

## EDG Modular Control Solution

### Modular Concept for the Control of Emergency Diesel Generators

Framatome offers its customer modularized products and solutions for emergency diesel generator (EDG) control systems to improve nuclear power plants' (NPPs) safety and performance

#### Challenge

EDGs are a critical asset, subject to nuclear industries' and authorities' attention because of their utmost importance to plant safety. A main focus is on their control system which must provide the long-term reliability of the EDG.

Various control functions are combined in a highly complex system, including the safety classified controls and protections, the operational features and Human-Machine-Interface (HMI), the mission critical speed and voltage regulation as well as thorough monitoring and surveillance.

Only a well harmonized concept, tailored for the specific diesel engine types in use, with awareness for the operators' easy use and maintenance, by simple and robust yet modern technologies, can avoid interferences, reduce failures and assure the reliability of the control system.

#### Solution

The Framatome Control Concept for diesel generators incorporates long-term experience in standardized modules of well proven products into a customized system set-up for any nuclear plant.

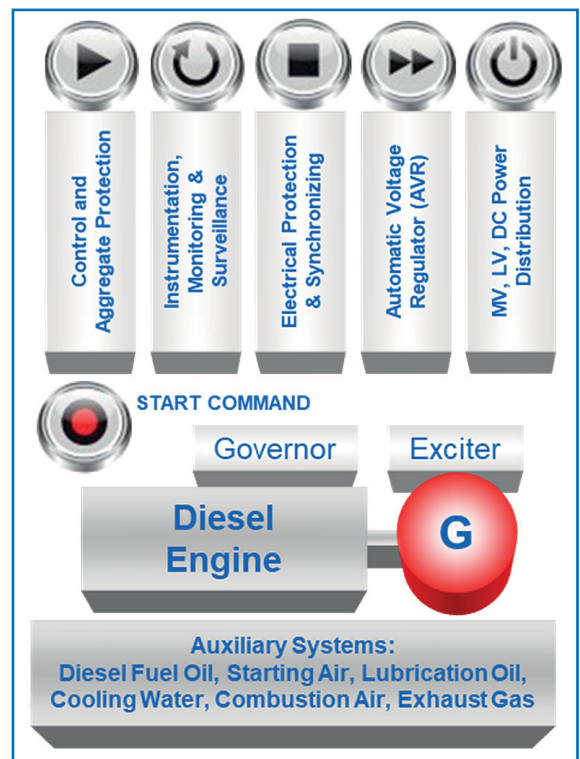
Modular interfaces and various configurations as well as a variety of product choices allow for different infrastructures.

Either in single stand-alone modules or in a comprehensive control package – we ensure the integration of the various functions, interfaces and requirements from engineering, operations and maintenance into a harmonized solution.

Maintenance is supported by the long-term availability of the in-house key components, and the interchangeability of the utilized devices selected from a dedicated parts pool with a high degree of availability as well as synergy effects resulting from standardized arrangements.

Qualification according design base events, beyond-design considerations, diversity requirements, defense-in-depth concepts, backup- versus redundancy-argumentations, design&products substantiation, etc. – in Framatome you can build confidence for your diesel generator sets.

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

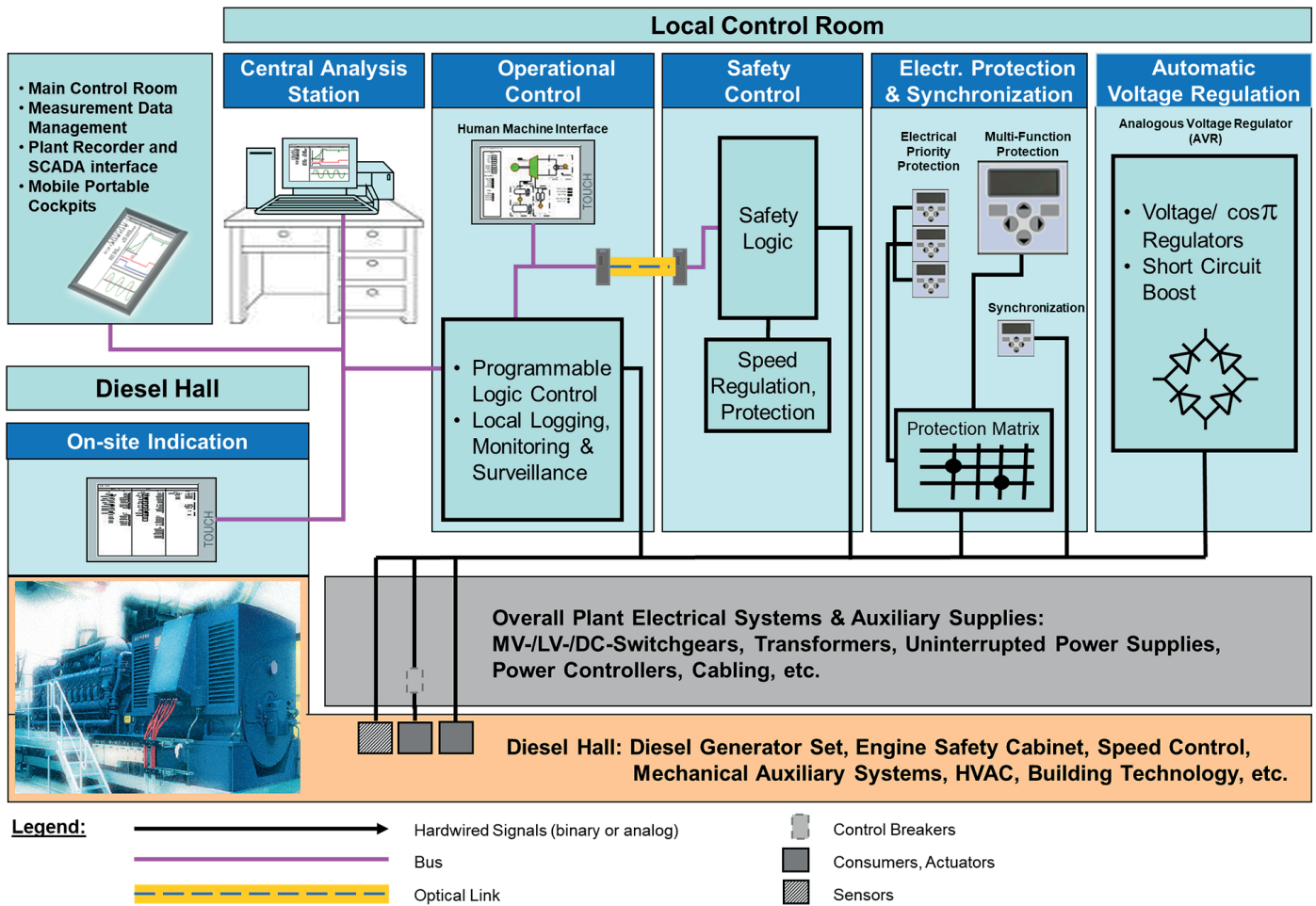


Modular Control Concept:  
Standard interfaces allow easy system configuration, integration and commissioning

#### Customer benefits

- Assurance of a harmonized and functionally integrated solution « out of one hand »
- Framatome Inside = experience with various nuclear codes, authorities and customer worldwide
- Pre-designed and pre-qualified modules reduce risks in time and money

# Overview of Framatome EDG Control Modules:



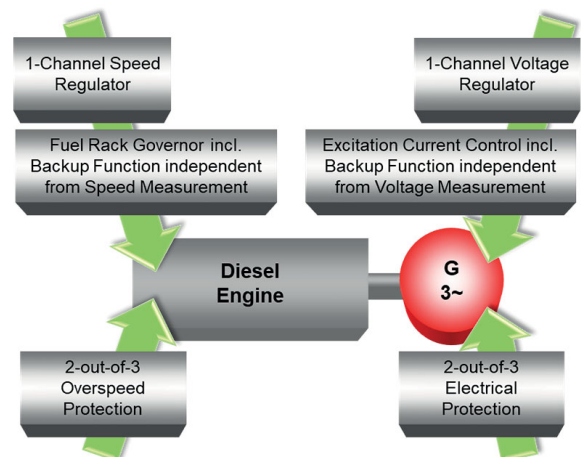
## Key figures

Single components or complete systems; stand-alone or integrated solutions; analogous or digital technology; fit for different engine types; consistent separation of safety and non-safety classified functions/devices; local and remote monitoring options.

## References

Framatome is a world leader in the design and construction of nuclear power plants. This vast experience is fed into the design and qualification of our EDG solutions. Framatome has delivered more than 300 EDG control systems for different NPPs types e.g. in Argentina, Belgium, Brazil, Bulgaria, China, Finland, Germany, Netherlands, Spain, Switzerland, under different applicable regulations (IEEE, RCC-E, YVL, KTA)

## Clear design concepts for controls, regulations and protections:



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

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