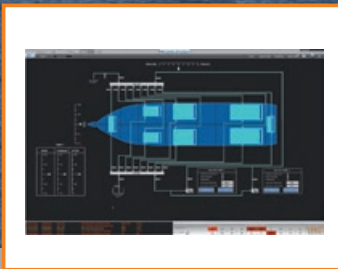


Complete Marine Solutions



Automation Systems



Power Management



Propulsion Control Systems



Propulsion Engine Controls



Governors & Actuators



Common Rail Systems



Gas & Dual-Fuel Engine Management



Engine & Vibration Monitoring Systems

- ✓ Integrated Marine Automation Systems
- ✓ Marine Engine Control & Monitoring

THE HEINZMANN GROUP

Comprehensive Solutions for Marine Applications

For over 100 years, HEINZMANN has been a renowned specialist in the control of diesel engines especially in the area of ship main propulsion engines and auxiliary engines including genset management. For some time now we have also been applying our specialist expertise to the management of gas and dual-fuel engines.

But that's not enough for us. In order to be able to provide our customers with solutions from a single source and to provide them with optimal support, not just in all areas of engine control, we have expanded the HEINZMANN Group, step by step.

The acquisition of REGULATEURS EUROPA 2005 expanded our product range so that it now also includes power management and propulsion control systems, along with hydraulic governors and actuators.

Together with HEINZMANN Automation, the subsidiary that we acquired in 2011, we can offer completely integrated marine automation systems. The advantage for our customers is obvious: from alarm, monitoring and safety systems for a complete shipping operation, through to engine control - at HEINZMANN, all systems are seamlessly integrated with each other.



The HEINZMANN Group: Experts in Marine Technology

The HEINZMANN Group offers a comprehensive range of propulsion control, engine control and automation systems for ships. For decades the group's member companies have supplied the civilian and

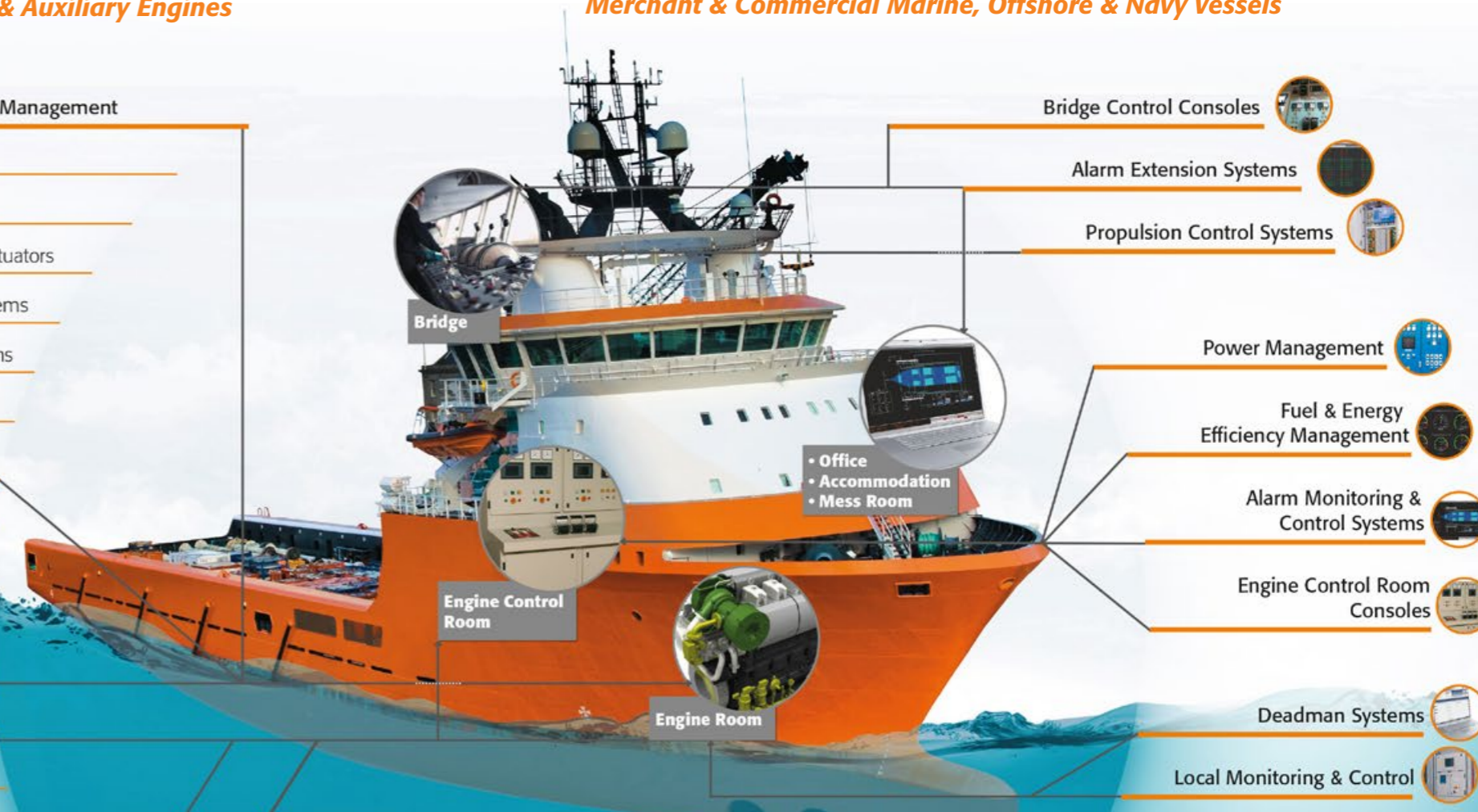
military shipping industry. They offer standard solutions as well as customer-specific development projects. The quality and reliability of HEINZMANN systems is valued by customers and their suitability for use

in ships is certified as a matter of course by well-respected classification societies.

Marine Engine Control & Monitoring Marine Propulsion & Auxiliary Engines



Integrated Marine Automation Systems Merchant & Commercial Marine, Offshore & Navy Vessels



Integrated Marine Automation Systems

MARINE AUTOMATION SYSTEMS

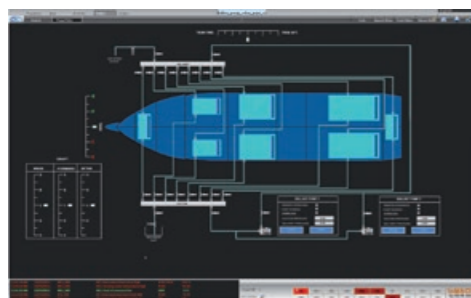
Specialist for marine automation since 1984, HEINZMANN Automation is one of the premier partners for manufacturers and operators in both the navy and the merchant marine sector. The portfolio ranges from small alarm systems to fully integrated monitoring and control systems. Bringing together a high-quality product range and leading engineering expertise, HEINZMANN Automation supplies automation solutions that are tailor-made for customers' needs and application requirements.



SeaMACS Automation System

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 utmost reliability.

- ✓ **Integrated vessel control**
- ✓ **Distributed data processing**
- ✓ **Systems for merchant marine, offshore and navy**
- ✓ **Advanced trending and analysis**
- ✓ **Full redundancy**



Monitoring



Controls

FuelMACS® Fuel & Energy Performance Management

Fuel and energy performance management including recording and comparison of data over time. Installation either as stand-alone system or as part of the SeaMACS Automation System, functionality meeting latest MARPOL convention for energy efficiency management on ships.

- ✓ **Vessel performance indicators**
- ✓ **Improved fuel efficiency**
- ✓ **Energy management**
- ✓ **Emission reduction**
- ✓ **Shore based analysis**
- ✓ **Applicable for dual-fuel solutions**



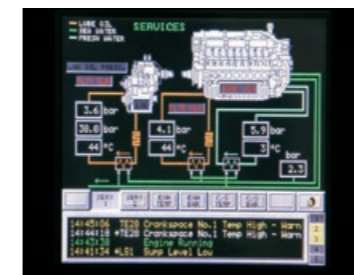
Fuel consumption management

More information on www.heinzmann.no

PROPULSION CONTROL SYSTEMS

For more than 60 years sophisticated propulsion control and ship monitoring systems of the HEINZMANN subsidiary REGULATEURS EUROPA (RE) have been supplied to merchant and military marine manufacturers around the world including the British Royal Navy and the United States Navy. Building upon this wealth of expertise, systems keep on being standardised and refined in order to offer a state-of-the-art solution for every new installation. RE works hand in hand with customers from initial consultation to project planning and execution, resulting in perfectly tailored control systems for any marine application.

RE is supplying integrated propulsion control systems for vessels with fixed and controllable pitch propellers and/or water jets.



Marine propulsion monitoring display

By integrating digital governing with engine, generator management and propulsion control, customers are provided with a cost-effective system whose modular form assures easy installation. The systems may incorporate machinery control room consoles, bridge control plates, propulsion logic panels and will fully integrate with SeaMACS Marine Automation Systems.



Machinery control desk

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 sophisticated customized propulsion control solutions.

Viking35

The Viking35 ECU, along with its Viking Vision user interface, provides the core platform for combined engine management. With its large and expandable range of conventional I/Os and communication ports, Viking35 is more than just a governor; it can be programmed to do all engine management functions and control associated plant, in one integrated and cost effective package. The Viking35 ECU is complemented by a range of hydraulic actuators, specifically the 2231 servo actuator, which provides a ballhead mode for manual speed setting in the event of power supply failure.



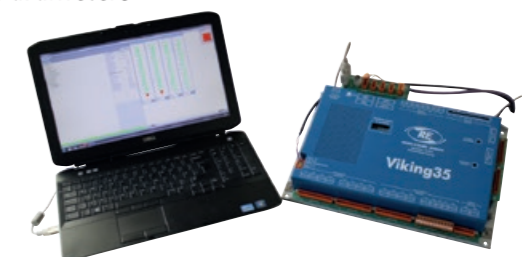
Viking35

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.

It offers the following features to the user

- ✓ **All parameters are grouped and presented in a logical tree structured menu**
- ✓ **Parameters can be displayed graphically**
- ✓ **Status information can be displayed graphically**
- ✓ **Alarms are displayed and logged in chronological order of event with the ability to reset**
- ✓ **Parameter and alarm information can be printed in a number of different formats**
- ✓ **Parameters can be downloaded from a Viking unit and stored or loaded into another unit**
- ✓ **Information can be presented graphically on up to 256 user defined pages**
- ✓ **Five password protection levels of editable parameters**



POWER MANAGEMENT SYSTEMS

With over 60 years of experience in prime mover control technology, RE are specialists in providing complex control solutions for medium and low-voltage electrical distribution systems from utility intake and embedded generation to site load. Systems have been successfully supplied to hospitals, airports, water treatment works and offshore installations around the world. RE's attention to detail continues through all stages of engineering, manufacturing, testing, installation and commissioning.

RE power management systems are based around the latest PLC and SCADA technology to provide customised solutions that are extremely reliable and retain the flexibility for future expansion.

The scope of functions includes

- ✓ Load dependent call-up and shutdown
- ✓ Generator synchronising control
- ✓ Circuit breaker close interlocking
- ✓ Active and reactive load control
- ✓ Island mode voltage and frequency control
- ✓ Load shedding and restoration
- ✓ Generator neutral earth supervision and control
- ✓ Fault contribution limitation
- ✓ Interconnector load limitation
- ✓ Power metering
- ✓ Alarm annunciation
- ✓ Data logging
- ✓ Remote monitoring
- ✓ Complete manual back-up control and monitoring

RE 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 RE power management systems.



Power management control cabinet

More information on
www.regulateurseuropa.com

DIGITAL GENSET MANAGEMENT

Genset management systems by HEINZMANN and REGULATEURS EUROPA are based around the THESEUS and Viking35 digital controllers. Encased into custom design marine panels, systems may incorporate PLCs, HMIs and enhancements such as Modbus and integrated speed control.

The scope of function includes

- ✓ Automatic mains failure sequencing
- ✓ Local or remote engine start, synchronising, load control, cool-down and stop sequencing
- ✓ kW load control
- ✓ Engine protection and monitoring
- ✓ Generator protection and monitoring
- ✓ Engine governing
- ✓ Power monitoring
- ✓ Generator excitation control
- ✓ Generator protection relay

XIOS^{GenSet}

Digital generator control

The novel XIOS^{GenSet} controller is an all-rounder for any generator system application: it combines all relevant benefits of a combustion engine speed governor with a generator control.

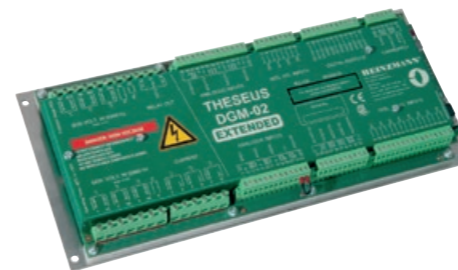
Only one central controller is needed for control and monitoring of the entire genset system.



XIOS^{GenSet}

THESEUS Digital Control Unit

HEINZMANN's digital generator control, management and protection system. Suitable for stand-alone and parallel operation with active and reactive load management for soft loading, load sharing and control. External communication via CAN protocols or Modbus.



THESEUS DGM-02 Digital Genset Controller

Viking35 Digital Control Unit

Regulateurs Europa's digital generator control unit has the following key features to ensure optimum engine control under the most complex and demanding scenarios:

- ✓ Support for medium and high-speed diesel, dual-fuel or spark ignition gas engines
- ✓ Connects to a wide range of hydraulic actuators (RE and Woodward)
- ✓ Isochronous, droop and true master/slave isochronous fuel rack loadsharing (for up to 16 engines) with optional kW balancing
- ✓ Start, stop, priming and auxiliary control
- ✓ External communication via CAN bus protocols or Modbus



Viking35 Digital Genset Controller

More information on
www.heinzmann.com

I/O Module ICENI

Range of modules that can be plugged together to form a node on a distributed I/O system.

- ✓ Open protocols to PLCs, PCs etc.
- ✓ Extended temperature range -20 to +70 °C
- ✓ Built in user interface
- ✓ Redundant power supply capability
- ✓ Plug & play configuration



ICENI I/O Module

System Components

The systems are completed by a range of HMIs, load share line interfaces or accessories like CAN repeaters.



PANOPTES Touch Screen Unit

Control Cabinets

Completely equipped control cabinets comprising speed control, genset management, I/O functions, HMI and monitoring devices.



Control cabinet for generator management

Marine Engine Control & Monitoring

For over 100 years HEINZMANN has specialised in engine control systems. In doing so, marine applications for ship propulsion engines and auxiliary engines have always been our core business. This incomparable experience represents a great advantage for our customers. Whether diesel, gas or dual-fuel engines, HEINZMANN masters all of relevant technologies and delivers complete systems with all of the components from a single source, including systems for genset. Of course, this also includes systems for genset management.

HEINZMANN products have certificates and classifications from all of the important certification companies. The range of products is completed by systems for reducing emissions and engine monitoring systems.

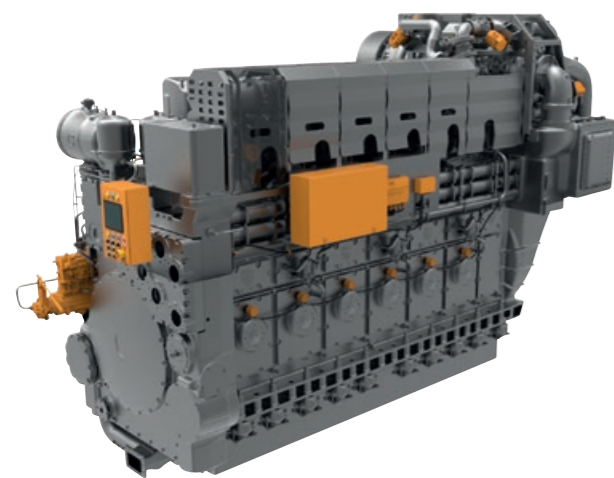
The systems can handle engine outputs between one hundred and several thousand kilowatts, and all speed ranges can be covered.

The scope of application includes main propulsion engines with fixed pitch propellers and pitch-controlled propellers, multi-engine units on one shaft, drive units with shaft generators as well as diesel-electric drive units, marine generators with automatic load distribution and systems with redundant engine control for maximum availability.

A main feature of the HEINZMANN systems is their extensive flexibility in terms of functional scope and interface layout. This is why they are suitable both for the building and the modernisation of all classes of vessels.

More information on www.heinzmann.com

DIESEL ENGINE MANAGEMENT



HEINZMANN electronic control systems for diesel engines have been used with great success since the 1980s. HEINZMANN control solutions are available for both: engines with conventional and electronic fuel injection systems.

They are installed in cruise ships, container freight ships, ferries (including high-speed ferries), fire-fighting boats, tug boats, research boats, vessels for production and processing of crude oil and natural gas, dredgers, yachts, navy boats and vessels and drill ships. Additionally, they are used in inland freight and passenger boats.



DIGITAL GOVERNORS FOR MARINE PROPULSION ENGINES

HEINZMANN governors are employed in the propulsion engines of most marine engine manufacturers worldwide. Available for both mechanical and electronic fuel injection, these controllers handle outputs of up to several thousands of kilowatts and cover all speed ranges. They can be used in main propulsion engines with and without controllable pitch propellers, multi-engine units on one shaft, drive units with shaft generators as well as diesel-electric drive units.

Their high flexibility in terms of functional scope and interface design makes them the control solution of choice for original equipment as well as retrofitting. Speed setpoint and gearbox clutch control commands from a main propulsion bridge control unit can be processed directly. Of course, all governors have received classification from major marine classification societies.

PRIAMOS Digital Control Unit

HEINZMANN's digital control for medium and large-sized engines and turbines in a IP55 enclosure that can drive HEINZMANN's most powerful actuators rated up to 300 Nm torque. It has assignable I/O with a dedicated cable harness. External communication via various CAN protocols.



PRIAMOS DC 1-03

HELENOS Digital Control Unit

HEINZMANN's digital control for medium-speed engines and turbines. The HELENOS unit forms the core control of application-dedicated systems for marine applications. It has assignable I/O and comes in two different enclosures. External communication via various CAN protocols and Modbus.



HELENOS DC 2-02

XIOS UC 1 Universal Control Unit

The modular, universal XIOS controller presents an entirely new generation of ECU. It consists of a high-performance main board with high CPU power, large DRAM and FLASH memory. A FPGA logic chip leaves more computing power to the CPU for PLC functions or processor-intensive control tasks. Additional I/O boards can be attached to the main board in different number and type. They are configurable by software, jumperless and small in size.

XIOS enables customers to develop their own control functions based on CoDeSys (IEC 61131-3) or MATLAB®/Simulink®. It is applicable for alarm and monitoring purposes just as well.



XIOS UC 1

Viking35 Digital Control Unit

Regulateurs Europa's digital propulsion control unit has the following key features to ensure optimum engine control under the most complex and demanding scenarios:

- ✓ Support for medium & high-speed diesel engines
- ✓ Connects to a wide range of hydraulic actuators (RE and Woodward)
- ✓ Isochronous, droop and true master/slave isochronous fuel rack loadsharing (for up to 16 engines) with optional kW balancing
- ✓ Start, stop, priming and auxiliary control
- ✓ Automatic engine derating to ensure maximum engine availability, even in arduous conditions
- ✓ Pitch control
- ✓ Command lever matching
- ✓ External communication via CAN bus protocols or Modbus



Viking35

* All trademarks are the property of their respective owners.

ELECTRIC ACTUATORS

For decades, HEINZMANN has been developing and manufacturing high-performance electric actuators. The portfolio encompasses electric actuators for any type of engine, for original fitting or retrofitting. Recognised for their fast and precise performance, HEINZMANN actuators are robust and operate reliably - reflecting the highest quality demands we make on our products.

StG 64/StG 90

These powerful actuators are proven on industrial diesel or gas engines, and on turbines, which require less than the undermentioned torque to move the fuel rack or fuel metering valves. They are for dedicated use with HEINZMANN digital controls.

- ✓ 64 Nm / 90 Nm
- ✓ 42° rotation
- ✓ analogue feedback



StG 180

This powerful actuator is used on marine propulsion and auxiliary engines. The StG 180 actuator is driven by HEINZMANN digital controls.

- ✓ 180 Nm
- ✓ 42° rotation
- ✓ analogue feedback



StG EC 40

Positioner with brushless actuator with a maximum torque of 40 Nm. Possibility of manual override. Two redundant power supply inputs. The StG EC 40 is available with an optional return spring to ensure setting to zero position if power supply fails. Power supply is 24 VDC, protection grade is IP66.

- ✓ 40 Nm
- ✓ brushless
- ✓ 90° rotation
- ✓ analogue or PWM setpoint



StG EC 250

This powerful positioner with brushless actuator delivers a maximum torque of 250 Nm. It needs one power supply to drive the electronics and a second power supply with higher voltage to drive the motor. Power supplies are 24 VDC and 48 VDC and protection grade is IP66.

- ✓ 250 Nm
- ✓ brushless
- ✓ 90° rotation
- ✓ analogue or PWM setpoint



HYDRAULIC GOVERNORS AND ACTUATORS

The range of hydraulic actuators contributed to the HEINZMANN portfolio by REGULATEURS EUROPA (RE) is built on more than 60 years of experience 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 or DC 8. Alternatively, they can interface with other controllers as part of a customised engine management systems by RE.

Governor 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: 8, 12, 15, 25, 34 or 40 ft. lbf.



Governor

1101/1102/1103/1104-4G

Popular hydraulic governor, providing mechanical speed control of diesel driven gensets.

Option for speed setting include hand, lever, motor and pneumatic as well as electrically operated stop and/or start fuel limiter.

Output range: 8, 12, 15, 25, 34 or 40 ft. lbf.



Governor/Actuator with Ballhead Backup 2221/2231-1G

Proportional actuator with output range of 8, 12, 15, 25, 34 or 40 ft. lbf., featuring as an option 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 generators and propulsion engines and other applications where common mode failures must be minimised.



Governor DG 2800.14

The DG 2800.14 governor is a microprocessor controlled hydraulic governor for diesel, gas or dual-fuel engines and steam turbines.

It consists of the well proven REGULATEURS EUROPA 2800 series actuator and the HEINZMANN digital DC 14 governor. The digital governor controls the proportional solenoid of the actuator by means of 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). The software allows to set the gear ratio between crankshaft and governor drive. In this way all speed related settings in the software refer to "engine rpm".

The DC 14 digital governor is set-up with the user-friendly interface program DcDesk. On top of that 20 selectable parameters can be edited using the units key pad and display (password protected).



Governor/Actuator 1500-3G/2223/2233-1G

The most powerful governor/actuator produced by REGULATEURS EUROPA. The output range is 120 to 250 ft. lbf. (= 160 to 340 Nm).

The governor can have either motorised speed setting or speed setting by means of a pneumatic or 4 – 20 mA signal.

The unit is available as a governor or an actuator to be driven by an electronic governor. The actuator may be equipped with a mechanical governor backup.

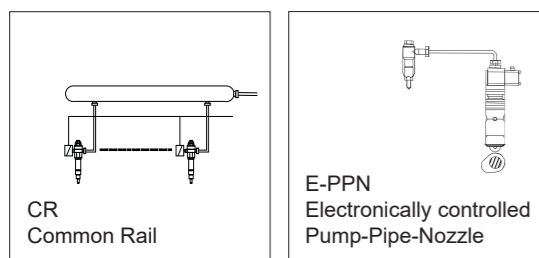
More information on www.regulateurseuropa.com



ELECTRIC FUEL INJECTION SOLUTIONS

In addition to its primary purpose of speed control, the HEINZMANN EFI controller series provides features which are beneficial for engine performance, such as optimised fuel efficiency, increased engine power, and fewer environmentally harmful emissions.

DARDANOS EFI controllers operate as a part of common rail or E-PPN injection system for diesel engines. For gas injection, they are used in conjunction with electrically actuated gas admission valves or gas injectors. Dual-fuel engines can be controlled using a combination of both diesel and gas injection components.



DARDANOS EFI Controls

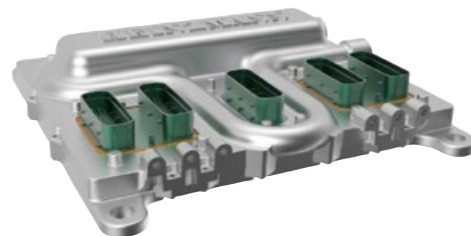
DARDANOS is conceived as a series of devices with varying extent to satisfy different demands and engine sizes. They are available for a wide range of engines starting with 24 and down to 6 cylinders/injectors.

HEINZMANN's electronic fuel injection controls drive solenoid actuated diesel and gas injection systems. External communication is realized via various protocols.

DARDANOS MVC 01-24

The MVC 01-24 is HEINZMANN's most powerful electronic fuel injection control for engines, such as diesel, gas and dual-fuel up to a maximum of 24 cylinders. For diesel common rail it can control the rail pressure of up to four separate pumps. It can drive solenoids with flexible configurable voltage in a range of 24-110 VDC.

MVC 01-24 comes with a comprehensive number of inputs and outputs. The system architecture of this sophisticated EFI control is tailored for redundant mode.



MVC 01-24

HERMES - Redundant EFI Control Solution

The DARDANOS control units for single main propulsion engines are the core elements of the extended control system HERMES for marine applications.

The redundancy of this system ensures high reliability and availability.



This marine certified solution includes

- ✓ DARDANOS control units
- ✓ Monitoring system
- ✓ Power supply
- ✓ Shutdown system
- ✓ Package of engine sensors
- ✓ Wiring harness
- ✓ HMI with possibility of remote communication
- ✓ Control panel

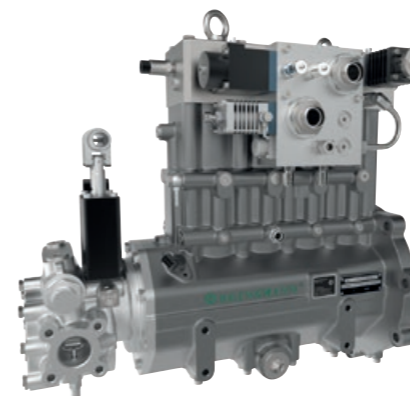
COMPLETE COMMON RAIL SOLUTIONS

HEINZMANN common rail systems enable propulsion engine manufacturers and fleet operators to leverage the benefits of common rail technology. The particular safety requirements are met both by their classified controllers and their double-walled hydraulic components.

Particularly with HFO operation, reliability of HEINZMANN components is ensured thanks to a proven design and the highest manufacturing quality standards. Along with tailored monitoring and safety devices, as well as flexible interfaces, a complete engine management system is offered. As a result of the precise control, marine propulsion engines operate more smoothly with lower fuel consumption and emission levels.

ODYSSEUS High-Pressure Pumps

HEINZMANN ODYSSEUS HDP-K Series high-pressure pumps have a uniquely robust design (principle: crankshaft + con-rod) and are able to generate rail pressures of up to 2,500 bar. All pumps are checked before delivery in accordance with the highest HEINZMANN standards and come with a full guarantee of quality.



High-pressure HDP-K4 HFO Pump

ODYSSEUS Injectors

The ODYSSEUS solenoid-controlled fuel injectors are available in many sizes and provide the flexibility to be adapted as required for engines with cylinder powers between 15 and 1000 kW and also for pilot fuel injection.

The complete set of fuel injection equipment including rails, piping, pressure relieve valves, flow limiters, etc., is available.



ODYSSEUS Injectors

ELECTRONIC PUMP-PIPE-NOZZLE CONTROL

E-PPN

Main component of the electronically controlled HEINZMANN E-PPN System is the solenoid activated injection control valve. The unit is located in the high-pressure fuel line of diesel engines. It provides a precise and speed/load dependent fuel injection timing for optimized combustion under any operating conditions.

The LAVINIA E-PPN system extends the existing fuel system. Application is possible for retrofit of diesel engines in field as well as for factory upgraded engines (OEM).

Controlled by a HEINZMANN EFI control it offers the benefits of electronic fuel control such as mapped injection timing, cylinder balancing and limitation functions. The valve offers the option of single cylinder shut-off. In dual-fuel applications the E-PPN valve enables independent timing for the pilot fuel injection.



Electronically controlled extension for mechanical pump-pipe-nozzle fuel injection systems

ENGINE EMISSION CONTROL

Emission regulations are becoming more stringent, requiring sophisticated aftertreatment systems of exhaust gases as well as improved internal combustion and engine management. HEINZMANN's APOLLON System keeps your engine emissions clean.

Exhaust Gas Recirculation

Exhaust Gas Recirculation (EGR) minimises the formation of nitrogen oxides (NO_x) when fuel is burned in internal combustion engines. HEINZMANN offers customised EGR solutions.

This includes

- ✓ Fast response times
- ✓ Steady-state and dynamic control modes
- ✓ Low leakage
- ✓ Robust and durable
- ✓ Suitable for wide range of engine sizes
- ✓ Easy system integration

Diesel Particulate Filter Regeneration

The active regeneration of Diesel Particulate Filters (DPF), independent of the engine operation, will be demanded more often for marine applications. HEINZMANN delivers the main system components.

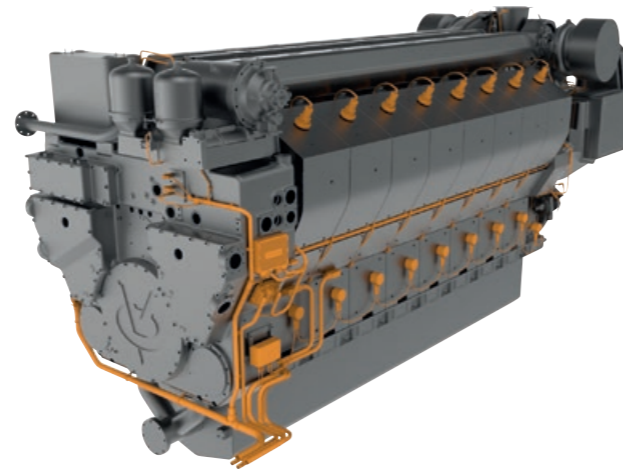
Wastegate

Wastegate valves with corresponding actuators complete the HEINZMANN Engine Emission Management (EEM) product line.



EGR-PV Poppet Valve

GAS ENGINE MANAGEMENT



HEINZMANN offers a complete product range for gas engine management, both as modular components and as fully integrated engine management systems. Known for their reliability and durability, these control systems are highly flexible and suitable for any size, type or make of gas engine. With standard products as well as with application-tailored solutions, HEINZMANN seeks to provide the perfect system for every customer's requirements.

Air-Fuel Ratio Control

The four different KRONOS AFR Systems for control of air-fuel ratio are each designed for a specific range of applications. Their proven mechanical and electronic components guarantee an optimal engine performance and a long operating life. Both highly adaptable to engine-specific requirements and compatible with third-party components, KRONOS Systems offer an excellent solution for AFR control in gas and dual-fuel engines.

HEINZMANN's AFR control systems comprise the mechanical and electronic components such as gas mixers, gas metering units and gas admission valves along with AFR control units. The systems are completed by adjusting screws and sensors.



Marine specific gas admission valve



EFI control unit

Speed Control

HEINZMANN's speed control systems are based on our governors, which are acknowledged for their great reliability and durability along with their excellent performance.



HELENOS DC 2-02 Speed Controller

They operate together with a big range of butterfly throttle valves in order to control the gas/air mixture quantity of gas engines to set speed and power.



DK 400-01 Throttle Valve

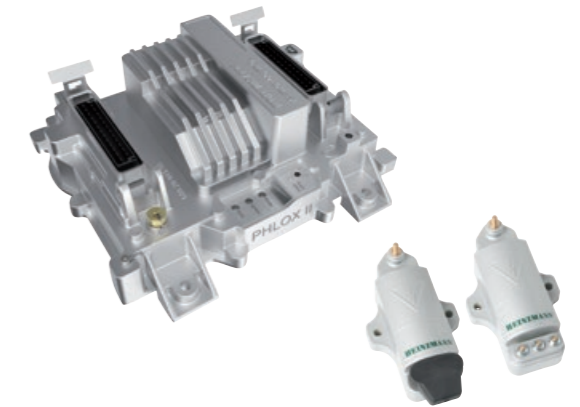
Further HEINZMANN supplies throttle valves with integrated actuators.



Throttle valve with integrated actuator

Ignition Control

PHLOX II Ignition Control Systems are built around the IC ignition control unit and include all integrant parts like ignition coils, ignition rails, pickup sensors, trigger discs and spark plugs. Suitable for all types of gas engines, PHLOX II system components can be precisely adjusted to the specific engine requirements and guarantee long lifetime and reliable operation.



Ignition control unit & ignition coils

Misfire Detection & Knock Control

In order to optimise the efficiency on modern gas engines, compression ratios are increased while the air-fuel ratio is becoming leaner. As a result, knocking or misfiring may occur - both harmful to engine components and spare parts. With the control systems ARIADNE Knock Control and KASSANDRA Misfire Detection, HEINZMANN offers solutions for the protection and safe operation of modern gas engines.



KASSANDRA Misfire Detection Unit



ARIADNE Knock Control Unit

More information on
www.heinzmann.com

DUAL-FUEL ENGINE MANAGEMENT



Conversion from diesel to dual-fuel combustion happens for two main reasons: The reduction of fuel costs and the reduction of emissions. HEINZMANN dual-fuel systems rely on proven components and offer solutions for the specific requirements of stationary gensets, compressor applications, vehicles and engines. Through precise control of diesel and gas metering they ensure optimal performance in both diesel and dual-fuel mode.

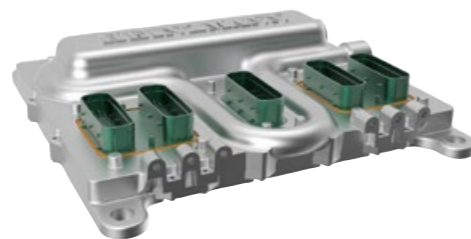
Dual-fuel solution benefits

- ✓ Remarkable fuel cost savings by using gaseous fuel instead of diesel
- ✓ Reduction of emissions
- ✓ Easy installation and commissioning
- ✓ High reliability based on proven components
- ✓ Tailored for customers' needs
- ✓ Technical support

ARTEMIS Systems

HEINZMANN offers a wide range of ARTEMIS Systems. The users can choose from 8 different control units and actuators, which fit their application and engine sizes. We offer both, full authority and gas control systems.

Besides control of gas flow, all ARTEMIS Systems limit the maximum exhaust temperature via a temperature sensor for engine protection.



EFI controller

The systems differ in being based on gas mixer or gas admission valve technology (single-point or multipoint). Speed/load control is either realised by a diesel or gas regulation.

HEINZMANN supplies gas mixer based dual-fuel systems for high-speed engines with engine power between 100 kW and 2 MW and admission valve based dual-fuel systems for medium and slow-speed engines with engine power between 100 kW and 1 MW per cylinder.

The HEINZMANN team will help the customer to find a tailor-made solution to fit individual needs.

ARTEMIS ECU

Highly efficient ECU featuring control logics for diesel and gas, sophisticated safety and engine monitoring strategies, gas train monitoring and unlimited diesel operation at any time.



Dual-fuel ECU



HEINZMANN ELEKTRA Gas Metering Unit and Actuator mounted on ABC Dual-Fuel Engine



More information on
www.heinzmann.com

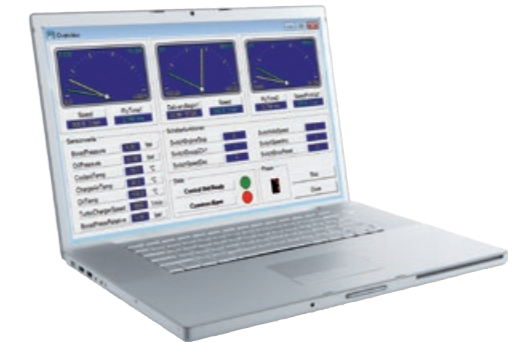
* All trademarks are the property of their respective owners.

ACCESSORIES

For all engine type control systems we supply communication software and any relevant accessories.

DcDesk Configuration and Visualisation Tools

Thanks to its design as a Windows®* program, the HEINZMANN DcDesk software offers a lot of graphical features, printouts and records of data for documentation purposes. Using DcDesk software, the parameters of any connected device may be adjusted while the system is running and the response can be observed directly. It is also possible to prepare a data set while disconnected from the device and to download it later on.



DcDesk Configuration Program

Sensors

HEINZMANN supplies a full package of engine sensors like speed sensors, temperature sensors and pressure sensors.



Speed sensors

Power Supply Units

It is preferable for the devices to have power supplied by means of power units (including emergency power supply if necessary), several types of which are being produced or supplied by HEINZMANN. In case of mains failure, there will be interruption-free changeover to battery backup. An alarm is activated in case of mains failure/battery operation, charging error and low battery voltage.

ENGINE MONITORING SYSTEMS

Cylinder Pressure Monitoring (CPM)

The proven advantage of the electronic TRITON CPM 500 compared to mechanical engine indicators is a considerably simpler and far more accurate operation. After acquisition, recorded data can be downloaded right away to a PC or notebook via USB and processed through HEINZMANN's visualisation and data processing software.

Transmitted by telephone or internet, information becomes available for expert analysis and condition monitoring at any remote location. An optional software upgrade allows power calculation for every cylinder to assist cylinder balancing.

CPM 500

The user friendly CPM 500 is a powerful electronic indication device.

The CPM 500 contains the basic components, handheld data acquisition unit calibrated together with HTT cylinder pressure sensor as well as analysing software.



TRITON CPM 500

Oil Mist Detection (OMD)

The advanced oil mist detection system is especially designed to meet the requirements of large diesel and gas engines, like ship or power plant engines. It protects your combustion engine from damage and explosion due to oil mist generated by local overheating.

The hazard of highly ignitable oil mist produced when lubricants or fuel come in contact with hot surfaces within the engine, has become one of the most significant risks for engine operators and personnel.

OMD control unit

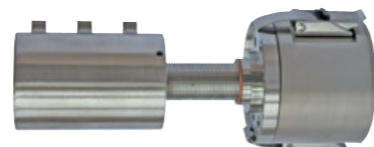
The control unit is designed to withstand the environment in the engine room. The vibration resistance of the unit allows installation directly on the engine. The electrical wiring interface is done by means of robust connectors with sealed metallic housings.



TRITON OMD Control Unit

OMD sensors

The OMD sensor has no moving parts and is therefore not subjected to wear and tear. A special protection design prevents the optical system from being impaired by splash oil contamination.



TRITON OMD Sensor

Bearing Oil Temperature Monitoring (BOTM)

One of the most common causes of downtimes in modern low and medium-speed combustion engines is the failure of the main or connecting rod bearing.

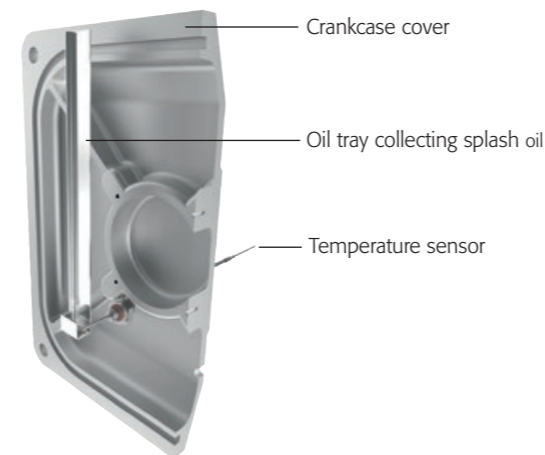
In the monitoring systems sector, HEINZMANN constantly strives to develop solutions for optimizing the availability and reliability of engines. The result of this research is the TRITON BOTM System, which makes an important contribution to preventing damage and ensuring high availability.

The BOTM system is more stable than other systems and helps to monitor, optimize and protect the engine.



TRITON BOTM Control Unit IP6K9K

In addition to monitoring all the relevant bearing temperatures, the system indirectly supervises the thermal load of the cylinders via splash oil monitoring. This ensures a quick reaction in order to avoid damaging the engine.



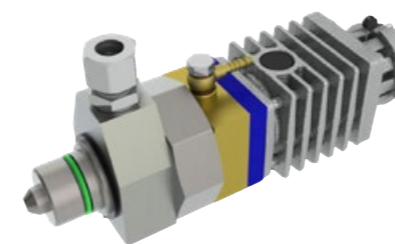
Rail Overpressure Limiting Valve

The Rail Pressure Limiting Valves (RPLV) are primarily designed to protect common rail equipment against overpressure.

The RPLV-2S is different to the 1S version in that it also offers the important limp-home function. After opening due to overpressure RPLV-2S works as a rail pressure control valve and keeps up some holding pressure under any system conditions even without risk of overheating. This provides high reliability and ensures engine running.

Overpressure in the rail system is detected precisely. A venting device supports fast valve action that performs quick pressure drop. A version with additional Compressed Air Release (CAR) is available.

After engine shutdown, the valve is reset again for further use. Double-walled design offers leak proof connection. The free turnable coupling of fuel return enables mounting with free orientation.



RPLV

VIBRATION MONITORING SYSTEM

Trino Vibration Monitoring Systems for Rotating Machinery

Designed to continuously monitor the vibration signatures of rotating machinery, Trino targets applications where vibration analysis experts are not generally on hand to identify and diagnose the advance signs of impending trouble.

Trino presents two-stage alarm information in a simple and clear format to local operators. This enables appropriate preventative action to be taken to avoid the often and very substantial consequential costs of an in-service unexpected machinery failure.

Applications are gearboxes, alternators, turbochargers, pumps and fans - marine and land based.



TrinoDETECT

More information on www.regulateurseuropa.com

SERVICE, OVERHAUL

We provide comprehensive on-site support for commissioning. We are also there for our customers, if problems arise with existing systems, wherever they may be located. Fast response to service requests is fundamental for us. With our worldwide net of branches, representatives and authorized dealers we are close to our customers.

In cases when no immediate technical assistance is available, contact can be arranged by phone or online. Remote access to on-board service tools is an option, which may be set up in advance.

CERTIFICATES

Type approvals of the devices as required for marine application have been issued by a number of classification societies.

More information on www.heinzmann.com

HEINZMANN Group

Quality & Precision
since 1897

The Group started in 1897 with
Heinzmann GmbH & Co. KG,
and now includes
HEINZMANN UK,
HEINZMANN China,
HEINZMANN Korea,
HEINZMANN India,
HEINZMANN Australia,
HEINZMANN AUTOMATION,
REGULATEURS EUROPA,
and CPK Automotive as
member companies.

The HEINZMANN Group
operates numerous global
subsidiaries, including eight
production sites and an
international distributor
network.

Our product portfolio
comprises engine
management system
solutions, as well as exhaust
gas aftertreatment solutions,
for industrial combustion
engines and turbines. It also
encompasses automation
systems, primarily for the
shipping industry.



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