

Uninterruptable Power Supply (UPS)

Battery Charger, Inverter and Battery

Improving the availability and reliability of your safety systems with our UPS solutions

Challenge

Safety-related systems require a continuous and sufficient power supply at all times, even in case of an event like transients caused by short circuits in the grid or switching of large consumers. Perfectly coordinated UPS components are essential to meet high demands from the system, ensuring that even in emergencies, there are no negative effects or interruptions in the power supply.

Solution

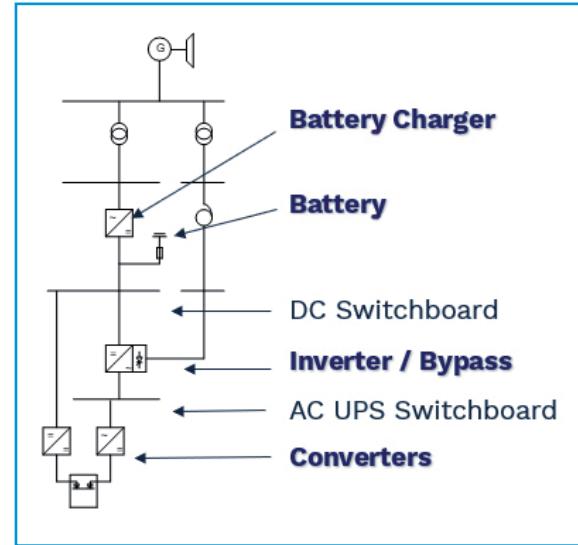
Framatome develops concepts, designs, and components to increase the safety and availability of UPS.

Our power supply concept includes suitable battery chargers to supply the safety-relevant DC consumers, as well as to charge batteries connected in parallel. Framatome designs batteries and racks specifically for greater backup times and optimized footprints. Framatome meets the requirements for longer discharge times.

Our modernization concept for UPS includes the parallel connection of up to three inverters in combination with one static transfer switch (STS).

The independent operation of each inverter guarantees that an inverter is not affected by failure of the other one.

Therefore, the unavailability of one component due to maintenance or failure (e.g. transients) does not impact the power supply of safety-related electrical loads. In case of transients, Framatome's battery charger limits the overvoltage peaks to a maximum permissible consumer voltage and downstream systems are reliably supplied via the inverters. Our UPS solutions improves the safety and availability of your power plant in every phase of the product lifecycle.



Example for a single line of emergency power supply system incl. UPS

Customer benefits

- Nuclear qualification
- Harmonized system design for a perfect coordination of the system
- High electrical requirements (e.g. robustness against transients and selectivity of protection devices)
- Software-free controller
- Controlled cybersecurity risks
- Reduced maintenance
- Long-term services and active product lifecycle management

Technical information

Battery charger

- Output voltage from 24 to 220 VDC
- Output current from 100 to 3000 A

Inverter

- Output power from 10 to 160 kVA
- Short circuit capability 3 x I_{nom} (3ph)
- With or without bypass transformer system

Batteries

- From 100 to 3480 Ah
- Proven lead acid types
- Racks suitable till 6G seismic



Safety UPS System (Rectifier and Inverter) for Nuclear Power Plant

References

Our approved modernization concepts of UPS have been successfully implemented in more than 20 NPPs worldwide

Europe:

- Germany
- France
- Spain
- Belgium
- Netherlands
- Switzerland
- Czech Republic
- Slovakia
- Slovenia
- Finland
- Sweden
- Hungary
- Lithuania
- Romania
- Ukraine



Asia:

- China

Framatome support

- Full design for components and systems incl. Civil, HVAC and I&C
- Full licensing support and qualification according to KTA, RCC-E etc.
- Delivering battery chargers, inverters, UPS and switchboards to NPP for more than 30 Years
- Several inhouse laboratories and manufacturing lines existing
- Modular, software free /analogue setting, monitoring and alarm system
- Manage obsolescence by proactive product lifecycle and detection of discontinued devices as fast as possible
- Increase the sovereignty for critical and safety equipment

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is our everyday commitment**