The Survivability Experts

IBD
Deisenroth Engineering

AMAP™-IED

Multi-Purpose IED-Protection

AMAP™– the High-Technology Protection System

AMAP is a synergistic modular High-Technology protection system. Developed and continuously improved by IBD (Ingenieurbüro Deisenroth / Germany), it is designed as a protection for all kinds of platforms: light vehicles up to heavy main battle tanks, vessels and aircrafts.
The central goal of our AMAP-philosophy is the highest possible effectiveness. In order to achieve this we focus on high performance and flexible next-generation technologies in vehicle protection research and development.

Based on our experience in delivering 30,000 protection kits we know what actual challenges man and material are facing all over the world. Through AMAP we provide accurate, scalable and modular protection concepts for a wide range of vehicles, mission areas and threat scenarios.

We always focus on one prime goal: to protect human lives in military operations and missions.

IBD has developed suitable AMAP concepts for almost every threat coming from conventional or unconventional weapon systems. We individually adapt these concepts to each platform and mission. Compared to conventional protection systems, the unmatched flexibility and performance of AMAP technologies substantially contribute to the optimization of our customers' survivability concepts.

System Advantages:

- Highest level of protection due to application of advanced technologies (e.g. nano-technologies, composite materials)
- Synergistic modular design – flexible protection concepts for almost every threat scenario
- Individually adaptable to each vehicle
- Considerable reduction in areal density due to combination of passive and active protection systems
- Easy integration of new solutions into vehicle concepts due to the modular approach

User Benefits:

- Highest survivability for soldiers due to substantially reduced threat and risk potential
- AMAP significantly improves the protection of all kinds of platforms (land vehicles, vessels, aircrafts)
- High tactical mobility and payload due to the low weight of the AMAP system
- Substantially reduced damage related costs due to easy maintainability
- Top-of-the-line concepts due to continuous feedback from missions in operational areas

The full Risk of Improvised Explosive Devices (IEDs)

Improvised Explosive Devices (IEDs) represent an enormously dangerous and unpredictable range of different types of threats. The unpredictability of "systems" manufactured and used by guerilla and terrorist groups derives from the wide spectrum of IED varieties.

Generally, the basis of IEDs are large quantities of explosives, often in combination with fragment and/or penetration effects. Mostly, unused or non-ignited artillery shells, fire extinguishers or hot-water tanks are filled with explosive or TNT – the result are IEDs with unpredictable effects. An additional risk are Explosively Formed Projectiles (EFPs) which obtain a high penetration capability with a relatively low quantity of explosives.

The unconventional use of road-side IEDs or vehicle-borne IEDs mostly takes place near vehicles. The objective is to attack the vehicles where they are least protected with armor.

Consequently the attacks are directed from the side or from below the vehicles – in order to hit the thinner armor of the wheel house or the belly. Conventional steel armor hardly withstands attacks from such short distances.

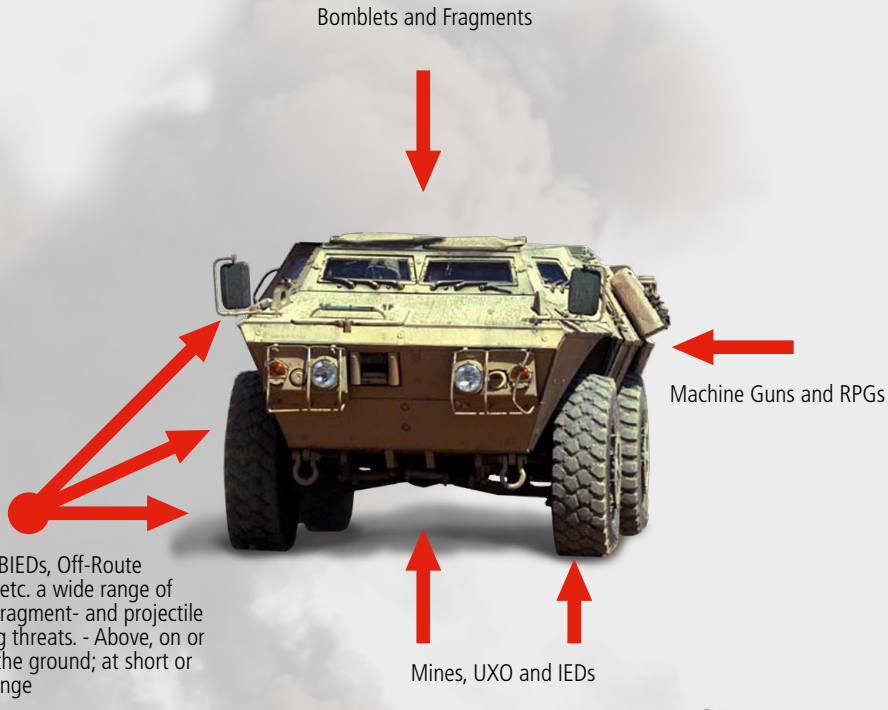
In addition, RPG-7 attacks are a real threat in most theaters today and have to be considered.

IED- Threat examples:

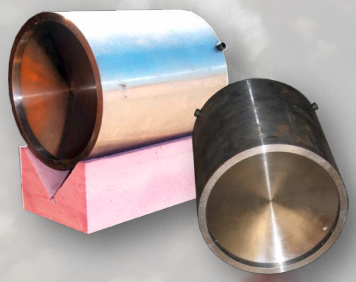
- 155 mm artillery shells
  - Vehicle- Borne IED (VBIED)
  - Road-Side IED (RSIED)
- Shaped Charges (SCs)
- Explosively Formed Projectiles (EFPs)
- Mines

RPG-7

Typical Attack Scenarios



155 mm Artillery Shells



EFP-Mines

Mines

Intelligent passive IED-Protection

With advanced materials and an intelligent layer structure, AMAP-IED provides reliable protection against IED attacks.

Via a 2-level synergistic concept with a modular structure, this protection is adapted to the specified risk potential, the mission purpose and the vehicle platform.

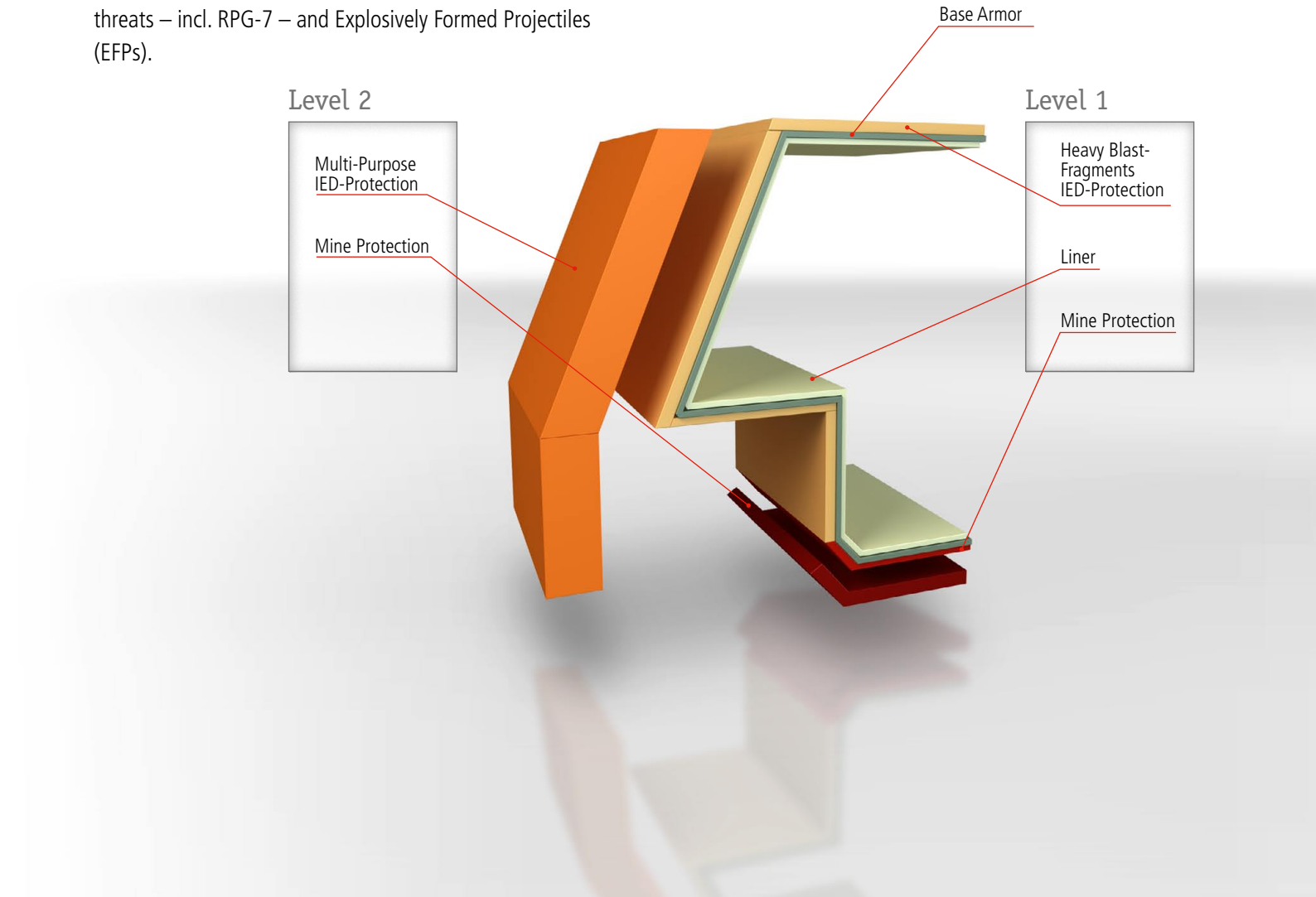
At the 1st level, vehicles equipped with Heavy Blast Fragments- AMAP-IED, can with stand blasts and fragments from any direction, e. g. 155 mm artillery shells, applied at very close range in various setups and quantities. The solution also provides horizontal protection against 14.5 mm and 30 mm attacks. The armor is capable of absorbing large amounts of energy.

Using additional add-on armor in combination with a special liner technology, the 1st level solution can be extended to the Multi-Purpose IED-solution (level 2). Vehicles equipped in such a way, are also protected against Shaped Charge (SC) threats – incl. RPG-7 – and Explosively Formed Projectiles (EFPs).

The Heavy Blast Fragments- and Multi-Purpose IED Protection concepts protect against IEDs from any direction, including attacks from below the vehicle by the use of conventional land-mines, IED mines and projectile forming IED mines.

The solution absorbs the energy generated by the explosion and prevents fragments and projectiles from penetrating the vehicle hull.

Summary:
AMAP-IED provides a highly efficient, low weight and modular protection solution against the most challenging and dangerous IEDs of today and the near future. The solutions have already proven excellent performance in several missions.



AMAP™-IED – next Generation IED-Protection Technologies

The increased use of Improvised Explosive Devices (IEDs), especially in Iraq and Afghanistan, has been a driving force in developing completely new protection concepts. The extent man and material are subjected to from IED attacks, is something that conventional protection systems cannot counter.

With AMAP-IED, IBD has created protection solutions of excellent performance exceeding what seems feasible today. The solutions are based on years of experience gained from technology and material development. The combination and development of successful technologies has resulted in superior products which have repeatedly proven themselves in missions.

Bison with Heavy Blast-Fragments IED-Protection

Leopard 1 with Multi-Purpose IED-Protection

Higher Performance – Lower Weight

Conventional steel-armor concepts have to be very thick to offer reliable protection against IED-attacks. This means that the vehicles are heavy so that mobility and mission capability are severely constricted.

IBD focuses on the development of new technologies and materials with optimized characteristics. These technologies and materials assume specific functionalities within the layered structure. The synergistic interaction of the individual high-tech elements is a very important factor explaining the high performance of AMAP-IED.

Within IBD research and development work the term "Advanced" acts as a commitment to developing intelligent, forward-looking and customer oriented technology. IBD advanced materials are, for instance, ultrastrong alloys, intelligent steels, extremely hard ceramic layers, energy absorbing composite materials and much more.

The advantages of these materials are obvious – the weight of the protection is reduced by up to 30%. This in turn results in a higher survivability and increases tactical mobility. Consequently AMAP-IED opens up new tactical options, reduces costs and, above all, provides an optimum protection of lives.

CV 9040 C with IED Mine-Protection

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