developing 120 hp, which was based on the Unimog S 404.

Several other vehicles followed, most often based on the newer Unimog series like the U 1550 L or the U 2150 L to take the increasing weight of armoured bodies.



The first armoured vehicle based on a Unimog chassis was the UR-416 powered by a watercooled Daimler-Benz OM 352 6cylinder diesel engine developing 120 hp, which was based on the Unimog S 404 and has been or even still is in service with the armed forces of Argentina, Ecuador, El Salvador, Greece, Kenya, Morocco, the Netherlands, Pakistan, Peru, Qatar, Saudi Arabia, Spain, Togo, Turkey, Venezuela and Zimbabwe (former Rhodesia).

Shown is a trials vehicle for a 20 mm cannon.

Photo: via Chris F. Foss

More recent Unimog-based Armoured Personnel Carries (APC) and armoured vehicles incorporating Mercedes-Benz Unimog components include the following types of vehicle:

Henschel Wehrtechnik (today Rheinmetall Landsystems) TM 170 APC

Henschel Wehrtechnik (today Rheinmetall Landsystems) Fahd APC Henschel Wehrtechnik (today Rheinmetall Landsystems) Condor APC

BAE Systems Land Systems OMC RG-31 Nyala APC

BAE Systems Land Systems OMC *Mamba* Mk II APC BAE Systems Land Systems OMC *Kobra* APC

Other vehicles of this category were the Taipan, the Mechem Ysterarend or Iron Eagle Fast-Attack and Scout Vehicle and the ALVIS Acorn, the BAE Systems Land Systems ALVIS Vehicles Ltd. Scarab Armoured Scout and Liaison Vehicle or the Foxhound, designed for the Australian Bushranger competition of 1999.



The first version of the Condor APC, whose successor model is today marketed by Rheinmetall Landsystems. In addition the early Krauss-Maffei Wegmann Dingo, later designated the Dingo 1, was based on the Unimog, using a Mercedes-Benz U 1550 L chassis.



Krauss-Maffei Wegmann Dingo 1

The Dingo has been designed especially for higher mobility and increased levels of protection for Out-of-Area (OoA) missions. An especially developed deflector-system of KMW gives a high level of protection against AT-mines. Standard equipment include GPS, rear camera, CTIS, ABS, a NBC protection system, and air conditioning. The Dingo 1 has proven its worth and capabilities in service with the German Armed Forces (Bundeswehr) during deployments in the frame of KFOR, TFF and ISAF. Today these vehicles have been sent to Gabon/Democratic Republic of the Congo. 147 units of the Dingo 1 are in service with the German Armed Forces (Bundeswehr).

Big Sticks

While several of the armoured vehicle manufacturers mentioned above have switched to other engine manufacturers for different reasons, often gearboxes and other components of the chassis including axles are still procured through Mercedes-Benz. Other promising projects had to be cancelled because the concerning vehicles were taken off the production line by Mercedes-Benz, because the manufacture of the Unimog range had been shifted to the new plant in Woerth. This measure in parallel meant a switch to a new series as wel, I and either had economical as well as technological reasons, as new technologies could not be economically integrated into existing designs as well as legal considerations demanding a dramatic reduction of emission levels permitted to state-of-the-art environmental compliant engines.

One of the promising projects using a Unimog chassis was the French 155 mm self-propelled artillery system CAESAR (Camion Equipe d'un Systeme d'Artillerie). Both vehicles, the weapons carrier as well as the ammunition supply vehicle, were based on a Mercedes-Benz Unimog chassis which went out of production at an improper moment. the However. new Mercedes-Benz Unimog U 5000 will be even more suited to such weapon systems.



Armoured Vehicles based on Mercedes-Benz Unimog U 5000

The new Mercedes-Benz Unimog of the U 5000 series has been taken as a base for several of the latest types of armoured vehicles as well.

The "Unimog Chassis for Special Applications" represents the base, on which armoured or special purpose bodies can be fitted to suit special demands. This chassis has been adopted from the Mercedes-Benz Unimog U 5000 vehicle and has been taken by military armoured vehicle manufacturers for the designed purpose in several cases to be mentioned below. Protected and armoured vehicles based on the Unimog U 5000 design may incorporate the following bodies: Ambulance, Special Forces and Commando Vehicle, Electronic Warfare (EW) Vehicle, Forward Observer Vehicle, Surveillance Radar Carrier, Meteorological Station. Beside protection the high level of mobility off roads, as well as the fast redeployment capability on paved surfaces make such vehicles especially attractive for tactical out-of-area operations to be conducted during peace-keeping, peace-enforcement and peace-making missions.



While all specifications of the "Unimog Chassis for Special Applications" are identical with the basic chassis of the Mercedes-Benz Unimog U 5000 the forward axle load is with 6,000 kg 500 kg higher and the rear axle load has been reduced to 6,800 kg to ensure a balanced weight distribution to both axles. Thus, the armoured vehicle is basically more stabile under load represented by armour, optional turrets and equipment. Tyres used for this chassis are of 365 / 80R20 type.

Today and in the area of Armoured Personnel Carriers (APC) or Internal Security Vehicles (ISV) Mercedes-Benz is able to look at a large variety of realised vehicles directly based on the Mercedes-Benz concept of armoured vehicles employing the Mercedes-Benz Unimog chassis, the engine and / or components of the drive train as a base. This variety includes vehicles

either directly designed and marketed by Mercedes-Benz in particular or by manufacturers of armoured vehicles in general using components and increasingly whole chassis' especially of the Mercedes-Benz Unimog U 5000. The latest examples are:

			Basic gears		Off-road gears (optional)	
	Transmission ratio		9.57		9.57 x 5.76 (G20)	
Gears	forward	backward	forward	backward	forward	backward
1	9.570	14.569	6.5	4.3	1.1	0.7
2	6.635	10.101	9.4	6.2	1.6	1.1
3	4.375	6.660	14.2	9.4	2.5	1.6
4	3.219	4.900	19.4	12.7	3.4	2.2
5	2.188	3.330	28.5	18.7	5.0	3.3
6	1.517	2.309	41.1	27.0	7.1	4.7
7	1.000	1.522	62.3	-	10.8	7.1
8	0.736	1.120	84.6*	-	14.7	9.7

Speed and Transmission Ratios:

at rated engine speed of 2,200 rpm; Axle ratio i=6.94 tyres 365 / 80 R 20

*electronically limited, max. speed at max. engine RPM: appr. 96 km/h (with tyres 365 / 80 R 20)

Krauss-Maffei Wegmann (KMW) Dingo 2 All Protected Vehicle (APV):

The proven Dingo 1 has been further developed into the Dingo 2 mostly by the adoption of the larger Unimog U 5000 chassis fitted with a Mercedes-Benz diesel engine developing 160 kW (217 hp). The first pre-production model was completed in 2003. Three such vehicles were funded by the BWB (Federal Agency for Defence Technology and Procurement), two with a long wheelbase of 3,850 mm and one with a shorter wheelbase of 3,250 mm. One additional vehicle was produced for company-related presentations funded by Krauss-Maffei Wegmann and Mercedes Benz. After six month of troop trials the Dingo 2 was accepted for service in the German Army in early 2004, followed by an order of 52 vehicles with deliveries starting in late 2004. Series vehicles can be distinguished by the uninterrupted front grille arrangement of the new vehicles. Meanwhile the Dingo 2 is also in service with the armed forces of Austria (20 units) with deliveries conducted from late 2004 to up to early 2005, while Belgium, following a requirement for a Multi-Purpose Protected Vehicle (MPPV), ordered 220 Dingo 2 including an option for 800 Dingo 2 in LWB and SWB variants, though budgetary realities may downgrade actual orders considerably. At the time of writing a Dingo 2 with enlarged rear space (Großraum) is being trialed at WTD 51 in Germany.



The Dingo 2 has received worldwide interest including the U.S. and Israel. In comparison to the Dingo 1 the follow-on vehicle shows increased protection with its modular add-on armour elements. All Dingo 2 in service with the German Armed Forces are of the longer wheelbase variant. (Photo: KMW) Note the RWS on the roof.

Rheinmetall Landsystems (RLS) Condor 2 APC:

Today, the latest variant of the Condor APC, a design of the late 1970s and with over 600 vehicles manufactured, is marketed by Rheinmetall Land Systems (RLS), employs the Mercedes-Benz Unimog U 5000 chassis and is being offered as the Condor 2. Seven Condor 2 APCs have been sold to the Kuwait National Guard.



Doosan Infracore Defense Products BG Barracuda APC:

Daewoo Heavy Industries & Machinery Ltd, today Doosan Infracore Defense Products BG of South Korea, offers the Barracuda APC. Nearly identical to the Rheinmetall Land Systems TM 170, which had been delivered to South Korea earlier, the Barracuda represents a further development of the former and has been exported to Indonesia (44) and Iraq (12).

SVOS MPV U-5000 Internal Security Vehicle:

In co-operation with Mercedes-Benz company SVOS (Vyrobce Specialnich Vozidel a Nastaveb s.r.o.) of Prelouc, Czech Republic, has designed and developed the Military Protected Vehicle MPV U-5000 combining the chassis of the Mercedes-Benz Unimog U 5000 with an armoured body. Beside a payload of 1,500 kg the MPV U-5000 can be fitted with a variety of turrets including a ring-mount for a GPMG or special purpose bodies. The prototype which was shown in 2005 has ample space for 2 + 8 soldiers. Shelter carriers, double cabs or weapon carriers are also on offer.



Nomen est omen: SVOS MPV U-5000, also this vehicle is based on a Mercedes-Benz Unimog U 5000 chassis.



The SVOS MPV U-5000 has been procured by Egypt and takes part in the competition for a requirement of the police of Singapore.

Tenix S600 Internal Security Vehicle:

While the first generation of S600 Internal Security Vehicle (ISV), developed by company Tenix Defense of Australia, were based on earlier Unimog U 1550 L or U 2150 L chassis', the latest member of the family is based on a Mercedes-Benz Unimog U 5000 chassis. Including commander and driver the latest S600 can carry up to 14 soldiers. The S600 can be fitted with a variety of small turrets and specialised versions including a 3,000 litre water cannon and another one with a Mobile Adjustable Ramp System (MARS) for use in hostage rescue situations to storm passenger aeroplanes. The Tenix S600 APC is in service with the armed forces of Belgium and Kuwait.

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