



# Operations+ Energy Optimization

Operations +

If you're looking for ways to reduce downtime and enhance the performance of operations and assets, GE Power Conversion's simple suite of clever software applications can help. Its flexibility includes 'on-prem' and cloud-based options which help to optimize operations and energy, and enable predictive maintenance and cyber-secure service solutions. GE Power Conversion's digital suite is based on a straightforward, modular range of digital app's, tools and services, connecting data with the right people. Already, more than 430 sites are benefiting from Power Conversion's digital solutions. Each of our three easy-to-navigate modules focuses on a key area of improvement: Operations+, Maintenance+ and Services+ tools and app.

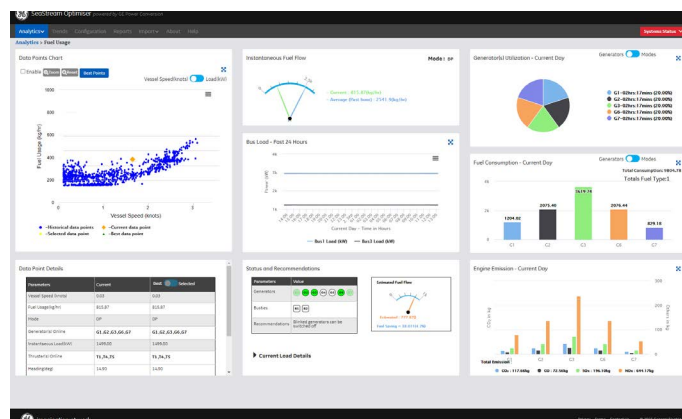
**Operations+** solutions include Performance, Process and Energy optimization. Operational efficiency, repeatability and safety are enhanced with real-time feedback on operational Key Performance Indicators (KPIs), with advisories for timely and targeted intervention.

**Operations+ Energy Optimization** tool is focused on improving energy efficiency to reduce fuel consumption, emissions and utilization of main engines. The Energy Optimization tool is suitable for a range of industrial applications, but particularly those with high fuel and energy usage looking for effective ways to help achieve cleaner operations and manage operational expenditure.

**USE CASE:** In the marine industry, **Operations+ Energy Optimization** tool has been used to simplify operator compliance with stricter emissions regulations and help with IMO reporting requirements, reducing operator workload. **Operations+ Energy Optimization** tool compares your vessel's current and historic operating states, profiling similar speed, system load and weather conditions. It then analyzes the factors resulting in any difference in fuel consumption and associated emissions. It provides the operator real-time, simple information on how the power system is running, recommending an enhanced configuration that helps improve fuel efficiency and reduce emissions – all from an intuitive, on-prem dashboard. The clear, easy-to-understand data dashboards allow the crew to make informed, real-time decisions on how best to operate the power system.

For fleet managers, the cloud dashboard allows monitoring of fuel strategy across individual vessels, fleet and operating scenarios.

Reports can be created for fuel consumption, estimated emissions, engine running hours and time spent in various operating modes.



**Operations+ Energy Optimization** tool is designed to work seamlessly on vessels with GE Power Conversion's SEASTREAM Vessel Control and Dynamic Positioning Systems, or any other vessel automation and control system.

## Key Benefits

Optimized system configuration, based on operational data reducing fuel consumption could result in:

- Fuel cost reduction
- Reduced emissions
- Operation of engines at a higher efficiency point

Reduced total main engine running hours could result in:

- Reduced maintenance costs for main engines
- Extended service life of main engines

Real-time view of the vessel's operational state and its effects on fuel consumption

Historical view of fuel consumption and estimated emissions (SOx, NOx, CO2, CO)

Sensor fault details (PME, Wind and Gyro failures)

Compact and cost-effective solution with integrated data historian

Intuitive dashboards providing insights

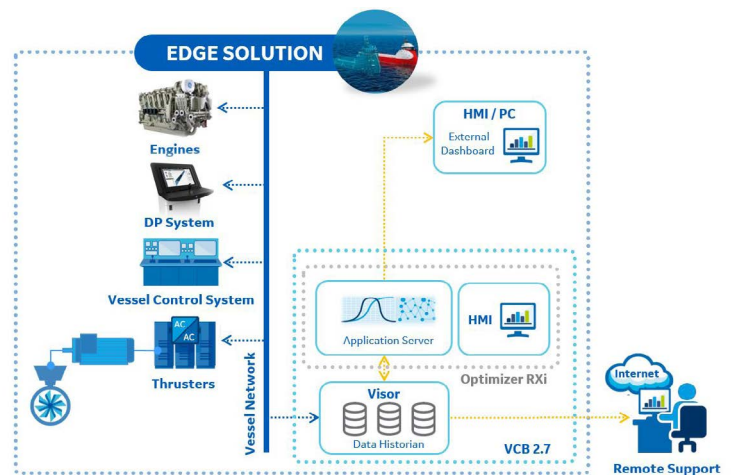
Open interface to 3rd party clients with OPC UA

Achilles Level 1 Security Certified (VCB 2.7+)

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## Key Features

- Fuel consumption vs transit speed and load charts.
- Instantaneous and averaged fuel consumption and emissions figures.
- Auto-detection of vessel operating mode.
- Data collection into local database of all KPIs and vessel state.
- Recommendation of optimum operating point by comparing against current operating point.
- Comparison between current and historical operating points.
- Ability to generate reports on fuel consumption and emissions for selected time period and during various operating modes.
- Charts showing generator utilization and duration in various vessel modes.
- Charts showing generator fuel consumption by mode and associated emissions.
- Multiple KPI plots and trending tool for viewing primary variables.
- Fleetwide view from a cloud dashboard.



The **Operations+ Energy Optimization** application is deployed on an on-prem PC which performs the analytics and provides insights into the optimum power system configuration. GE Power Conversion's Visor Connect Box (VCB) is used to safely and securely collect data required for the analytics, such as main engine fuel consumption, power system usage parameters, and weather conditions from the vessel's DP or automation and control system.

The dashboards can be displayed on the local HMI of the on-prem PC or a larger external monitor. Both the on-prem analytics PC and VCB are packaged in one unit.

Fleetview is also available using cloud dashboard from an onshore location.

## Customer Success Story

Deployed on an offshore vessel, GE's Operations+ Energy Optimization app used six months of operational data to demonstrate potential of **upto 30% fuel savings during specific operating conditions**, without sacrificing transit speed or system integrity (and while maintaining sufficient spinning electrical power reserve).



## OUTCOMES

GE Power Conversion's **Operations+ Energy Optimization** tool has helped our customers:

- Realize that their vessels may not be operating as efficiently as intended
- Identify systems running under sub-optimal conditions, with particularly easy opportunities to reduce energy consumption during non-mission-critical activities (such as transit)
- Uncover simple, immediate configuration options to impact energy use (such as the number of generators online, bus-tie status, and load-dependent start/stop thresholds)
- Demonstrate lower carbon fleet credentials to their customers and stakeholders
- Achieve reduction of fuel to about 30% in some scenarios

To find out more:  
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