DEGO IV Diesel Engine Governor

DEGO IV is Qtagg's real-time controller platform for speed control of diesel engines and generator turbines. DEGO IV supports integration with other units and systems on ship or at a power plants.

Supported engine arrangements

DEGO comes preconfigured with applications and functions for all typical propulsion and generator arrangements such as:

- Mechanical propulsion, single engine
- Mechanical propulsion, multiple engines
- Auxiliary generators
- Land-based power plants

The all in one box design allows for safe installations and efficient integration of sensors from different systems via the analog, digital and communication interfaces, for example:

- Fuel rack actuators for camshaft engines
- Speed pick-ups on engine and propeller shafts
- Power measurement for the generator and the busbar
- Controllable pitch control systems
- Fuel meters
- Shaft torque and power meters

The DEGO engine speed governor is approved by all major marine classification societies.

How does it work?

The control goals of the DEGO system are to keep:

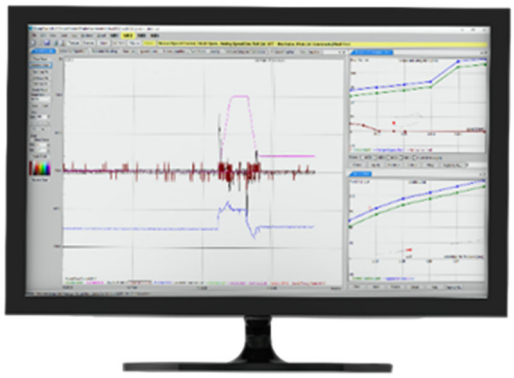
- The engine within safe operational margins
- The engine at the required speed

The controller tuning can be adapted for different load and speed situations to provide optimal control in all working areas. The engine is limited with torque and smoke limits together with an overspeed protection.

User interface

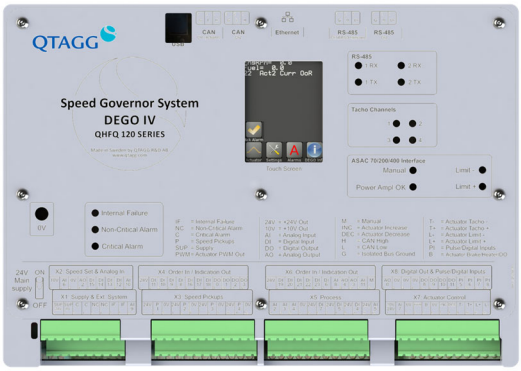
The commissioning tool DegoAid gives the crew full access to real-time information in a graphical format. High frequency logs gives detailed information about the engine and the propulsion system.

This allows for safe commissioning, optimal tuning of the engine and quick troubleshooting.



Mechanical design

DEGO IV is available in two different packages. One for field mounting (IP54) and one for DIN rail mount as seen below .



Control panels

DEGO has control room panels for twin engine and single engine application.

Single engine propulsion

For all applications a redundant concept by using two or more speed sensors is used to provide operational safety and avoid single point of failure. For slow speed engines there is an ultra-slow speed operation mode where every other cylinder is fired in a synchronized way.

Speed setting for the engine is selected as either analog or increase/decrease signals for flexible integration with the bridge control system.

Multi-engine propulsion

The multi-engine propulsion application is designed for efficient control of engines working in pairs through a common gearbox. This application utilizes a digital master slave concept with speed droop as a back-up functionality.

For engines working in a pair on one propeller shaft, there is a loading on/off program with an optional de-clutch signal when unloaded. There are also several options in this configuration for load balancing between the engines, synchronization of engines before clutch in etc.

For vessels with two propeller shafts, propeller synchronization to reduce vibrations in the hull can be provided.

Land-based generators

The generator application is designed for land-based diesel generators. The application is designed for fail-safe operation in all situations with a built-in redundancy and fall back concept.

In normal operation the application works in isochronous or load control mode. At loss of communication it will fall back to speed droop to maintain system stability.

The system measures and uses the electrical load to immediately react to electrical load changes. Before connecting a generator to the electrical grid its frequency and phase is automatically synchronized. When connected, the electrical load is increased with a time controlled loading program.

Before opening the breaker the generator is un-loaded with a time controlled un-loading program.

Upgrade and retrofit

The DEGO is designed for efficient retrofits of hydraulic and electric governors. DEGO IV has the same physical size and electrical interface as the DEGO III governor, i.e. upgrading existing DEGO installations is very easy.

Options

- Multi-channel tacho to prevent torsional vibration in the shaft system
- Critical RPM areas blocking
- Fuel Pump Motioning for fuel pump service
- Low Speed Operation
- VIT Control with fuel quality control
- Lubrication Oil Control
- Engine Synchronization
- Shaft Synchronization
- Dual Fuel Operation
- CPP interface for load control and fuel rack signal
- Pitch control

Communication

- CANOpen x2
- TCP/IP
- Serial RS-485 x 2
- USB-port

I/O Interfaces

- Analog Input x 10
- Analog Outputs x 5
- Digital Inputs x 24
- Digital Outputs x 10
- Tacho / Pulse Inputs x 6
- Alarm Outputs x3

Actuator Interface

- Analog Control and Feedback 0-20mA, +/-10V
- PWM Control 0-200mA
- CANOpen
- Integrated drive for ABB Legacy Actuators