EASY — Engine Automation and Safety System

EASY, Engine Automation and Safety System is a digital automation and protection system for marine and power plant engines. It supports safe, reliable operation in demanding applications where uptime and precise control are critical.

About EASY

EASY is built on a PLC-based architecture with separate control and safety functions. It automates engine start/stop sequences, manages auxiliary systems, monitors critical parameters and provides independent engine protection, helping improve uptime and reduce operator workload.

Easy User Panel

Key features

- **Engine start/stop logic**

Automated controls with interlocks ensure safe operations without extensive manual checklists and minimize human error or reduce human error.

- **Auxiliary system control**

Manages turbo, cooling, lube oil, slow turn, jet assist, VIT etc.

- **Alarm, supervision and safety**

Comprehensive monitoring and emergency stop functionality for both engine and crew safety.

- **Separate control and safety PLCs**

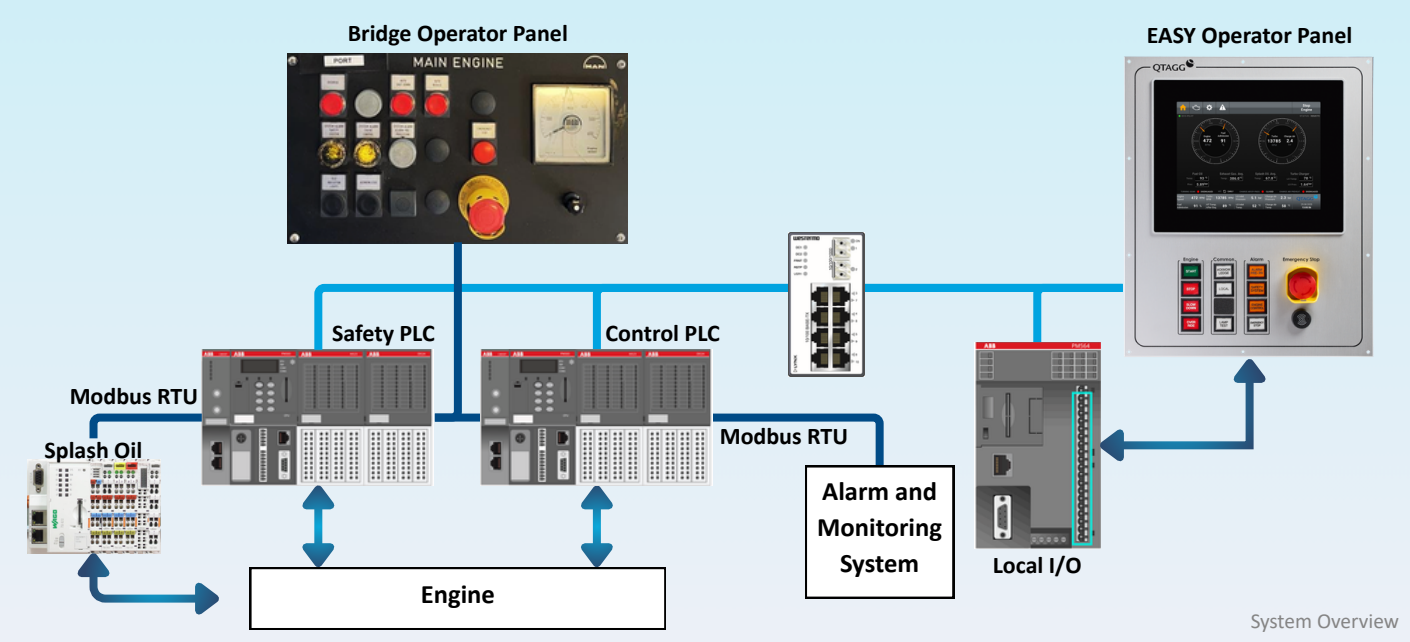
Functional separation ensures reliability and simplifies maintenance.

- **Easy access to key information**

Key engine data is displayed on the engine overview page, with further details accessible as needed.

System Overview

EASY uses separate PLCs for control, safety and operator interface. The Control PLC manages normal engine operation, the Safety PLC provides independent engine protection, and the Local I/O PLC connects the touchscreen, push buttons and control desk. Together, they communicate with the engine and alarm monitoring system to provide real-time control, monitoring and protection.



System Overview

Control PLC

Automates critical engine operations and coordinates auxiliary functions:

- Engine start/stop.
- Auxiliary system control: Charge air, cooling water pumps, lubrication oil pumps, cylinder lubrication, pre-heat/cooling change over.
- Advanced engine management: Slow turn, speed check, waste gate control, jet assist, variable injection timing (VIT).

Interacts closely with the safety PLC to ensure safe engine startup.

Safety PLC

Dedicated to real-time protection of engine components and personnel. Monitors critical engine parameters and enforces shutdowns based on predefined safety thresholds:

- Emergency stop: ECR, ER and bridge.
- Overspeed protection: Redundancy.
- Temperature monitoring: Exhaust gas, main bearing, splash oil, lubrication oil, high-temperature cooling water.
- Pressure monitoring: Cylinder lubrication oil, coolant, turbocharger systems, filter differential pressure

Operates independently of the control PLC to ensure maximum safety.

Local I/O PLC

- Provides operators with direct access to control functions and real-time feedback via a touchscreen.
- Ensures smooth and responsive user interaction with the engine control desk.

System Communication and Redundancy

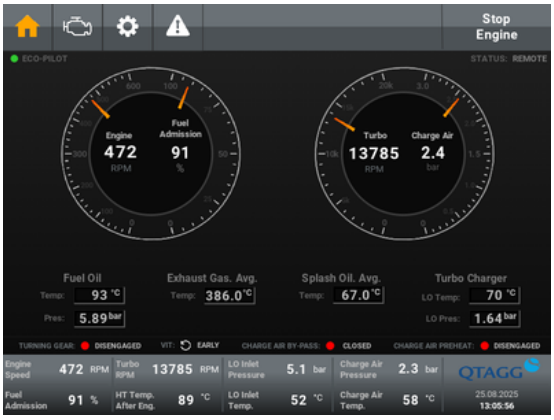
- Fast and efficient data exchange with minimal latency for real-time control of the ship's engines.
- Designed to suppress non-critical alarms during non-operating states while maintaining fail-safe behavior.
- Safety PLC assumes full autonomous control in case of communication failure, ensuring operational safety.

Applications

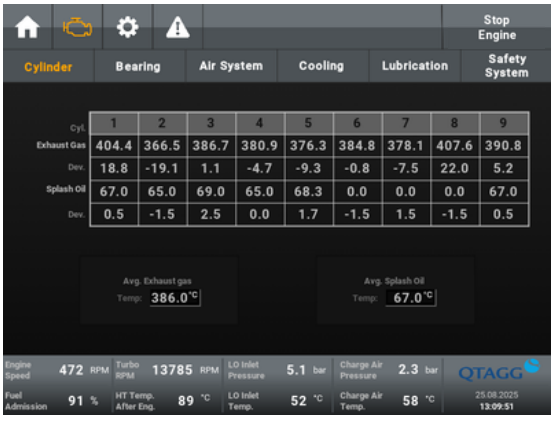
EASY Engine automation and protection system is ideal for use with marine and power plant engines. It is designed to provide robust control for reliable and safe engine operations even in demanding environments.

Intuitive User Interface

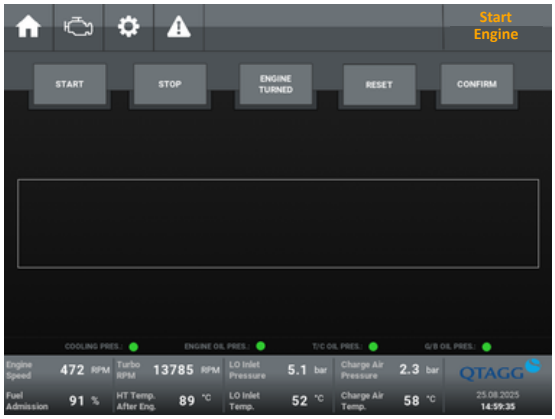
- The user interface was designed in cooperation with experienced first officers to provide a superior user experience.
- All key engine data are displayed on the main screen, with further details available as needed.
- Physical panel with buttons for all operational controls.



Main Screen



Cylinder Monitoring



Start and Stop Sequence