

Operational I&C for Emergency Diesel Generators (EDG)

Control, Monitor and Survey your EDGs

Framatome's EDG operational control represents a state-of-the-art mature control, monitor and surveillance system which works in parallel to the EDG safety control

Challenge

EDGs are operated in standby or in test runs most of the time.

Surveillance and periodic test runs assure the availability and reliability of the EDG with its mechanical and electrical support systems.

While the essential safety control functions operate the EDG, an additional set of functions must allow the synchronization, loading, speed- and voltage-adjustment.

Latest performance surveys show critically deteriorating EDG conditions – beyond typical protection-functions and fault-annunciations, the capability for monitoring, trending and condition evaluation is a key feature in today's modern EDG surveillance systems.

Solution

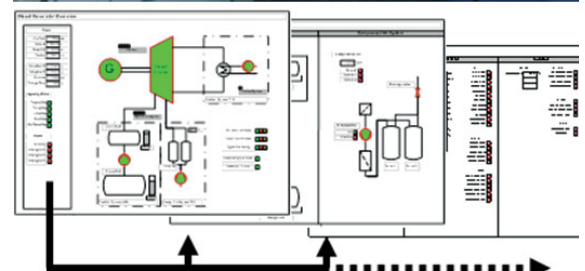
The operational EDG control is a functionally separated and conceptually integrated part of the overall modular control concept.

It provides the operator with:

- EDG standby condition (including pre-lubrication and pre-heating)
- synchronization of the EDG to the grid,
- adjustment and control of the load, voltage and power factor,
- test of different operating conditions (e.g. pump transfers),
- ability to monitor, trend and analyze the performance of the EDG with its auxiliary systems,
- detection of anomalies and evaluation of the EDG condition,
- annunciation of alarms and initiation of protective trips
- cooling and shutting down of the EDG, and putting the EDG back into standby condition.

Customer benefits

- Increase EDG reliability through the use of intelligent digital systems
- Opportunity to trend performance and even carry out predictive maintenance
- Various brands of digital components for easy integration into overall plant
- Replace obsolete, outmoded indications by on-site, local and remote data screens
- Modular extensions by additional data logging, visualization and analysis options
- Easy application with different engine types

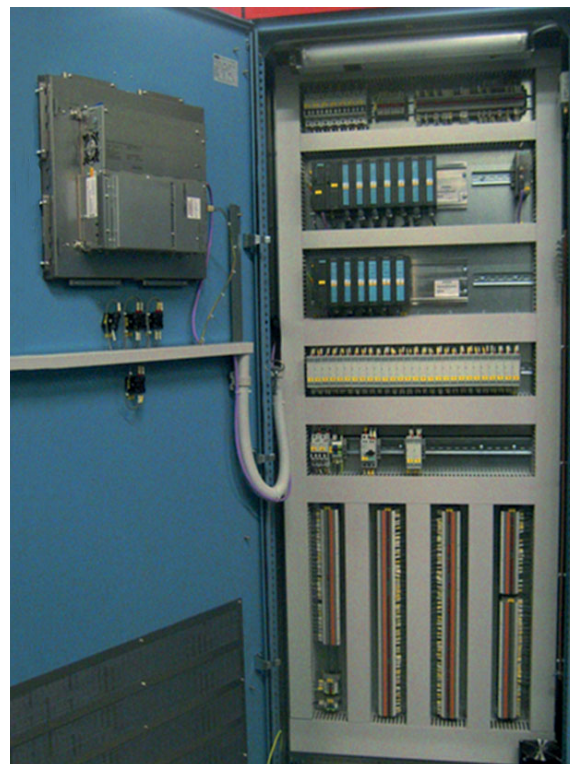


Displayed information arranged in hierarchic and intuitive structure: from the general EDG overview screen, down to specific detailed status information of individual systems or to data trends and event logs

Your performance
is **our** everyday **commitment**

Technical information

- Separation from safety classified functions
- Local and remote control options
- On-site indications nearby the EDG
- Continuous electronic data logging replaces time consuming manual data records
- Online monitoring with state-of-the-art PLC and display
- Online and offline data evaluation
- Fingerprinting and history logs allow comparative data analysis
- Visualization of human machine interface in modern touch panel
- Additional surveillance and data logging & analysis packages (e.g. temperatures & pressures, vibrations, acoustics, electrical characteristics)



Example of an PLC-based Operational Control Cubicle

Key figures

Standard seismic proven cubicle, IP54
600 x 600 x 2200 mm (w x d x h)

Covers all operational functions of the EDG systems including additional control features

Over **100** applications in nuclear projects

References

Framatome is a specialist for EDG controls and surveillance. Our experience with the unique EDG conditions in different reactor types allows us to consider the specific standby application (operation only few times per year with long standby intervals) rather than the typical manufacturers

recommendations for marine or power-generation application (with continuous operation up to 8000 h per year).

Easy handling supports the operator during the routine test runs, including additional control features for existing EDGs (upgrades tap into the AVR and governor to

control the power factor, reactive power and load output).

Beyond the standard Fault-Protection and Alarm-Annunciation functions we focus on the continuous automatic diagnostics, trending and conditions evaluation of the whole generator set.

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