framatome

EDG Product Line

Emergency Diesel Generator Solution for Nuclear Power Plants

Emergency Diesel Generator (EDG) Solution and associated I&C ensure nuclear plant safety in the event of a station black-out by integrating the best vendor components into a fully nuclear-qualified system.

Challenge

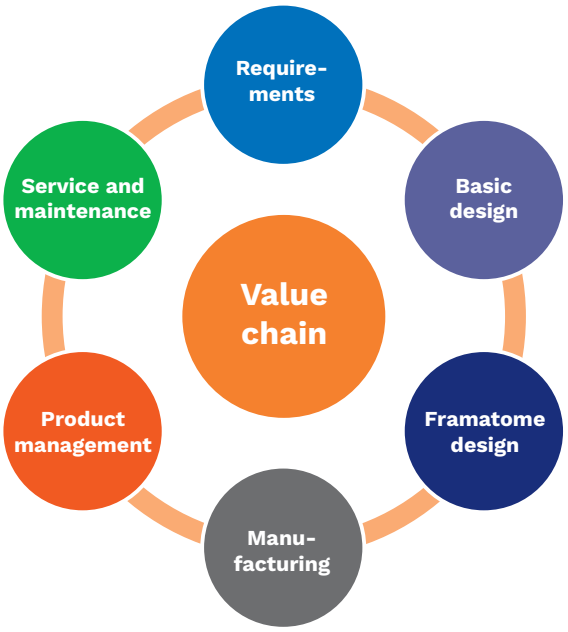
EDGs are of vital importance for the safety of plants. Authorities pay special attention to EDGs which are included in the highest safety classes.

The long-term reliability and availability of EDGs requires a robust system design which is proven to be fail-safe. The EDGs have modern technologies that are straightforward and economic to operate and maintain.

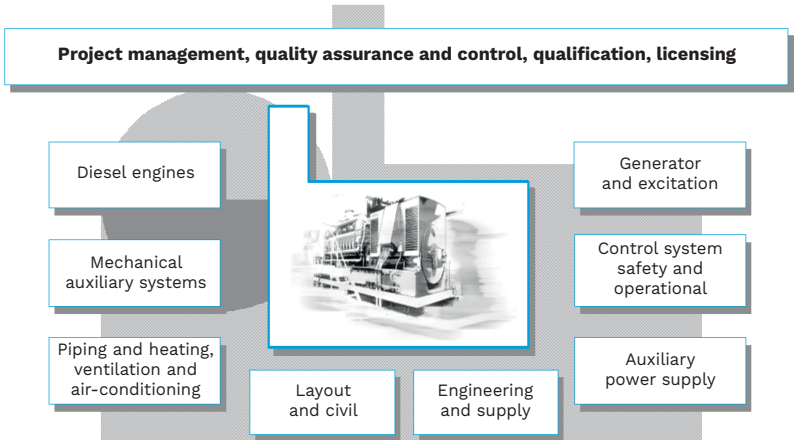
Solution

Emergency Diesel Generator Solutions and associated I&C provide a qualified customized package and ensure nuclear plant safety in the event of a station black-out by integrating them into a fully nuclear-qualified system.

OEM–independent EDG system packages for fixed installation purposes in nuclear power plants (NPPs) are available in various power output ranges, starting at few kVA up to 10 MVA and beyond. The EDG concept can be applied for different infrastructures by modular interfaces and various configurations, e.g. power plants, hospitals, airports, railways, database...



Diesel generators for emergency and for station black Framatome integral organized EDG Product Line covers the entire value



Diesel generators for emergency and for station black out: "a plant within the plant"

Customer benefits

- Maintain plant safety in the event of a station black out
- Ensure optimal component selection
- Simplify component integration with pre-qualified auxiliary systems
- Reduce costs for plant-specific qualification
- Reduces costs of maintenance and obsolescence
- Customized solutions as independent from Engine / Generator
- Modernizations projects based on customer's requests

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

Technical information

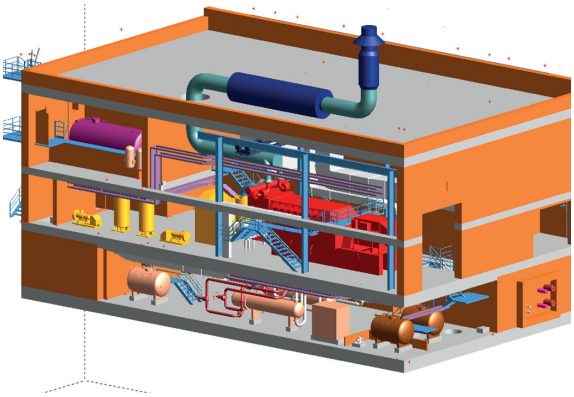
Framatome roles:
- Overall EPC (Engineering, Procurement, Construction) contractor
- Integrator of EDG systems
- Supplier of systems and individual components

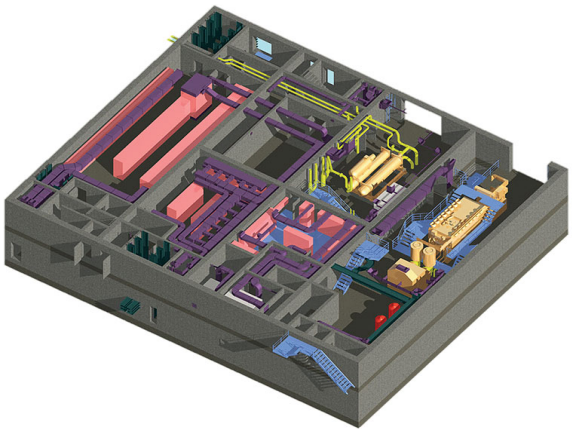
EDG Systems features:
- Modular Analogous Excitation System (MAEX)
- Electrical Protection and Synchronization
- Integrated Digital Safety Control for EDGs
- Operational Control
- Continuous (Online) Monitoring
- EDG Maintenance and Service
- Hardened Emergency Diesel Generators
- Independent Containerized Station Blackout (SBO) EDGs
- Suitable for all major international reactor lines
- Fulfill all major applicable regulations (such as IEEE, RCC-E, KTA, YVL and GOST standards)
- Earthing, Grounding, Lightning Protection, EMC
- Uninterruptible Power Supply
- Small- and Multi Group Diesel Applications

Practical Experience

Framatome is a specialist for EDG systems and has a reference basis of more than 300 installed systems. Furthermore, Framatome develops own pre-qualified EDG products for electrical system and instrumentation and control (I&C) such as Spinline and TELEPERM® XS digital safety I&C, analog safety I&C (ADCON-S), digital operational I&C (ADCON-O) or fully analogous excitation (MAEX) and control technology. For a most efficient project handling, Framatome relies on an own developed full system simulator.

We have the experience as a Diesel Integrator, especially in Qualification, and we are experienced already in all plant types such as VVER, EPR,.... This all minimizes the risks of unexpected costs and ensures an efficient handling and high-quality delivery.





Generic EDG Building in power class above 6 MVA

Key figures

1 – 10 MVA power range

> 300 projects world-wide in all kind of reactors

> 5 sub supplier for engine & generator (each) ensures the best ecological and economical solution

References EDG Systems

Country	Year	Scope
German Fleet – Germany	1960 - 1988	Complete EDG Systems for all KWU Plants New Built
Borssele – Netherlands	1969	Complete EDG System New Built
Goesgen – Switzerland	1980	Complete EDG System New Built
Angra 2 – Brazil	1982	Complete EDG System New Built
Philippsburg 1 – Germany	2000	Complete EDG System Modernization
Doel – Belgium	2007	Complete EDG System Modernization non OEM Plant
Atucha 1 – Argentina	2010	Complete EDG System Modernization
Oskarshamn – Sweden	2013	Complete EDG System Modernization non OEM Plant
Taishan 1+2 – China	2013	Complete EDG System New Built
Tianwan – China	2016	Complete EDG System New Built non OEM Plant
OL3 – Finland	2021	Complete EDG System New Built

Contact: EDG@framatome.com
www.framatome.com

framatome