



GE VERNOVA

# SFC UPGRADE SOLUTION

Engineered solution for better process control

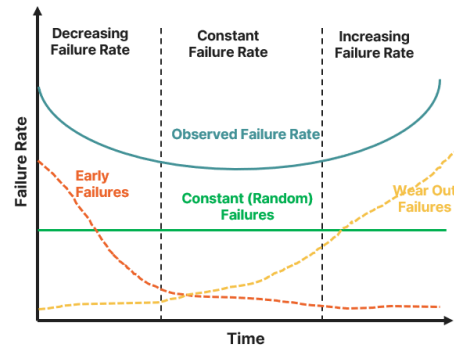
## Static Frequency Controller & process control

Static Frequency Converter (SFC) are thyristor-based converters mainly used as a soft starter for synchronous machines in gas power plants to operate the generator as a motor at the start-up process, or in hydro power plants for starting the pump-turbine set and to adapt the rotating speed of the pump-turbine for optimized operation, or for grid intertie and connection (e.g., 50Hz to 60Hz and vice versa or 50Hz to 16 2/3 Hz for railway networks).

### UPGRADE CONSIDERATIONS

Product failures can happen at the early stages due to mishandling of equipment and at the end of life due to wear or latest technological threats such as cyber threats. Such failures could be avoided, and the life of the equipment can be improved if we maintain and upgrade with the latest technological advancements regularly. Such improvements will help for better process control.

A bath-tub curve helps to understand in a better way.



## Migrate to latest drives control technology of GE Vernova's Power Conversion business

GE Vernova's Power Conversion business has brought many developments to the field of MV drives and controls over decades. Through our upgrade programs, we bring new and improved features that help preventing the risk of obsolescence, cyber security breaches and deferring the cost of a totally new solution.

### Features

- High performance using modern multi-core CPU.
- Enhanced cyber security measures meeting IEC-62443 to protect customer's critical infrastructure
- Latest industrial Fan-less controller with extended temperature operations.
- User interface with an intuitive touchscreen HMI to monitor drive status.
- P80i software configuration tool for user friendly programming experience.



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## GE Vernova's Power Conversion business Advantages

- Better spare parts availability and breakdown support with the new controller.
- Improved inventory control by upgrading multiple vintage drives to the same modern hardware and software.
- Protection for customer assets via an upgraded solution meeting IEC-62443 standard.
- Easy connectivity to GE Vernova's Power Conversion business digital solutions for remote monitoring, diagnostics and predictive analytics.
- Phased upgrade options to suit customer schedule and maintenance plans.
- Consistent and cost-effective project execution by GE Vernova's Power Conversion business experts.
- Further options can be combined with proactive mini upgrades and cyber services to extend existing drive systems lifetime and improve operations.
- Hands-on training by GE Vernova's Power Conversion business experts to maintain your SFC in an expert way.
- Advanced redundancy concept for uninterrupted drive availability.
- Smart de-excitation switch to ensure very short de-excitation.

## Customer friendly options

This upgrade is available in two different options based on customer's site conditions.

### • Option – 1 : Retrofitting

Retrofitting the existing SFC panel by retaining the power stacks and upgrading the controller to latest hi-speed controller including cyber security features.

### • Option – 2 : Revamping

Replacing complete SFC panel by new SFC.

## PROVEN SUPPORT STORIES\*

Most recent successful completion sites because of on time delivery support based on site criticality, customized technical solution, cost optimization, end to end support.

- ✓ Power generating station @Texas USA.
- ✓ Power generating station @Florida, USA.
- ✓ Industrial solution in Italy.
- ✓ Power generating station in India.

\*GE Vernova's Power Conversion business has much more to highlight on request.



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## Digital connectivity

If you are looking for ways to reduce downtime and enhance the performance of operations and assets, our new controller with inbuilt digital and capabilities can help.

## Maintenance+ APM for drives

Maintenance+ Asset Performance Management (APM) for Drives tool is a cloud based analytic tool that analyzes Key Performance Indicators (KPIs) with predefined algorithms to provide early warning information of potential failures and helping operators thereby, to reduce unplanned downtime.

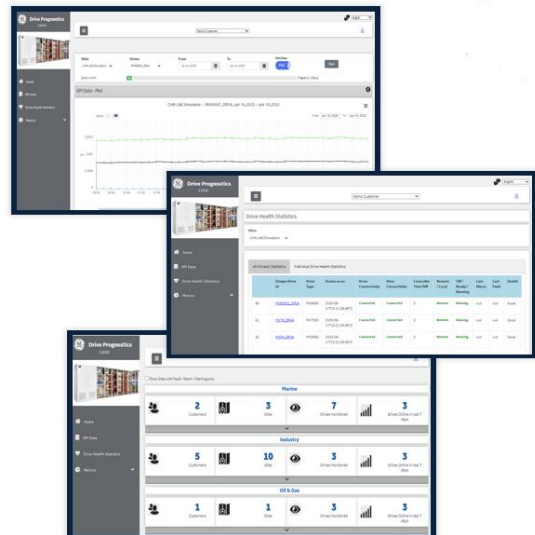
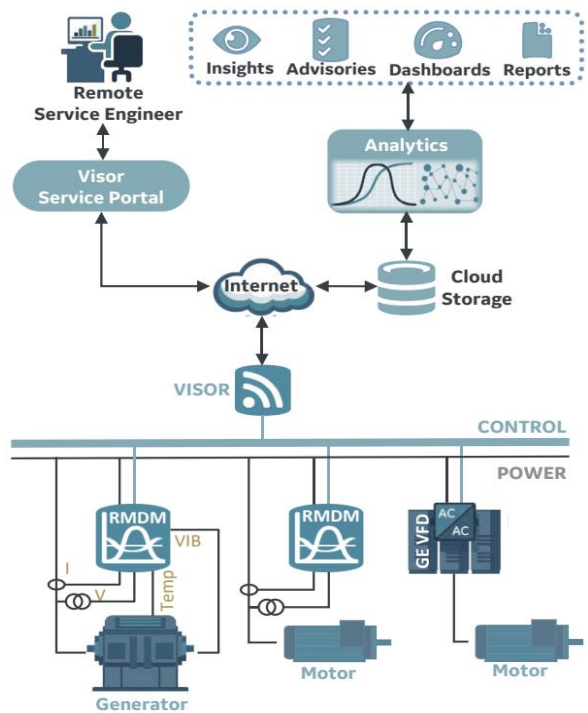
## Services+ Remote engineering

Visor Remote Monitoring & Diagnostics (RM&D) system delivers on-tap expertise to remotely manage, update and check on the health of your assets.

## Services+ Cyber services

Enabling reduced exposure to cyber security vulnerabilities associated with software and connected systems.

Necessary I/Os and software configurations for VISOR upgrade will be installed and configured by GE experts during same shutdown along with controller upgrade.



**CONTACT US**

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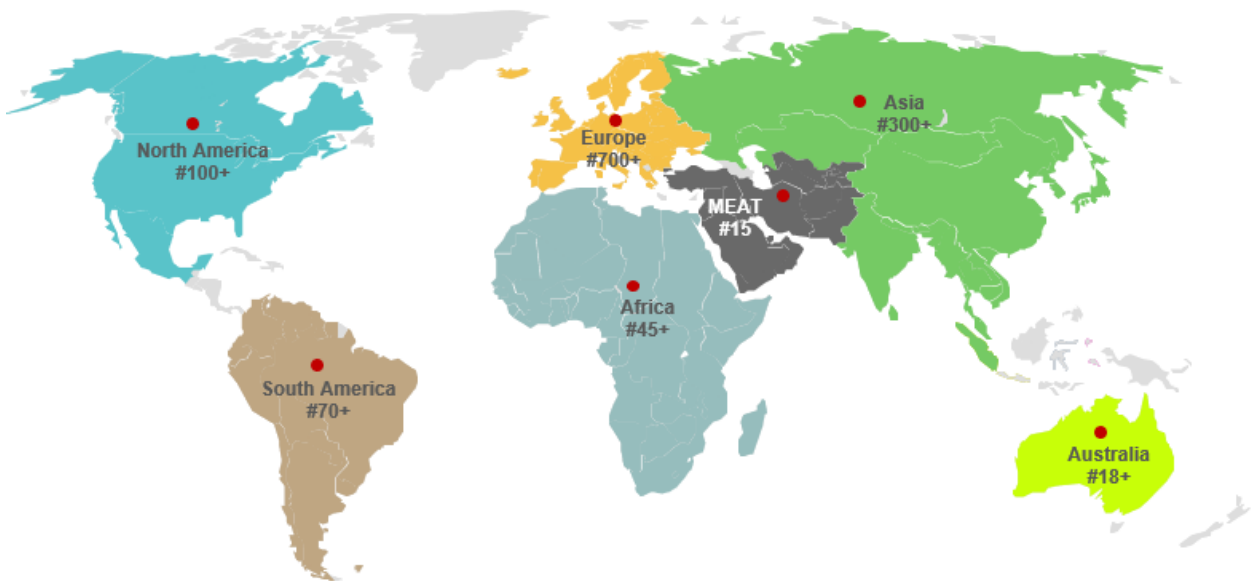
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## Evolution journey of SFC of GE Vernova's Power Conversion business

SFC technology is based on an AEG development dating back to 1940. In 1973 with the increasing numbers of gas turbine systems, this technology was then upgraded for series application. Formerly we supplied these converters under the AEG brand, subsequently under CEGELEC, ALSTOM, Convertteam and now under GE Vernova's Power Conversion business brand.

1000+ global SFC references for various applications



## GE Vernova's Power Conversion business lifetime services

Bespoke service support in the form of spares and replacement parts, onsite and remote technical support, maintenance services, upgrades, customized trainings and service agreements aimed at supporting customers based on their unique needs.