Ballistic protection for armoured vehicles
Roof protection on CV90

**Performance**

<table>
<thead>
<tr>
<th>Protection</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Protection against bomblets</td>
<td>&lt; 50 mm diameter</td>
</tr>
<tr>
<td>Protection against artillery</td>
<td>20 mm diameter FSP</td>
</tr>
<tr>
<td>Multi hit capability</td>
<td>&lt; 200 mm</td>
</tr>
<tr>
<td>Hit angle</td>
<td>Up to 45°</td>
</tr>
<tr>
<td>Required armour basis</td>
<td>STANAG 4569, level III</td>
</tr>
<tr>
<td>Fulfils environmental standards</td>
<td>STANAG 2895 (A1 – A3, B1 – B3, C0 and C1)</td>
</tr>
</tbody>
</table>

**Technical characteristics**

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<tr>
<td>Light construction – 40 kg/m²</td>
</tr>
<tr>
<td>Low profile for unimpaired visibility</td>
</tr>
<tr>
<td>Integrated anti-slip surface</td>
</tr>
<tr>
<td>Adaptable to every contour and shape</td>
</tr>
<tr>
<td>Individual assembly and disassembly of the plates</td>
</tr>
</tbody>
</table>

**Extended Version**

**Multi hit capability**

Full protection for two hits within 200 mm radius

- hole cover
- protection material
  - anti-slip surface
  - 23 mm PROTEPUR-5
- Adaptable base plate (sandwich)
  (to fulfill STANAG 4569 Level V, 20 mm FSP)
  Optimized accounting for
  - Threat level requirements
  - Base armour of chassis / turret
Ballistic side protection

Protection technology
- Reactive armour against CE/KE threats such as
  - HEAT and tandem HEAT, eg. RPG-7
  - HE LV DP
- Passive armour against KE threats such as
  - APFDS up to 120 mm
- Passive armour against HE threats such as
  - IED (Improvised Explosive Device)

Technical characteristics
- Combination of both types of armour to optimise weight
- Designed for easy handling and low logistical costs
- Low collateral damage by influencing the direction of the explosive reaction
- Low damage incurring materials
- Modular system guarantees high protection coverage

Active protection
High precision defence system against anti-tank missiles

View of lethal blast
Due to the unique concept of reactive modules, we are able to confine the explosive reaction to a very limited area reducing the potential for collateral damage to civilians or accompanying troops.
**LASSO (Light Armour System against Shaped Ordnance)**

LASSO is an adaptive and highly efficient protection against the common anti-tank grenade RPG-7 and its derivatives. Due to the simple and intelligent design LASSO is lightweight and reliable. LASSO is a system with outstanding performance to protect various objects such as armoured vehicles and buildings. LASSO has been tested under real conditions.

### Features

<table>
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</thead>
<tbody>
<tr>
<td>Multi-hit capability</td>
</tr>
<tr>
<td>Replacement in the field</td>
</tr>
<tr>
<td>Easy mounting without special tooling</td>
</tr>
</tbody>
</table>

### Performance

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<td>High coverage due to thin and high tensile net</td>
</tr>
<tr>
<td>Light weight construction &lt; 15 kg/m²</td>
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</tbody>
</table>

**Dynamic Protection**

Live firing in Hinterhein, Switzerland
LASSO (Light Armour System against Shaped Ordnance)

Features

- No impairment on mobility due to close mounting
- Easily adaptable to any vehicle
- Full 360° coverage possible

Net design

- High tensile steel > 1700 N/mm²
- 3-D structure improving multi-hit capability
- Knotted ends increasing impact resistance capability

Target after live firing with RPG-7

Close mounting to the vehicle

3-D structure
## Mine protection

**Concept**

- An effective mine protection consists of various counter-measures
- A light blast and EFP resistant, easy to mount armour plate
- Intermediate flooring with retention sleeves for the torsion bars
- Reorganization of interior equipment

**Protection concept**

For combat vehicles against AP and AT mines up to
- Blast mines up to 10 kg TNT
- EFP and CE mines, eg. TMRP-7

**Expertese**

Based upon a vast experience in protection, state of the art simulation software and some of the worldwide best equipped laboratories and testing grounds, we are able to design and test complete mine protection concepts for any type of vehicle.