

The package is essential!

Emergency power supplies should ensure critical business processes - but are these also protected themselves?

The German air traffic control (DSF) system failure in 2012, the earthquake off Japan in 2011 (Fukushima) or the earthquake in Haiti in 2010 all show the risks and vulnerabilities of the energy production, infrastructure and communication sectors.

The two natural disasters mentioned above were certainly 'hundred-year events', but smaller environmental incidents can also lead to system failures and faults. For example, with power stations, all major loads such as electronic controls and communication systems are secured against power failure. This ensures that a controlled shutdown can be carried out at any time. For aviation/airports the unbroken supply of radio and radar systems, runway lighting and other safety devices are of paramount importance. Telecommunications networks should also be able to withstand disturbances such as fire or earthquakes so that they also continue to be available in emergency situations.

Robust battery-supported power supplies offer 24/7 security in all these areas. They ensure that these critical applications are not left without power even if the grid fails. The prerequisite is, however, that these systems themselves are provided with sufficient protection against environmental influences.

BENNING has been manufacturing an extensive range of AC and DC power supplies for decades. Areas of application include the oil and gas industry, the petrochemical industry, conventional power stations and nuclear power plants, airports, telecommunications, medical and other industrial sectors.

Robust cabinet systems are a basic requirement for protection against external influences. BENNING develops and produces these systems with high vertical integration in its own plants on NC-controlled machines.

They are then customised to the requirements of the end user and facility.

The robust UC design

The current UC housing design has proved successful. It is characterised by the smart symbiosis of attractive design, high resilience and maximum modularity. The bevelled case edges give it a visually lighter form, while the inner workings correspond to the highest static requirements. The structured design is ideal for accommodating BENNING electricity supply systems. Rectifiers, inverters, DC-DC converters and UPS systems can be optimally arranged. In addition, various volumetric dimensions are represented in the flexible design concept. In light of this, the UC cabinet system can also be used as a housing for the battery and distribution cabinets for BENNING LI energy-storage systems.

Protection against water

The UC cabinet systems are protected in accordance with EN 60529 against invading foreign matter, contact and liquids and already meet standard protection classes IP 20 or optionally IP 21.

With a corresponding design, the cabinet system guarantees protection against vertically dripping water (IP42). The power supply also remains intact when deluged by a sprinkler system triggered by a fire, for example.

Protection against foreign matter

The requirements in tropical or subtropical areas are of an entirely different nature. Here termites and invasive vermin often represent a potential risk. BENNING can equip UC cabinet systems designed for these regions with a unique screen to provide protection from solid foreign bodies with a diameter of 1 mm or greater.



BENNING Li-energy storage system in a UC housing design

BENNING power supply system

The UC cabinet supporting system withstands the highest loads

Suitable for extreme situations

As a matter of course, BENNING's products use housings which are suitable for transport on trucks, ships or aircraft. Crane eyelets make it easier to transport the power supply systems, e.g. for insertion in the installation site. In addition, the housing can also withstand vibrations up to earthquake intensity ('seismic resistance').

BENNING power supply system

Depending on regional earthquake specifications and contained mass, necessary reinforcement is introduced into UC cabinets.



Component testing on a shaker in the BENNING test laboratory

This is achieved by diagonal braces or cruciform shapes. In addition, the increased number of screw fittings leads to increased strength. If these measures are not sufficient for certain regions or the size exceeds a limit, BENNING reverts to use of cabinet systems with welded designs. This flexibility is due to the high level of vertical integration and the know-how of the employees at the production sites.

The starting point for the production of the housing is the cabinet system's construction stability. To do this, BENNING engineers perform extensive calculations, which are supported by empirical tests. These strength tests of individual UC components, distribution and power supply modules are carried out in BENNING's own test laboratories.

The inspection of the overall design is carried out in external test institutes in accordance with international standards IBC 2012 (International Building Code), NEBS GR-63-CORE, the GOST standards, IEC and UBC (Uniform Building Code).

Worldwide there is a limited number of institutes qualified to conduct the required seismic resistance simulations and vibration tests. This includes companies like IABG

(Munich), SOPEMEA (Paris) and KEMA (Arnhem) who test the seismic resistance of the BENNING power supplies by stochastic movement patterns and transient acceleration or according to predefined earthquake spectra on suitable test benches known as 'shakers'. After successful testing, the respective standard conformity is confirmed.

Haiti 2010 - earthquake of magnitude 7

But even in harsh operating conditions BENNING power supplies have already proved their high level of steadfastness. During the severe earthquake in Haiti (2010), most of the communications infrastructure in Port-au-Prince was destroyed. The BENNING power supplies still functioned and provided the necessary power to operate the mobile radio network - despite the fact that the telecom building was largely destroyed.

This example confirms that opting for uncompromising product quality can be a crucial factor in critical situations. A product philosophy that BENNING is committed to - today and for the future. ■

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