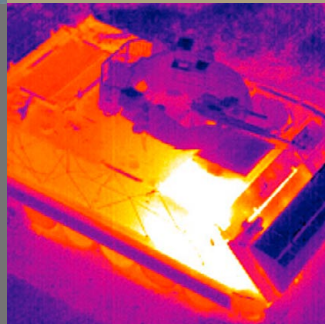


The Survivability Experts

**IBD**  
Deisenroth Engineering



**AMAP™ -S**  
Advanced Signature Management for Stealth



## 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



## Dangerous Signatures

The prevention of being detected is an important measure to improve Survivability, since an unrecognized vehicle is no target and therefore can't be defeated. Various physical effects generate characteristic vehicle signatures. For reconnaissance corresponding detection sensors and systems exist:

### Visual Signatures

Examples:

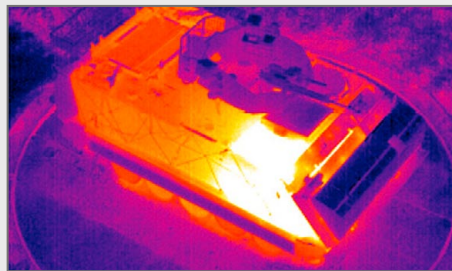
- The design, outline and color of the platform
- Lamps/lights
- Glass surfaces



### IR-Signature (Temperature Signature)

Examples:

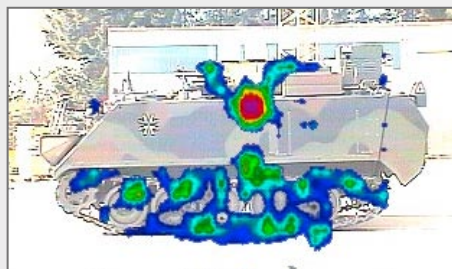
- Heat of the vehicle, engine, exhaust and exhaust gases
- Heat generated by wheels or tracks and tires
- Solar loading of the whole vehicle and especially surfaces of certain materials



### Radar-detectable Signature

Examples:

- Vehicle surfaces, which reflect radar signals
- All radar frequencies (incl. 8-18 GHz, 35 GHz, 94 GHz) as a multi-spectral approach



### Acoustic Signature

Examples:

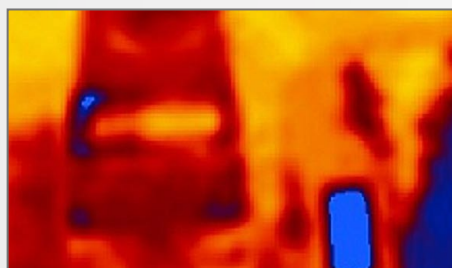
- Engine
- Tracks or wheels
- All moving parts of the vehicle (doors, hatches and others)



### Other Signatures

Examples:

- Magnetic, electric and seismic – single or in combination
- Reflection of specific sky-radiation from metal surfaces



## IBD Stealth Technologies

AMAP-S is a modular system using high-tech materials and technologies developed by IBD. Based on more than twenty years of experience this system is continuously updated with new technologies and progress in material science. The results are intelligent passive and active systems, innovative constructions and specifically designed and developed materials for demanding applications. Combining different technologies of AMAP-S achieves multi-functional and hyperspectral stealth-levels for the individual platforms (land vehicles, naval vessels and aircrafts).

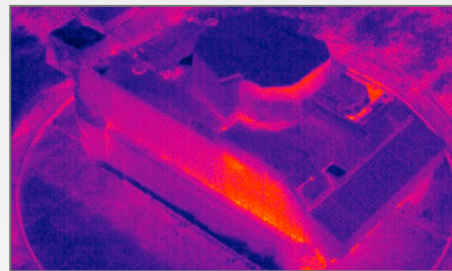
### Visual/optical Camouflage

- Passive modules with enhanced performance
- Electronically controlled active camouflage, where the system automatically adapts the vehicle color to the changing background



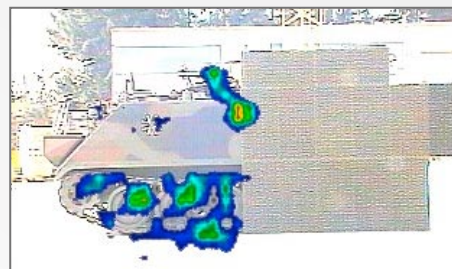
### IR-Protection

- Controllable infrared emission technologies – integrated in the base platform as well as in added parts, on the basis of passive and active measures



### Radar Protection

- IBD's active Radar-absorber covering all frequencies to achieve a broadband radar protection



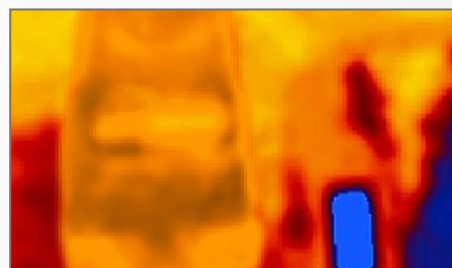
### Acoustic Measures

- Design and use of special materials to minimize the acoustic levels and signatures



### Radiometry Protection

- Passive and active measures, including the use of specific materials, reducing detectability with passive methods





## Complete Services for Signature Measurement and Tests

IBD's own test facilities possess equipment for measurement of signatures at different wavelengths and aspects. Vehicles (even tanks) can be tested on a turntable to monitor the signature over a wide range of frequencies from directions all around the vehicle. Special cameras and other hard- and software support the measurements. Hence infrastructure and comprehensive knowhow at IBD provide the support to our customers necessary to develop the optimum stealth concept for each individual platform.



Turntable for Signature Measurement



Turntable for Signature Measurement



Radiometry Measurement

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