

Over 50 years experience.

Research, development, and production of solutions in the fields of EMP (Electromagnetic Pulse) and high precision measuring of physical parameters.

Comprehensive consulting and engineering services.

In-house know-how to understand customers needs.

Fully committed to top-level quality.

ISO 9001 certified quality management.

Off-the-shelf and customer specific products for:

- Armed forces
- Security organisations
- Telecommunication industry
- Energy suppliers
- Meteorological organisations
- Universities and Research Centers
- Numerous special applications

Active in most countries worldwide.

#### Swiss Quality for Professional Users

Meteolabor is the recognized world leading specialist for safe and reliable solutions to protect personnel and electronic equipment against transient over voltages including those generated by HEMP/NEMP (High altitude electromagnetic pulse/nuclear electromagnetic pulse) or lightning strikes. Meteolabor is also famous in the field of high precision measuring of physical parameters like temperature, humidity, pressure etc.

As a privately-owned Swiss company, Meteolabor is a completely neutral partner. Customers have the assurance of the best Swiss quality related methods, processes and also materials used. Since 1996 the ISO 9001 certificate proves the company's full commitment to quality and reliability. Compliance with this philosophy is a daily goal for all Meteolabor employees.

Reliability is an absolute must in the fields of safety and measurement. Both business units, EMP and Meteo, concentrate on developing and also manufacturing top-level quality components and systems – products the end user can fully trust. Meteolabor offers highly reliable protection elements and measurement systems which reflect our high engineering standard combined with latest production technologies.

#### Customer relationship – not just a phrase

The various customers worldwide – including the Swiss Armed Forces – trust Meteolabor and its highly professional capabilities to offer tailored solutions, some of them have been in operation for decades now. A rapidly growing number of customers highly appreciate the company's flexibility and have chosen Meteolabor as their partner. Choosing Meteolabor means having decided for the optimum solution. Meteolabor – a company helping the customer to find the best matching solution for his needs.



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## EMP (Electromagnetic Pulse)

The business unit EMP of Meteolabor offers protection/filter components and systems for reliable protection against transient over voltages including those generated by HEMP/NEMP and lightning strikes while also effectively filtering RFI (Radio Frequency Interferences). Customer requirements have led to the development of a variety of components. The focus is on military and highly professional industrial applications. The product range is set up to protect power feeding lines (mains and low voltage – up to 1000 A and higher), data and control signals (e.g. analogue or digital, RS-485, Ethernet, telephony

etc.) as well as coaxial high frequency signal cables (carrying signals up to the GHz range).

Single protector components for a specific signal line up to complete modular concepts like the MAK are available. Most components have a mechanical feed-through design to perfectly match shielded room protection and filtering requirements.

Ask for a custom tailored solution if you have specific requirements!



## Meteo (Meteorological and Measuring solutions)

Having started with balloon based radio sounding systems for the armed forces these special applications, realised by the Meteo business unit, have grown to become the world-leading reference for scientific research in that field. Portable radio sounding equipment combined with a variety of radio sondes are capable of carrying different sensor types and combinations of those.

The high-precision sensors mainly used for measuring all kinds of physical parameters in fixed installations, are not only

intended for meteorological applications. Besides a lot of installations within the meteorological field (the WMO uses Meteolabor products as reference sensors.) many of the products are also used in industrial applications or research institutes around the world.

Very specialized solutions, like soil humidity measuring systems and others, resulted out of the broad knowledge combined with high-level engineering skills.



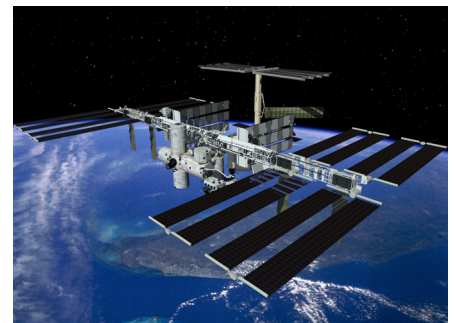
## Engineering

Components, equipment or even complete systems designed to fulfill specific customer specific needs are just one of the strengths of Meteolabor. Extensive knowledge in highly specialized fields like EMP (HEMP/NEMP and RFI – to name the most important ones) or measurement of physical parameters, enables Meteolabor to provide consulting services or specifically engineered solutions to customers in these fields.

Example solutions include custom designed protectors/filters for nuclear

power plants as well as temperature measuring equipment used inside the Columbus space station.

Additionally, extensive consulting services for HEMP/NEMP and lightning protection projects are available. The earlier Meteolabor experts are involved the better – later changes cost a lot of time and money. A continuously growing number of military, governmental and industrial customers rely on Meteolabor solutions.



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## Standard EMP Protectors

We offer several product lines. Common to all lines is, that combined lightning and NEMP protection is offered.

### USS-1

Used for single wire, asymmetric power or data signals. Up to 150 V, 0.5 A and 180 kHz bandwidth.

### USS-2

Used for wire pairs, symmetric power, telephony or data signals. Up to 150 V, 6 A and 100 MBits / s for Ethernet.

### USN

Used for telephony, RS-485 or 1 Gbit / s Ethernet.

### USP

Used for power lines up to 400 V / 64 A. Best suited for mobile installations.

### PLP

Used for fixed installed power lines with up to 400V / 1000 A with weights up to 0.5 tons.

### CSP

RF protectors, mainly for lightning, but offers basic NEMP protection.

### MAK

The modular solution for mobile and fixed use for shelters, trucks and tanks. With more than 70 different modules available.



## Application: EMP Hardening of Data Centers

Today, most data centers are not protected against the threat of EMP. They will become useless in case of a NEMP or a microwave weapon like the Boeing Champ.

EMP weapons are reality and no longer fiction. They will primarily take out the infrastructure without harming humans.

We consult companies which are building data centers and want to implement the required technology.

But EMP protection must be planned right from the beginning. Implementing it later is almost impossible - the changes would be far too extensive.

EMP weapons are there. They will be used in the future by terrorists or by armed forces.



## EMP Testing

All our EMP protectors run through several stages of testing.

There is one final inspection and electrical test on our inspection automat prior to being released to sales.

The inspection automat follows instructions programmed on a PC and fires a couple of EMP against the device and logs the results.

In 2016 we start driving our devices from being threat level compliant to MIL-STD-188-125 (the whole system works after a NEMP) to 100% full single device compliance. This is more and more requested by our customers. To achieve this, we run our own Montena equipment.

The picture shows a USP-74101 in final inspection test.



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## Application: UAV Shelter

Unmanned aerial vehicles or drones need a ground station when in operation. Most of these ground stations offer space for two or more pilots, equipment and other staff.

It is in the nature of a UAV operation, that there must be bi-directional communication, computers and power.

All these signals can be protected, either by our standard products or the use of our MAK.

It does not matter, whether the shelter is mobile or not, we do have solutions for

both versions.

Common is, that the components have a mechanical feed-through design to perfectly match shielded room protection and filtering requirements.

With both versions, the single entry principle can be implemented. This makes it possible to use standard instead of EMP hardened equipment in the shelter.



## Application: EMP Truck or Tank Protection

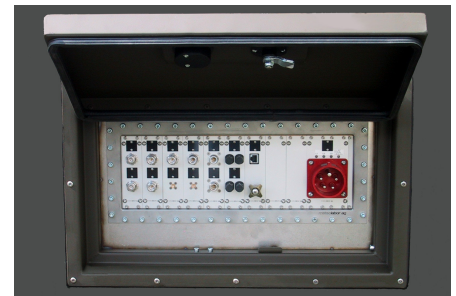
Nowadays a lot of tanks need full EMP protection, since they make use of all kinds of communication equipment and computers.

Meteolabors MAK (Modular Attachment Kit) delivers full EMP protection for trucks, tanks and shelters.

Instead of having one big protection box, the MAK has many small protection boxes united in a common frame.

When a truck or tank is renewed after a few years, the electronic requirements change as well. The MAK offers a modular solution, meaning every module can be exchanged, while the complete box remains in place.

In the end, the MAK helps making safer investments for an often uncertain future. The demand changes.



## Application: High Speed Glider for High Altitude UAV Missions

A Swiss consortium, consisting of Meteolabor as the prime contractor, Team Smartfish, EPFL and CSEM developed and successfully tested a high speed UAV glider travelling up to 32 km above ground and 1087 km/h speed.

The project was run by the ESA (European Space Agency). The goal was to make the final approach of re-entry vehicles (like the space shuttle) less sensitive to severe conditions like structural failure, GPS failure or a shortage in power.

The project was called iHMSD, integrated Health Management System Demonstrator and has many commercial applications.

In only 11 months, we proved that flights at supersonic speed, at an altitude of 32 km and -70° C are possible with an 1.2 kg heavy glider, under harsh wind conditions.

Watch the movie related to the project on youtube:  
[https://www.youtube.com/results?search\\_query=meteolabor+iHMSD](https://www.youtube.com/results?search_query=meteolabor+iHMSD)



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