



Regulateurs Europa
Member of the HEINZMANN Group

Marine, Industrial & Traction

Product Guide

Control and Monitoring Solutions



REGULATEURS EUROPA

SPECIALIST FOR GOVERNING CONTROL AND MONITORING

REGULATEURS EUROPA (RE) is amongst the world leaders when it comes to the supply of control and monitoring solutions. From mechanical and electronic governors to turnkey monitoring and control systems for marine, traction, industrial and offshore applications.

Nearly seventy years of experience developing control and monitoring philosophies for prime movers is clearly evident in the products and services supplied to engine builders, utility companies and ship operators in addition to many other users around the world. The name REGULATEURS EUROPA has become synonymous with quality and dependability.

REGULATEURS EUROPA is able to supply products that satisfy the most demanding of applications. As a member of the HEINZMANN Group REGULATEURS EUROPA offers a complete portfolio of control and management solutions for all major types of prime mover with products ranging from standard components to highly complex power management systems.

PRODUCTS

GOVERNORS

Wide range of hydraulic, electro-hydraulic and digital governors



CONTROL

Control systems for marine, industrial and traction applications



ACTUATORS

Hydraulic actuators with and without ballhead backup option



MONITORING

Monitoring systems for ship, industry, traction and condition based monitoring



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GOVERNORS

With nearly seventy years of experience, REGULATEURS EUROPA is a renowned specialist in the field of hydraulic control. The company delivers a wide range of hydraulic governors.

Customers from the industrial, shipping and rail vehicle sectors value the controllers for their absolute reliability and durability, combined with outstanding operating properties.

As single components or as part of an engine management system - REGULATEURS EUROPA supplies the optimally configured controllers for application-specific requirements.

MAIN BENEFITS

- ▶ Excellent control management
- ▶ Reliability
- ▶ Endurance

HYDRAULIC GOVERNORS

Engine builders around the world trust in REGULATEURS EUROPA hydraulic governors whenever a high reliable, stable and optimal solution is needed for specific applications like marine propulsion gensets and turbines in diesel, gas or dual-fuel mode.

RE 2100

Hydraulic governor, providing mechanical speed control of high-speed engines, with options to provide electrical or pneumatic speed control and boost pressure fuel limitation.

- ▶ Output range Nm: 11, 15
- ▶ Output range ft lbf: 8, 11



RE 1800-3G

Powerful mechanical hydraulic governor, providing mechanical speed control and featuring a two-stage, high stiffness, backlash-free hydraulic servo mechanism for best possible control on engines whose fuel control systems require a high work output. Option for start/boost pressure fuel limiter.

- ▶ Output range Nm: 81-108
- ▶ Output range ft lbf: 60-80



RE 1115-4G

Hydraulic governor with electronic speed setting for marine propulsion engines. Analogue (4-20 mA) and digital speed setting modes (raise/lower speed) available. Electrically operated stop, electric start fuel limiter or boost pressure fuel limiter. 4-20 mA load signal available. A low build version of the 1115 type governor is available for engines with limited space for the governor. Pneumatic fuel limit and 4-20 mA load signal available.

- ▶ Output range Nm: 11, 16, 20, 34, 46, 54
- ▶ Output range ft lbf: 8, 12, 15, 25, 34, 40



RE 1500-3G

Largest of the RE hydraulic governors, providing mechanical speed control and featuring a two-stage, high stiffness, backlash-free hydraulic servo mechanism for best possible control on engines whose fuel control systems require a high work output. Option for start/boost pressure fuel limiter.

- ▶ Output range Nm: 163, 271, 339
- ▶ Output range ft lbf: 120, 200, 250



1102-4G

Popular hydraulic governor, providing mechanical speed control of diesel or steam turbine driven gensets. Option for electrically operated stop and/or start fuel limiter.

- ▶ Output range Nm: 11, 16, 20, 34, 46, 54
- ▶ Output range ft lbf: 8, 12, 15, 25, 34, 40



ELECTRO-HYDRAULIC GOVERNORS

REGULATEURS EUROPA is continuously extending their hydraulic governor range. Latest development is a microprocessor controlled hydraulic governor, which combines the well proven RE hydraulic governors with a special developed HEINZMANN digital control.

DG 2800.14

The DG 2800.14 governor is a microprocessor controlled hydraulic governor and consists of the well-proven RE 2800 series actuator and the HEINZMANN digital DC 14 governor. The digital governor controls the proportional solenoid of the actuator by means of a current signal. The DG 2800.14 includes an integrated speed pick-up, however, if required an external pick-up can be connected. The DC 14 digital governor provides state-of-the-art speed control (steady state speed wander < 0.1 % at nominal speed), start fuel limit and functionality typical for generator application, including isochronous load sharing (optional).
Marine certification: DNV GL, ABS

- ▶ Output range Nm: 20.3 | 41.7
- ▶ Output range ft lbf: 15 | 30



MAIN BENEFITS

- ▶ Tried-and-tested
- ▶ High performance
- ▶ Flexible
- ▶ Durable
- ▶ Flexible
- ▶ Precise
- ▶ Adaptable

DIGITAL GOVERNORS

REGULATEUR EUROPA digital governors are highly valued on account of their flexibility, which means they can meet all customer requirements and prerequisites. Our governor systems are known for their durability and tried-and-tested reliability. They can be used for diesel, gas and dual-fuel engines and turbines of any size, type and make. Alongside our standard products, we can also offer bespoke solutions that are tailored to specific applications.

XIOS^{UC}

Multi-functional and modular engine governor with advanced I/O system. Follow-up product for PRIAMOS DC 1-03/DC 1-04.

- ▶ Processor: 32 Bit 264 MHz
- ▶ Communication interfaces: Ethernet, CAN, RS-232, RS-485
- ▶ Display: 4.3" (optional)
- ▶ Degree of protection: IP20
- ▶ Power supply: 9... 32 VDC



Viking35

An ECU with a high number of I/Os, suitable for a wide range of complex control and monitoring tasks in ships, locomotives and generators. The Viking35 has established itself as the ideal solution on the market for applications involving complex load sharing in particular. The user-friendly Viking Vision software or a corresponding hand-held device can be used to edit or display control and status parameters in real time. It is combined with hydraulic actuators from REGULATEURS EUROPA.

- ▶ Power supply: 24 VDC
- ▶ Degree of protection: IP00



DC 8

Digital speed governor for combination with actuators from the StG 2000 series. Alternatively, it can be used as a positioner or periphery module to extend the I/O capacity of the primary control unit. Available for marine drives with an output of 0-1 A, for controlling hydraulic actuators from the REGULATEURS EUROPA range.

- ▶ Power supply: 12 | 24 VDC
- ▶ Degree of protection: IP00
- ▶ Interface: Galvanically insulated CAN bus



DC 6.200

A version of the versatile HEINZMANN DC 6 controller with an output range of 0-200 mA makes it perfect for the small RE 20 actuator and other small proportional electromechanical actuators.

- ▶ Power supply: 12 | 24 VDC
- ▶ Degree of protection: IP00



SOFTWARE

REGULATEURS EUROPA configuration and visualisation tools are used to control and display operating parameters for all digital governors.

Viking Vision

Viking Vision is a free of charge PC based tool which has been developed to allow easy access to the adjustable parameters and status information in all Viking products



DcDesk

The DcDesk software is a configuration and visualisation tool for all digital HEINZMANN systems. It comes with all functions for commissioning, monitoring and maintenance/diagnosis.

ACTUATORS

The range of hydraulic actuators offered by REGULATEURS EUROPA in the HEINZMANN portfolio is built on nearly seventy years of expertise in hydraulic governing. Customers in the industrial, marine and rail traction sector acknowledge these actuators for high reliability and durability along with excellent performance.

All models are designed to be controlled by digital controllers Viking35, DC 8 or XIOS. Alternatively, they can interface with other controllers as part of a customised engine management system by REGULATEURS EUROPA.

MAIN BENEFITS

- ▶ Excellent control management
- ▶ Reliability
- ▶ Endurance

HYDRAULIC ACTUATORS

RE Series 20

Small proportional actuator using engine oil for its operation but with a self-contained oil pump and accumulator. Can be used with a range of proprietary ECUs, making it an ideal solution for upgrade/retrofit installations. This actuator is controlled by a HEINZMANN digital governor DC 6.200.

- ▶ Output range Nm: 6
- ▶ Output range ft lbf: 4.7



RE 2221-1G

The 2221 is a proportional actuator where the position of the output shaft is proportional to the electrical input signal 0-1 A. This actuator is typically used in medium/high-speed diesel engines in generator systems or locomotives.

- ▶ Output range Nm: 11, 16, 20, 34, 46, 54
- ▶ Output range ft lbf: 8, 12, 15, 25, 34



RE 2800-1G

This model is a compact hydraulic proportional actuator used in combination with the Viking range from RE or governors from other manufacturers. It is completely interchangeable with actuators from the UG range.

- ▶ Output range Nm: 42
- ▶ Output range ft lbf: 30



RE 2231-1GH

Proportional actuator featuring a mechanical-hydraulic governor as a ballhead backup in the case of a power failure or controller fault, providing various manual speed setting options. Popular actuator model for marine propulsion engines and other applications where common mode failures must be minimised.

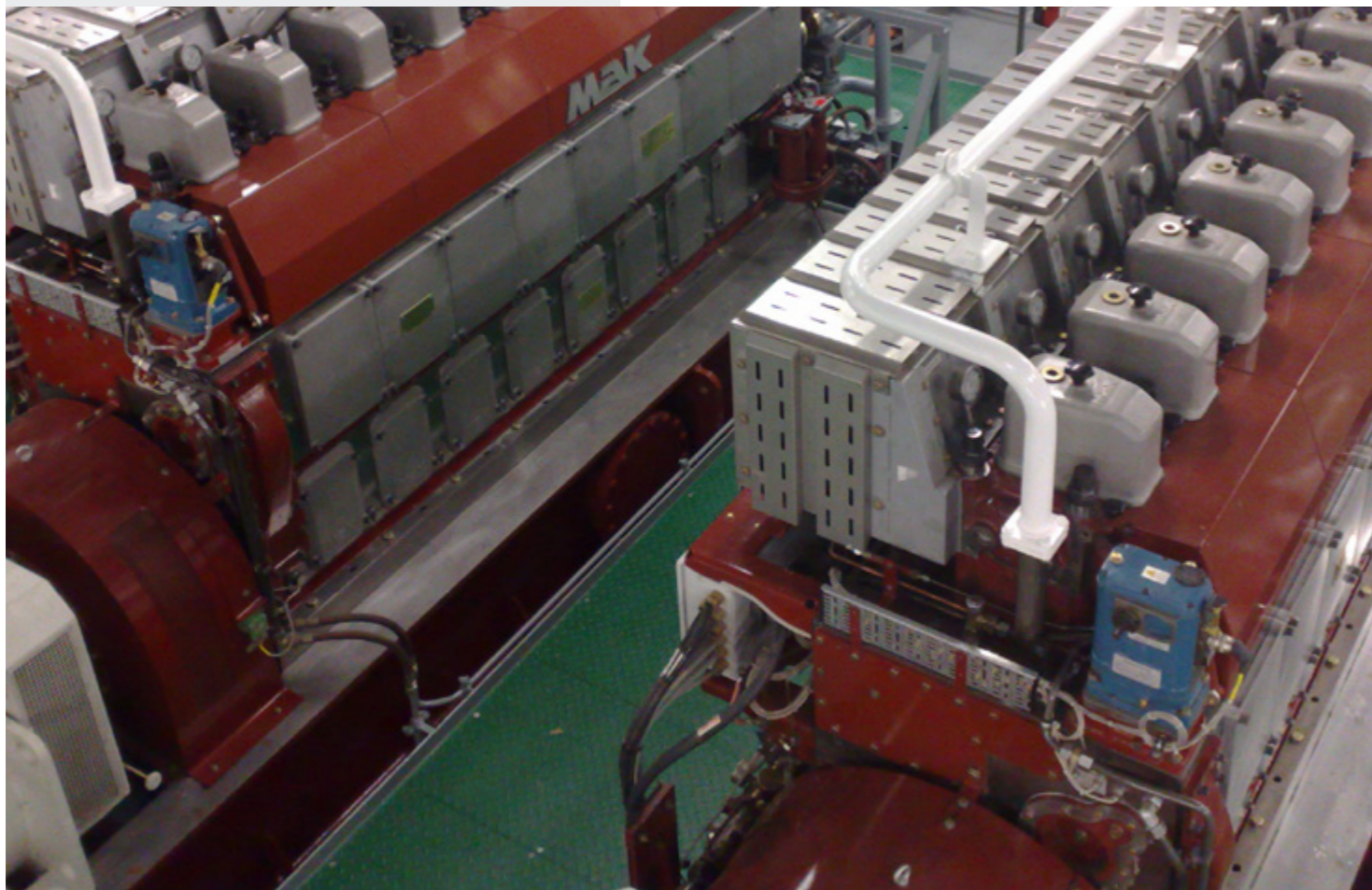
- ▶ Output range Nm: 11, 16, 20, 34, 46, 54
- ▶ Output range ft lbf: 8, 12, 15, 25, 34, 40



DA 2800

Compact hydraulic proportional actuator based on the 2800 series actuators with an integrated amplifier. The amplifier boosts the output signal from 0-200 mA to 0-1 Amp or from 4-20 mA to 0-1 Amp. This allows to use the DA 2800 actuator with different non-RE controllers of other manufacturers.

- ▶ No external amplifier needed
- ▶ No extra space in the control cabinet for an additional PCB needed
- ▶ No additional wiring needed
- ▶ Only one cable to the actuator
- ▶ Wire break detection from PCB to actuator
- ▶ Amplifier with marine type approval



RE 2222-3G

Proportional actuator featuring a two-stage, high stiffness, backlash-free hydraulic servo mechanism for best possible control on larger engines requiring increased work outputs. Option for start/boost pressure fuel limiter and/or a mechanical-hydraulic governor as a ballhead backup.

- ▶ Output range Nm: 81, 108
- ▶ Output range ft lbf: 60, 80



RE 2232-3G

Proportional actuator featuring a two-stage, high stiffness, backlash-free hydraulic servo mechanism for best possible control on larger engines requiring increased work outputs. Option for start/boost pressure fuel limiter and/or a mechanical-hydraulic governor as a ballhead backup.

- ▶ Output range Nm: 81, 108
- ▶ Output range ft lbf: 60, 80



RE 2223-3G

Proportional actuator featuring a two-stage, high stiffness, backlash free hydraulic servo mechanism for best possible control on large medium-speed engines. Option for start/boost pressure fuel limiter and/or a mechanical hydraulic governor as a ballhead backup.

- ▶ Output range Nm: 163, 271, 339
- ▶ Output range ft lbf: 120, 200, 250



RE 2233-1G

Proportional actuator featuring a two-stage, high stiffness, backlash free hydraulic servo mechanism for best possible control on large medium-speed engines. Option for start/boost pressure fuel limiter and/or a mechanical hydraulic governor as a ballhead backup.

- ▶ Output range Nm: 163, 271, 339
- ▶ Output range ft lbf: 120, 200, 250



TEST EQUIPMENT

REGULATEURS EUROPA provides electrically driven governor test stands for permanent installation. The purpose of the rig is to assist in adjusting, servicing and testing the performance of hydraulic speed governors and hydraulic actuators.

Further we supply units for testing, charging and calibration of actuators.

Test Stand AK8

Our test stands have been designed to simulate diesel engine operating conditions; the governor and test stand forming a closed loop system. For the setting-up and testing of hydraulic actuators the test stand can also operate in open loop mode. In that instance the drive speed is set at, and controlled from, the stand itself. For testing of governors and actuators of all major brands.

- ▶ All-electric 5.5 kW drive
- ▶ Includes oil supply to fill the governor under test
- ▶ Governor oil may be circulated and pre-heated
- ▶ Operated from a 15" colour touch screen HMI
- ▶ Includes 4 ... 20 mA speed setting driver
- ▶ Operates in open and closed loop mode



Actuator Charger/Tester

For calibration of all RE actuators. The magnets in all RE actuators are accurately calibrated at the factory, guaranteeing the actuator performs in the precise manner the design intended. At overhaul of the actuator and/or strip down of the actuator assembly it is essential to re-calibrate the magnet to maintain the accurate operation of the unit. The RE actuator charger/tester is designed specifically to do this task and is available in either 110 VAC or 230 VAC 50/60 Hz power supply format. The functionality of this independent unit is built into the AK8 test stand above.

- ▶ Includes oil supply to fill the governor under test
- ▶ Governor oil may be circulated and pre-heated
- ▶ Operated from a 15" colour touch screen HMI
- ▶ Includes 4 ... 20 mA speed setting driver
- ▶ Operates in open and closed loop mode



Actuator Calibration Unit

The actuator calibration unit ACU is a tool for maintenance and repair of HEINZMANN actuators. It is designed to perform a general working test of actuators and to calibrate actuators analogue feedback.

- ▶ Analogue feedback calibration
- ▶ General working test
- ▶ Cable harness included



SYSTEM COMPONENTS

REGULATEURS EUROPA supplies a range of auxiliary systems and components in order to complete their control and monitoring systems by self-produced equipment.

DISTRIBUTED I/O SYSTEMS

ICENI I/O Modules

The ICENI range of distributed I/O modules can be used to communicate with PC or PLC equipment or extend the range of the RE Viking35 ECU. The DIN rail mounted modules are designed to be cost effective and easy to configure, via a colour display keypad, without the need for a programmer or laptop. ICENI has been built to a high specification to encompass the extended temperature range of an engine environment but is easily suited to a much wider role; both to enhance RE control and monitoring solutions or as a product for other OEMs.

ICENI is a range of modules that can be plugged together to form a node on a distributed I/O system. Nodes are positioned at strategic points around the plant enabling local field devices to be wired to the modules rather than individually back to the master station, thus simplifying the plant wiring.



The master station can access the input process image to determine the plant status and also write to the output process image area to control plant devices. The network node is controlled by a master module that always occupies the first slot. A combination of input and output modules to suit the field requirements are then plugged into the right hand side of the master module to form the ICENI bus. The node is completed with a power supply module.

- ▶ Open protocols to PLCs, PCs etc. (Modbus RTU, CANopen, DeviceNet)
- ▶ Extended temperature range (-20 ... +70 °C)
- ▶ Inbuilt user interface for commissioning and support
- ▶ Robust construction
- ▶ Independent electrical isolation
- ▶ Redundant power supply capability
- ▶ "Plug & Play" automatic configuration
- ▶ Cost-effective solution for a wide range of applications

SIGNAL CONVERTER MODULES

Converter Module ECM 7118

The amplifier module ECM 7118 provides an interface between any of the REGULATEURS EUROPA range hydraulic actuators and electronic control units from other manufactures.

- ▶ Size: 75 x 110 x 50 mm
- ▶ Mounting: Standard DIN rail mounting
- ▶ Power supply: 24 VDC (18 ... 32 V) max. 2 A
- ▶ Input: Selectable 0 ... 200 mA or 4 ... 20 mA. The input signal is isolated from both power supply and output signal.
- ▶ Input resistance: 35 Ω for 0 ... 200 mA input, 235 Ω for 4 ... 20 mA input
- ▶ Output: Pre-set for RE series actuators, or 0 ... 1000 mA nominal
- ▶ Time lag: < 5 ms for 100 % step
- ▶ Ambient temperature: -10 ... +75 °C

- ▶ EMC requirements: In order to comply with the requirements of IEC61000-4-2, -3, -4 and -5 the module must be mounted in a steel plate enclosure
- ▶ Type approval



Converter Module 7150

Actuator drive signal converter module. Interface to any electronic control unit from any other manufacture.



- ▶ Input signal: 0 ... 200mA range (35 Ohm nominal input resistance)
- ▶ Output signal: 4 ... 20mA range (adjustable)
- ▶ Fault sensing:
 - ▶ 4 ... 20mA output signal wire-break detection. 0 ... 200 mA input signal is broken when output signal wire break is detected
 - ▶ Module health status (4 ... 20mA wire break/ loss of power supply) indicated via clean contact and LED.
- ▶ Response: <5 ms for 100 % step change
- ▶ Power supply: 24 VDC nominal (18 ... 32 VDC range)

- ▶ Isolation: 1 kV between input, output, and power supply
- ▶ Temperature: -20 ... 70 °C operating range
- ▶ Mounting: standard DIN rail module

Stepper Motor Drive Module

REGULATEURS EUROPA series of hydraulic governors may be equipped with a speed setting device which can be adjusted from a 4-20 mA signal. In this instance the speed setting mechanism in the governor is adjusted by means of a stepper motor, which is controlled by driver M602901F.



The unit complies with the requirements of IEC61000-4-2, -3, -4 and 5 if mounted in a steel plate enclosure. A potential free change over contact is available for alarm indication. Please refer to the data sheet, which summarises the differences between builds and provides the specification and connection diagram of the latest build M602901F.

- ▶ Analogue speed setting mode
- ▶ Ramp rate adjustable for increase or decrease speed
- ▶ Raise speed in digital speed setting mode
- ▶ Lower speed in digital speed setting mode
- ▶ Fast/slow ramp rate selectable if in digital speed setting mode
- ▶ Minimum speed stop
- ▶ Maximum speed stop
- ▶ Selectable reduced maximum analogue speed setting level
- ▶ Select idle speed setting level
- ▶ Select run-up to rated speed (constant speed)
- ▶ Type approval

CONDITION-BASED MONITORING

Condition-Based Monitoring (CBM) is increasingly recognised within many industries as one of the foremost methods of managing the maintenance and availability of critical assets.

With a long and successful history of providing control and monitoring systems for marine, industrial, and traction applications worldwide; as well as an experienced team of certified vibration analysts, REGULATEURS EUROPA is ideally placed to provide CBM solutions.

REGULATEURS EUROPA solutions for CBM enable real-time and continuous monitoring of assets. Systems feature simple and informative local alarm screens for on-site engineers, providing an initial diagnosis of developing problems. This immediate feedback enables appropriate decisions and preventative actions to be taken to help avoid what could become very substantial consequential costs, and the possibility of corresponding secondary damage.

By continuously collecting and monitoring vibration data over an extended period the benefits of trending can be realised. RE supports its customers by analysing and trending historical data to assess any deterioration in asset condition. Customers are then able to make timely and informed decisions.

TrinoDETECT

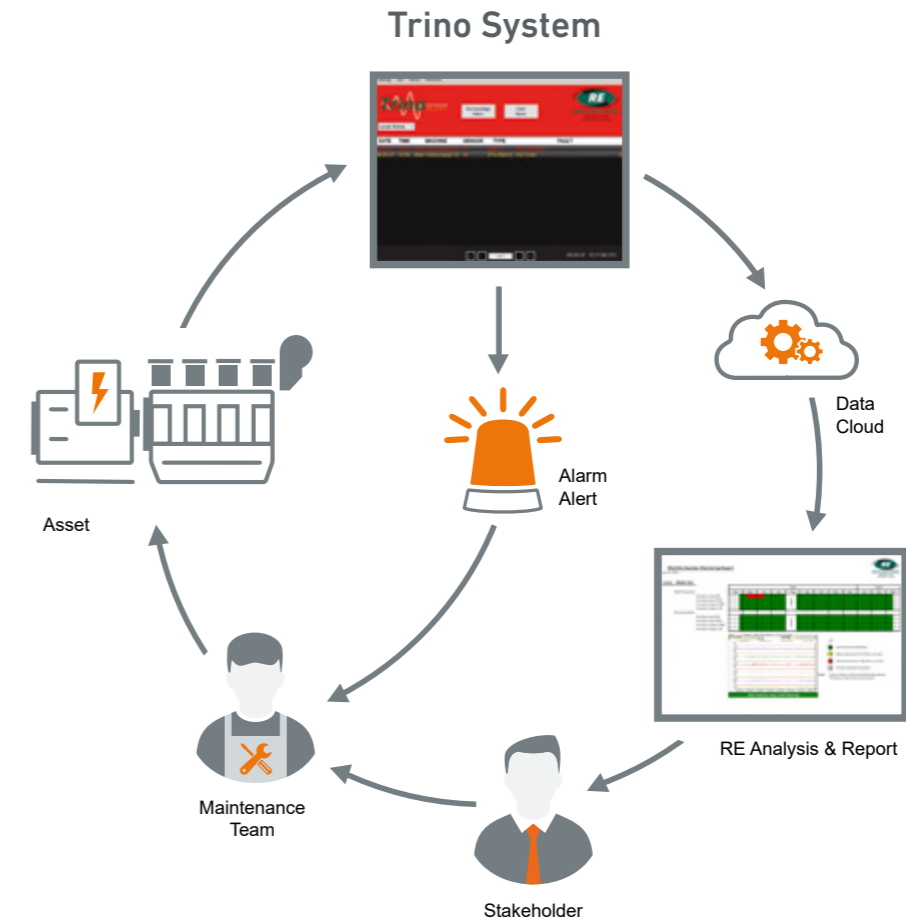
The TrinoDETECT unit continuously collects and monitors vibration frequency data received from a number of machinery sensors (typically accelerometers). Using spectrum analysis and moving band pass filter techniques, the condition signature contained within the sensor data is assessed to diagnose common machinery faults.



Alarm frequencies and amplitude levels automatically track and adapt themselves to the operating speed of the machinery, helping to ensure that Trino reliably senses any deviation from normal. Tracking is particularly useful for the successful monitoring of variable speed assets.

TrinoREMOTE

Regular and automatic transmission of detailed alarm and performance data to remote offices via internet connection and the cloud are available for vibration analysts to assess the condition of the rotating machinery and to advise on the appropriate course of action.



TrinoALERT

TrinoALERT is typically mounted in a machinery control room and provides a centralised presentation of pre and main alarms from one or more TrinoDETECT units. Each alarm entry clearly indicates the machine and sensor reference, date/time log and a short diagnosis as to the most likely cause of the fault.



MAIN FEATURES

- ▶ Continuous and permanent condition monitoring
- ▶ Initial local diagnosis
- ▶ Simple traffic light style severity rating system
- ▶ Trending
- ▶ Automatic data transmission
- ▶ Analysis & reporting service from certified vibration analysts
- ▶ Can help:
 - Maximise availability of assets
 - Optimise maintenance planning
 - Reduce costs



INDUSTRIAL CONTROL & MONITORING

With almost seventy years of experience in prime mover control technology, REGULATEURS EUROPA are specialists in providing complex control solutions for medium and low voltage generator and electrical distribution systems.

REGULATEURS EUROPA has successfully supplied systems to hospitals, airports, clean and waste water treatment works, nuclear power stations and offshore installations around the world with attention to detail through all stages of engineering, manufacturing, testing, installation and commissioning.

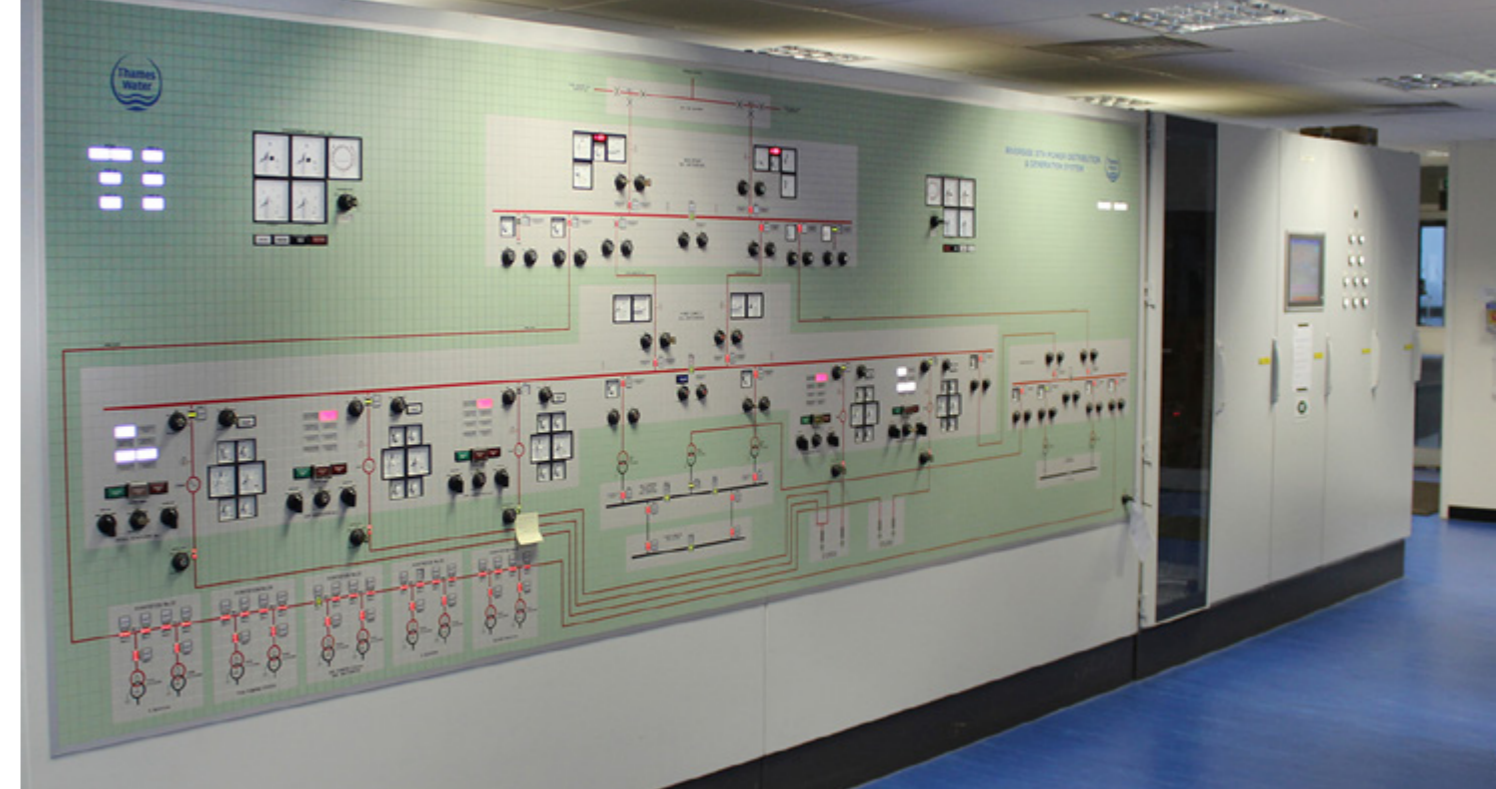
REGULATEURS EUROPA works closely with the customer to develop control solutions that are tailored to meet every aspect of the application requirements to provide reliable electrical power, that is why our customers choose REGULATEURS EUROPA Power Management Systems.

POWER MANAGEMENT

System Design

REGULATEURS EUROPA designs Power Management Systems (PMS) to meet customer requirements. This includes the number of generators, the rating of individual engines, and the engine type including diesel, dual-fuel, gas engines and turbines or the switchboard arrangement (e.g. bus couplers, utility incomers, etc.). The PMS provides automatic control of generators including the following basic functions:

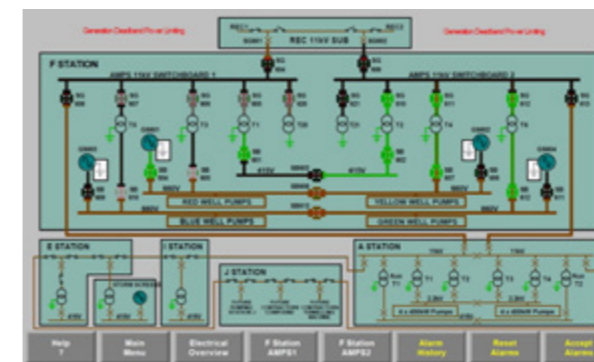
- ▶ Load dependant call-up and shutdown
- ▶ Generator synchronising control
- ▶ Circuit breaker close interlocking
- ▶ Loss of mains protection supervision
- ▶ Active and reactive load control
- ▶ Island mode voltage and frequency control
- ▶ Load shedding and restoration
- ▶ Generator neutral earth supervision and control
- ▶ Transformer tap changer supervision
- ▶ Generator and utility energy cost management
- ▶ Fault contribution limitation
- ▶ Interconnector load limitation
- ▶ Power metering
- ▶ Alarm annunciation
- ▶ Data logging
- ▶ Remote monitoring
- ▶ Complete manual back-up control and monitoring



SCADA

REGULATEURS EUROPA SCADA systems are based around the latest technology to provide customised solutions that are extremely reliable and retain the flexibility for future expansion. The SCADA system can be designed to meet the requirements of the customer.

- ▶ Network systems (server/client)
- ▶ Autonomous systems
- ▶ Panel mount or desktop position location



MAIN FEATURES

- ▶ Load dependant call-up and shutdown of generators
- ▶ Priority order selection
- ▶ Minimum numbers of sets
- ▶ Loss of mains protection supervision
- ▶ Neutral earth control
- ▶ Active load sharing
- ▶ Reactive load sharing
- ▶ Peak lopping operation
- ▶ Base load operation
- ▶ Power factor control
- ▶ Island mode operation
- ▶ Frequency control
- ▶ Voltage control
- ▶ Load shedding
- ▶ Load application



GENERATOR MANAGEMENT

REGULATEURS EUROPA has nearly seventy years' experience of providing control solutions ranging from single diesel engine governors through to complete control systems for multi-generator installations. RE specialises in design, engineering, manufacturing, installation and commissioning services to meet the customer specific requirements including consultancy and surveying services to assist in achieving a working solution.

REGULATEURS EUROPA's past projects have included generator and power control solutions for many different applications like banks, hospitals, hotels, telecommunications centres, airports, water treatment works, sewage treatment works, nuclear power stations and process plants.

Customers for these systems are not only located in the UK and Europe but around the world; from Brazil to India and Ireland to Australia.

REGULATEURS EUROPA has the facilities to design, engineer and manufacture control systems to meet the customer specific requirements for diesel driven generator sets. The control systems are designed using the

MAIN FEATURES

- ▶ Local engine control panels
- ▶ Remote engine control panels
- ▶ Control desks
- ▶ Remote start/stop
- ▶ Engine speed governing
- ▶ Alternator excitation
- ▶ Manual/auto synchronising
- ▶ Generator electrical protection
- ▶ Alarm indication
- ▶ Electrical data acquisition
- ▶ Breaker status indication
- ▶ Digital/analogue instrumentation
- ▶ Mimic display

latest PLC and HMI technology and, where appropriate, incorporate the field bus networks and serial communications in an attempt to reduce the amount of installation cabling. The functionality of single engine governors through to complete control systems is tailored to meet the customer's and end user's requirements.



Genset Control

Generator management systems from HEINZMANN and REGULATEURS EUROPA are based on well proven digital governors. In addition to the tried-and-tested Viking35 systems, the new XIOS^{GenSet} governor is an all-rounder suitable for all generator systems, as it combines all the relevant advantages of combustion engine governors and generator governors. The system can be fitted in control cabinets in accordance with industrial standards, and can include PLC controllers, HMI user interfaces, integrated speed control and numerous other functions. Communication can take place via numerous interfaces using different protocols.

In addition to engine and generator monitoring and protection, the system provides speed control, multiple communication interfaces and protocols for remote control and monitoring, as well as multiple generator control functions.

- ▶ Active and reactive load control
- ▶ Start/stop sequence control
- ▶ Synchronising
- ▶ Fuel selection
- ▶ Power metering
- ▶ Voltage control

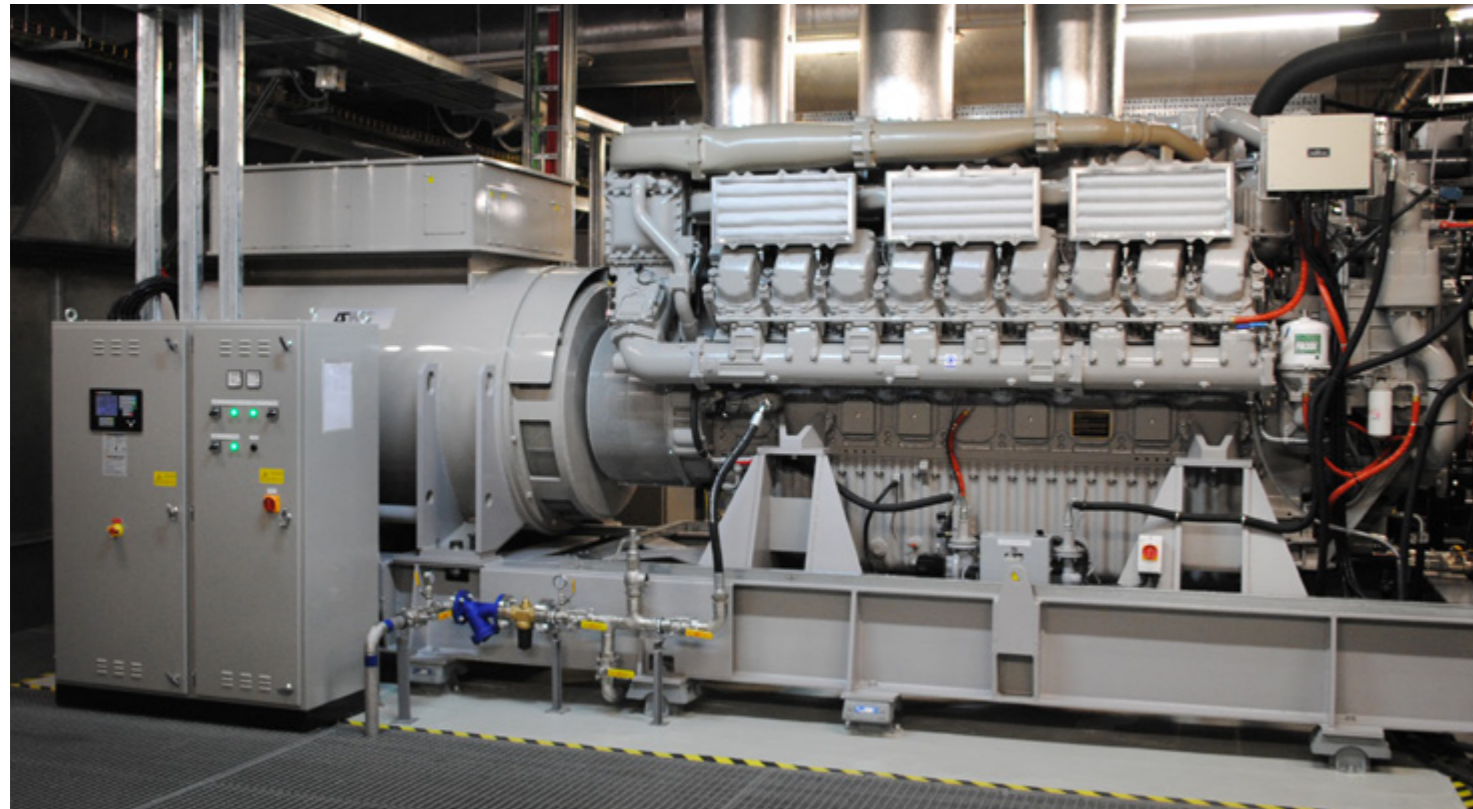
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XIOS^{GenSet}

A multi-functional, digital and cost-efficient system solution offering a wide range of solutions for controlling generators as well as protection and monitoring functions. Only a single central governor is required to control the entire genset system. The device's multi-functional design means it can be used in the best way for each specific customer and the engine and generator control can be configured flexibly. XIOS^{GenSet} can be used for island and parallel operation as well as for individual or group applications. The system is supplemented by a clear, user-friendly and easy-to-operate HMI.



MARINE CONTROL AND MONITORING

For almost seventy years the sophisticated propulsion control and ship monitoring systems of REGULATEURS EUROPA have been supplied to merchant, commercial and military marine applications around the world.

Building upon a wealth of expertise, REGULATEURS EUROPA work hand in hand with customers from initial consultation to project planning and execution, resulting in perfectly.

With its longstanding experience in governing and controlling prime movers and its excellent design and production capabilities, REGULATEURS EUROPA fulfils the needs of shipbuilders, equipment manufacturers and fleet operators through customised propulsion control and monitoring solutions.

PROPULSION CONTROL

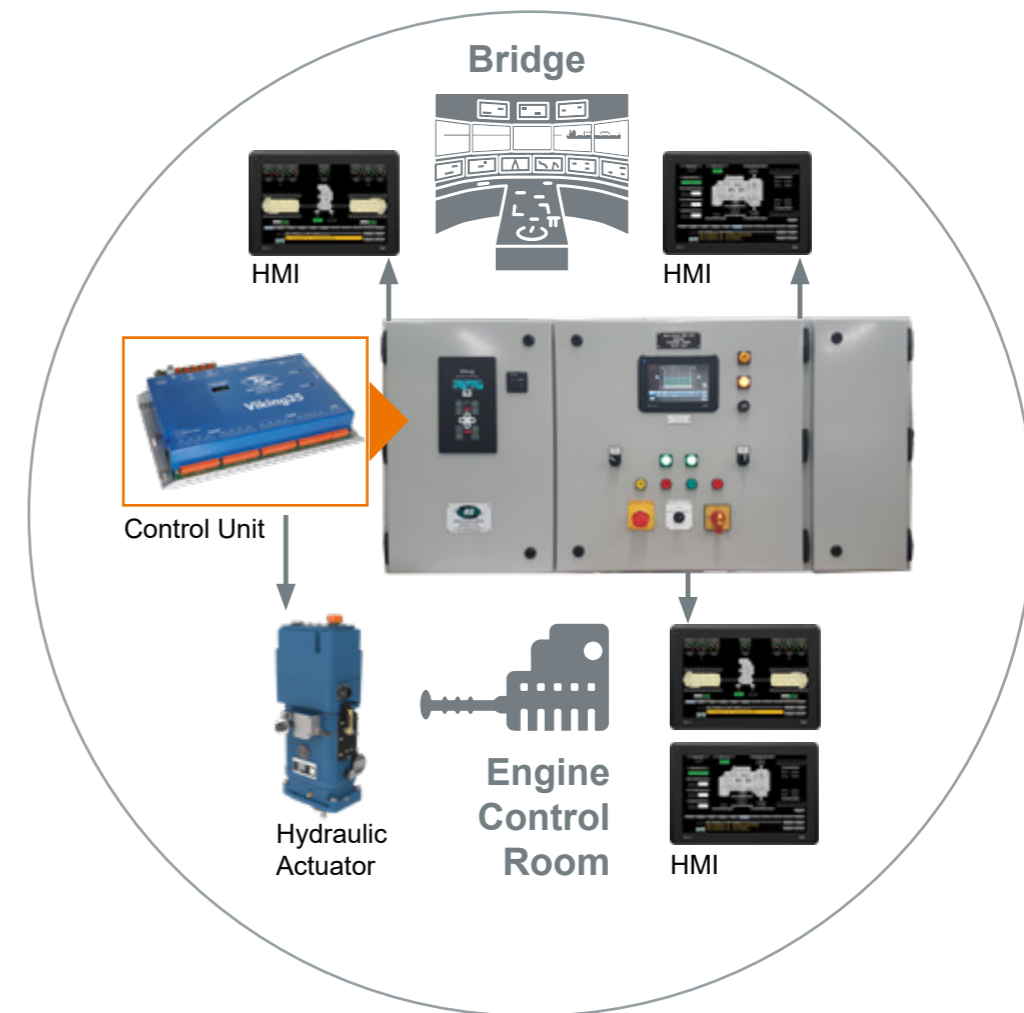
Propulsion Control Panels

The REGULATEURS EUROPA Propulsion Control Panels (PCPs) are a fully integrated governing and propulsion control unit providing a cost effective solution for Fixed Pitch Propeller (FPP), Controllable Pitch Propeller (CPP), and water jet marine applications.



- ▶ Speed governing
- ▶ Logic for starting and stopping
- ▶ Clutch control
- ▶ Engine protections such as slowdowns and hardwired shutdown

Propulsion Control Panel Overview



Combined Engine Management

Within the single bulkhead mounted enclosure is the sophisticated Viking35 digital governor, with flexible propulsion controls and essential hardwired safety circuits. This leaves the scope and the level of monitoring specifically to suit customer's requirements. Designed to fully meet the requirements of the various marine classification societies it already applications as diverse as fast military patrol vessels, luxury yachts, fast ferries and commercial shipping.

The fundamental control functions are programmed with customer specific parameters designed to suit and protect the engine. These parameters are accessible via the user-friendly operator interface display which allows setting up and tuning while the engine is running. Local manual control is obtainable via front mounted switches and push buttons.

In addition to speed governing the PCP provides:

- ▶ Logic for starting, stopping,
- ▶ Clutch control
- ▶ Engine protections such as slowdowns and hardwired shutdowns



HARDWARE CAPABILITIES

- ▶ Pre-start priming
- ▶ Interlocked start sequence
- ▶ Multi-attempt start capabilities
- ▶ Dual dynamics
- ▶ Clutch engage interlocks
- ▶ Acceleration limitation
- ▶ Wire break detection
- ▶ Overspeed test facility
- ▶ Engine RPM analogue outputs
- ▶ Engine load analogue outputs
- ▶ Helps to reduce overall costs

Complete Solutions

Building further on the PCP, REGULATEURS EUROPA can produce a complete range of solutions for marine engine control and monitoring, tailored for the vessel and its application. Based on the depth of knowledge within the company, these can range from standard systems to bespoke solutions to meet the customer's specific requirements.



The PCP is designed to interface with proprietary water jet and controllable pitch propeller systems. To complete the package REGULATEURS EUROPA can also offer various control stations such as bridge, open bridge/bridge wing and/or machinery control consoles.

The engine control stations would normally have instrumentation, start and stop facilities, ships telegraph and monitoring systems or other features built to classification society requirements. If the system is fixed pitch command levers and transfer of control can also be provided.



External Facility Control

In addition to the engine's controls the propulsion control panel can provide the control for external facilities:

- ▶ Jacket water heaters
- ▶ Exhaust flap changeover
- ▶ Priming pumps

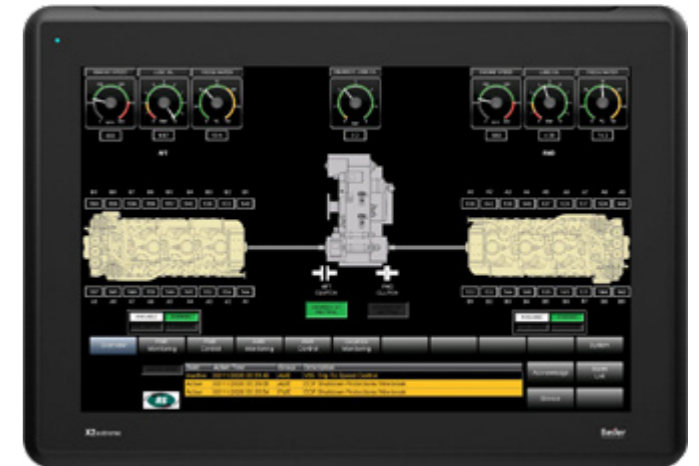


System Design

REGULATEURS EUROPA is able to supply integrated propulsion control systems for vessels with fixed/controllable pitch propellers and/or water jets, multiple engines into single gearboxes, and diesel power generators. By integrating digital speed governing with engine, generator management and propulsion control, customers are provided with a cost-effective system whose modular form assures easy installation.

Systems may incorporate:

- ▶ Machinery control room consoles
- ▶ Bridge control plates
- ▶ Propulsion logic panels
- ▶ Turbocharger condition monitoring



GENERATOR CONTROL

REGULATEURS EUROPA can provide controls for marine generators ranging from those used for diesel/electric propulsion, as main auxiliaries or just standby units. RE is particularly well known for providing load sharing systems and for complex combined generator/propulsion solutions as required by large suction dredgers.

Generator Panels

The typical panel shown includes all of the necessary I/O to interface with the engine, generator and ships systems. The Windows* based PC software provides an easy interface with the generator control panel; allowing performance to be monitored and parameters changed by authorised personnel



Viking35 Generator Control Panels

At the heart of many generator control panels is the Viking35 ECU which combines the engine management functions together with multi engine electrical and/or mechanical load sharing, via load measure transducers.



ICENI Distributed I/O Systems

The ICENI range of distributed I/O modules can be used to communicate with PC or PLC equipment or extend the range of the RE Viking35 ECU.

For more information please refer to page 12.



Control and Monitoring Panels for Specialised Applications

Specialised applications such as front-line military vessels require hardware designed to withstand the adverse environment. REGULATEURS EUROPA is experienced in the design and manufacture of integrated control and monitoring panels designed to perform in ships where vibration and shock etc are a major factor.

MONITORING

REGULATEURS EUROPA monitoring and surveillance systems can be as simple or complex as the application demands. From simple LED and LCD displays to comprehensive touch screen based systems and ship wide monitoring.

Marine Monitoring Systems

It is normal RE practice to keep monitoring and safety as separate functions to avoid common mode failures that could endanger the machinery. Whilst most applications require digital and/or screen-based monitoring displays REGULATEURS EUROPA can offer a range of solutions including direct reading local engine panels.



Engine & gearbox monitoring and alarm systems can operate between bridge, engine control room and engine room and are designed to meet marine classification.



Marine Automation Systems

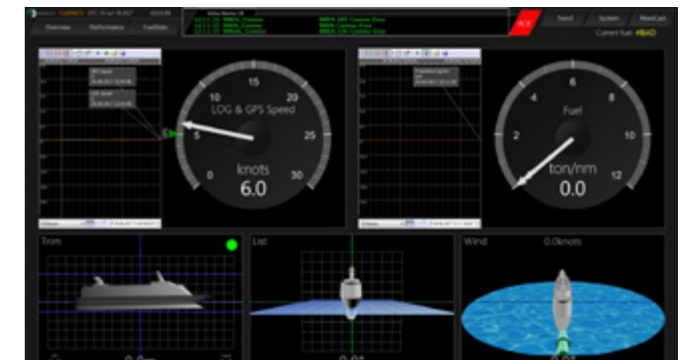
Screen based monitoring systems are popular in many marine applications. RE can custom design screens and/or integrate SeaMACS monitoring displays from their sister company HEINZMANN Automation.

- ▶ Scalable system for monitoring of vessel machinery and associated equipment
- ▶ Interfaces for trends, reports, alarms and processes, optionally extendable by video surveillance and more.
- ▶ Customizable, flexible architecture for scalability and redundant system for outmost reliability



Fuel Consumption Systems

Based on the SeaMACS IAS platform, FuelMACS® incorporates additional functionality for fuel and energy performance management.



It offers a valuable SEEMP tool to ship owners, allowing them to monitor and compare their vessel's or fleet's performance fuel performance in real-time and/or based on historical values.

TRACTION CONTROL

REGULATEURS EUROPA has been producing traction governors and controls for over seventy years. These are operational in many types and manufacture of locomotive worldwide; including Australia, China, Iran, Kenya, Malaysia, Nigeria, Syria, Sri Lanka, Tanzania and the United Kingdom.

Control systems for diesel-electric and diesel-hydraulic locomotive of REGULATEURS EUROPA are characterised by precise speed governing and stable and reliable operation. Their compact and robustly designed hardware components are adapted to the harsh environmental conditions in locomotives. HEINZMANN locomotive control systems are installed worldwide, in both passenger and freight trains, and have been chosen by leading locomotive manufacturer for retrofitting. REGULATEURS EUROPA offers a range of both mechanical-hydraulic governors and microprocessor based governing systems to suit locomotive applications. REGULATEURS EUROPA has extended their scope of supply to include sophisticated remote monitoring systems and cab controls.

Viking Traction Control

The Viking Traction Control unit is designed for the railway environment and houses the following main components:

- ▶ Digital Controller Viking35 ECU
- ▶ Speed switch PCB
- ▶ Protection module
- ▶ Interface circuitry



The engine protection provided by Viking Traction solutions provides de-rating with respect to measured parameters; this helps to ensure that the locomotive can continue to operate safely even if a fault is detected.

As an additional feature Viking traction can interface with remote monitoring; thus, allowing operational problems to be viewed and diagnosed at the depot.



Power Unit

The power unit provides regulated 28 VDC, 300 W power supply output for the traction control and monitoring units, derived from a power car supply input. The unit protects components from power supply surges and transients in accordance with RIA12 requirements. It includes a back-up battery for short periods of loss of main power.



RE 2221

The 2221 is a proportional actuator where the position of the output shaft is proportional to the electrical input signal 0-1 A. This actuator is typically used in medium and high-speed diesel engines in generator systems or locomotives.

Viking Control Panel

Viking Control Panel Traction control panel with Viking35 ECU, performing the following core functionality:

- ▶ Speed governing
- ▶ Start interlocks
- ▶ Engine auxiliaries control during starting/running/stopping conditions
- ▶ 1st and 2nd stage engine protection
- ▶ Overspeed protection
- ▶ Independent engine shutdown by separate protection module

The reduction in maintenance has been proven to finance the procurement of the new equipment. The electronic controls have also meant that speed and load control settings have proven to be more repeatable than its mechanical-hydraulic predecessors. Viking Traction governors can be tailored to interface with any locomotive speed setting and load control arrangement.



Governor Replacement

REGULATEURS EUROPA is successfully replacing mechanical-hydraulic governors of any manufacture with digital Viking Governing Systems. Mechanical-hydraulic governors by their nature suffer from heating effects and internal wear.



SERVICES

REGULATEURS EUROPA has a team of field service engineers to install, commission, repair or maintain REGULATORS EUROPA's products. All our engineers are trained in REGULATORS EUROPA products and their applications.

Our 24 hour response capability ensures a dedicated team of skilled service engineers available worldwide for planned services or emergency call outs.

We also offer a service exchange scheme and in-house repair service with comprehensive warranty. The global network of REGULATORS EUROPA agents and distributors provide a truly worldwide service facility.

SPARES, OVERHAULS & SERVICE EXCHANGE

Worldwide Service

REGULATEURS EUROPA has a network of authorised service facilities that are experts in the fields of governor maintenance and repair.

For the maintenance of your current product or an upgrade to the latest products please contact REGULATORS EUROPA or your nearest service facility.

TECHNICAL ASSISTANCE

REGULATEURS EUROPA offers 24/7 emergency assistance from both the UK and the Netherlands.

United Kingdom:

+44 1206 875 409

support@regulateurseuropa.com

The Netherlands:

+31 50 5019888

sales@regulateurs-europa.com

Service Exchange

In both the UK and Netherlands we offer a range of REGULATORS EUROPA service exchange governors. If you have maintenance problems and cannot return the governor for an overhaul then call our Customer Support Department to discuss the service exchange options that are available or arrange a service engineer.

REGULATEURS EUROPA further offers preventive maintenance contracts for control systems, diesel power stations and interface circuitry as well as mechanical/electrical maintenance for diesel power stations.

Overhauls

We offer overhaul facilities at both our UK and Netherlands sites for a range of manufacture of governors. REGULATORS EUROPA only use genuine spare parts on any governor overhauls.

We offer overhauls for the following manufacture of governors:

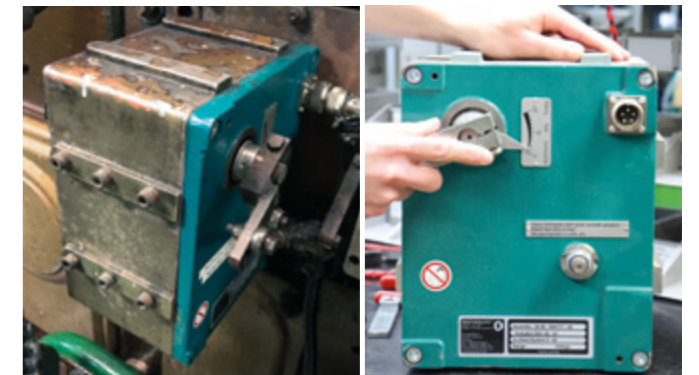
- ▶ REGULATORS EUROPA
- ▶ Woodward
- ▶ Zeksel
- ▶ Diesel Kiki



stocks of genuine spare parts. To ensure that you are using REGULATORS EUROPA genuine spare parts contact your nearest service facility.

Spare Parts

REGULATEURS EUROPA holds a large amount of spares at its factories in the UK and the Netherlands. A network of independent service facilities holds



APPLICATIONS ENGINEERING

REGULATEURS EUROPA can provide a complete application engineering solution from initial concept through to final commissioning in industries such as power generation, building management and process plant. Our experienced team of project engineers will work with the customer to provide a workable control system and provide a high level of technical backup.

Experienced Engineers

REGULATEURS EUROPA's engineers have many years of experience of control systems including:

- ▶ PLC (Allen-Bradley, Siemens, Mitsubishi, GEM80, GE Fanuc)
- ▶ HMI (PanelView, Proface, Mitsubishi E-series)
- ▶ SCADA (Intellution Fix, RSView, Citect, Cegelec P1200)
- ▶ Communications (ethernet, Modbus, DH+, DH485)
- ▶ Fieldbus (DeviceNet, ControlNet, Profibus, CAN)

and have a good working knowledge of:

- ▶ Hazardous areas
- ▶ Electrical protection schemes

Site Services

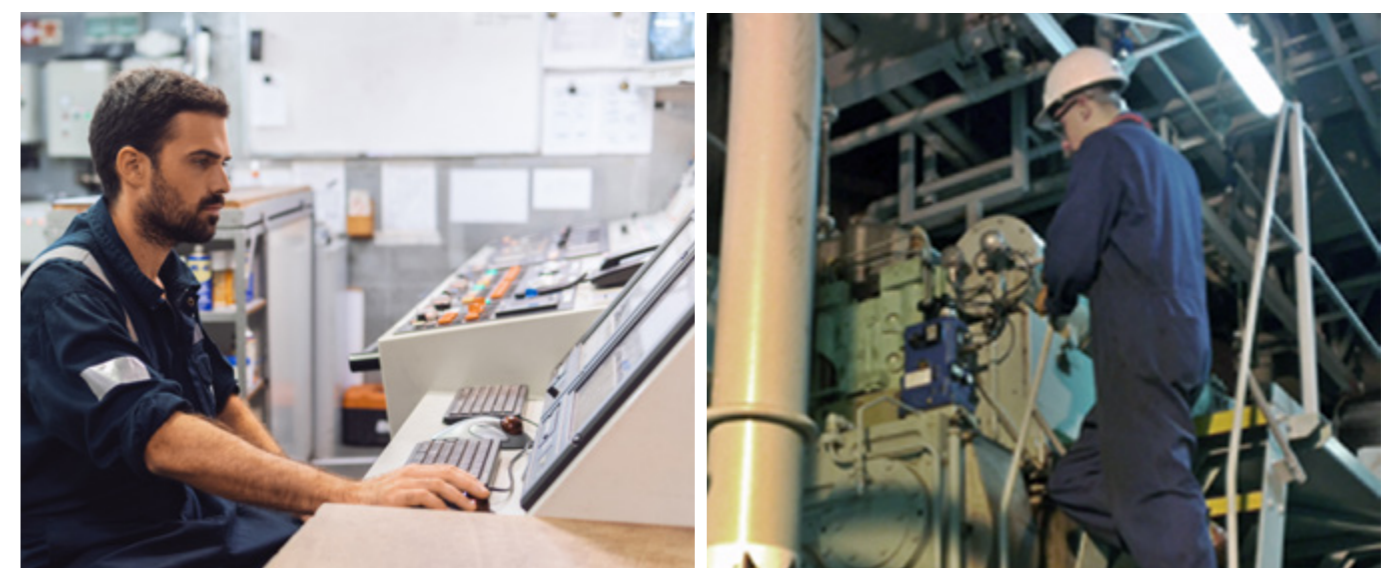
Services provided by REGULATEURS EUROPA's Field Project Engineers and Technical/Consulting Engineers, with many years of experience of generator installations, include:

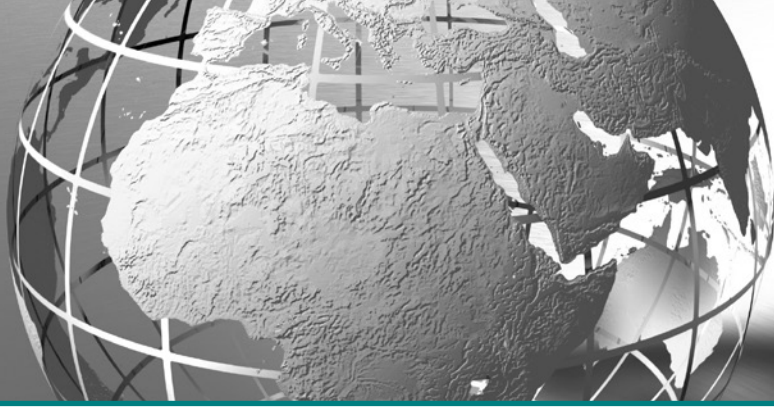
- ▶ Surveys of existing generator installations
- ▶ Hazard and risk assessment surveys
- ▶ Modifications of existing control systems
- ▶ Design and replacement of unsupportable control systems
- ▶ Installation and commissioning of new control systems
- ▶ Installation and commissioning of replacement alternators
- ▶ Maintenance contracts of new and existing generator installations
- ▶ Project management including CDM



INSTALLATION & COMMISSIONING

Manufacturers, packagers and operators trust in REGULATEURS EUROPA governors and control and monitoring systems. RE governors and actuators are proven in many applications and in various types of engine. Key application areas for REGULATEURS EUROPA are marine, traction and industrial.





HEINZMANN GROUP - THINKING IN DRIVE AND CONTROL

HEINZMANN is a globally active family business founded in 1897 with its headquarters in Schönau (Germany), in the Black Forest.

Today, in the field of engine management HEINZMANN is one of the leading suppliers of components and systems for industrial combustion engines, generators and turbines. As a specialist and development partner, HEINZMANN is committed to developing exactly the right solution for increasing efficiency and reducing emissions.

In the Electric Drives division, HEINZMANN demonstrates innovative strength and development expertise in engine technologies of the future. The company has proven itself as a leading supplier and system provider for electric drive applications.

Our collaborative interaction with more than 40 globally active subsidiaries and sales companies characterises the spirit within the HEINZMANN group of companies and makes us a reliable partner.

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