CHAUVIN ARNOUX ENERGY

# Our power monitors in nuclear environments

**At Chauvin Arnoux Energy, we have succeeded in meeting EDF's specific requirements in the context of the Open Phase Condition (OPC) project thanks to our ENERIUM 50 power monitor.**

**This project involves nuclear power plants where phase loss on the HV grid may lead to power supply unbalances. These events are rare but may have serious consequences, such as cooling failure, so they are a safety priority for EDF.**

## Context

EDF has identified the necessity of monitoring three-phase grids to detect any phase loss which might cause a dangerous unbalance. The aim is to install power monitors capable of detecting inverse voltages in order to trigger alarms and enable the operators to react quickly.

This requirement was formulated on the basis of a publication by the International Atomic Energy Agency (IAEA) highlighting the importance of monitoring these conditions in nuclear power plants all over the world.

Measure up

## · Our response with the Enerium 50


After being consulted by EDF, we worked in close collaboration with them to design a solution based on our ENERIUM 50 power monitor.

This model was chosen due to its ability to effectively monitor inverse voltages and its roll-out was validated on a pilot site. After this validation, EDF decided to generalize use of the Enerium 50 on all the French nuclear power plants (CNPE).

## · Specific adaptations for EDF

To meet EDF's precise requirements, we developed a specific version of the Enerium 50 including additional functions:

### · Reinforced data security

New software was developed to lock/unlock remote communications (RS485, Ethernet, optical), guaranteeing better protection against cyberattacks.

### · Customized alarms

Two levels of alarms were programmed, one for a low inverse voltage and the other for a high inverse voltage, allowing the operators to respond appropriately.

### · Optimized interface

The screen of the Enerium 50 has been customized to show both the voltage unbalances and the voltage measurements between phases on a single page.

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## · Roll-out in nuclear power plants

Roll-out of the Enerium 50 began during the shutdowns of the nuclear units in the power plants, a process which will run until 2030. We will continue to support EDF throughout this project to ensure compliance with the safety and performance requirements at every step.

Thanks to our expertise and adaptability, we have been able to supply EDF with a tailored solution which contributes to the safety of France's nuclear power plants. The Enerium 50 has proven to be the ideal tool to monitor voltage unbalance, improve operator responsiveness and guarantee safety on nuclear installations.

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