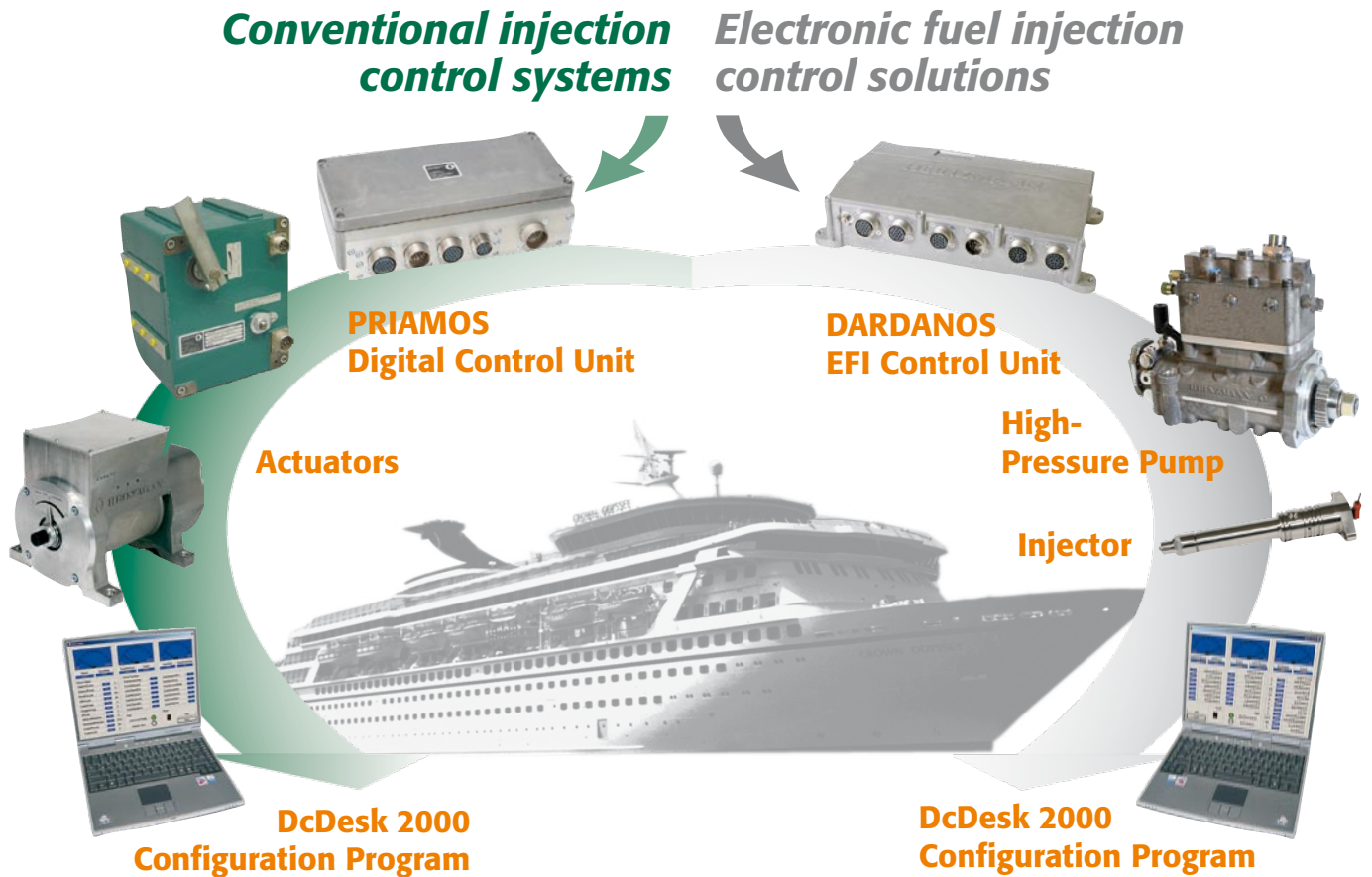


# POSEIDON

## Control Systems for Marine Operation



- ✓ For main propulsion engines
  - single and twin engine installations
  - redundant control systems
- ✓ For auxiliary engines
- ✓ Conventional or electronic fuel injection



## POSEIDON

HEINZMANN electronic control systems for diesel engines have been used with great success since the 1980s.

POSEIDON 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, custom vessels for the production and processing of crude oil and natural gas, dredgers, yachts and navy boats. Additionally they are used in inland freight and passenger boats.

The systems can handle engine outputs between one hundred and several thousand kilowatts, and all speed ranges can be covered. HEINZMANN control systems are already employed in the units of most global marine engine manufacturers.

The scope of application includes 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, marine generators with automatic load distribution and systems with redundant engine control for maximum availability.

A main feature of the HEINZMANN POSEIDON 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.



## POSEIDON Benefits

- ✓ **Reduced fuel consumption**
- ✓ **Lower emissions (EFI)**
- ✓ **Low maintenance costs**
- ✓ **Long life cycle**
- ✓ **Redundant system capability**
- ✓ **Safety features included**

## POSEIDON SYSTEM FEATURES

### Speed setting selection

- Local setpoint (engine room)
- Remote setpoint (bridge)
- Emergency setpoint (binary speed increase/decrease)
- Lever setpoint with integrated gearbox and direction control
- Up to four engines controlled by one common lever or by separate levers

### Master/slave operation

- Two engines on one shaft
- Clutch control
- Load transfer control

### Main propulsion engine control

- Single control system
- Redundant control system (single main engine)
- Emergency mode (fixed fuel option) in case of power loss (single main engine)
- Pitch control function
- Shaft generator mode

### Auxiliary engine control

- Isochronous active and reactive load sharing
- Droop mode including smooth transfer from isochronous mode
- Generator control and protections
- Shore synchronisation option

### Communication

- ModBus
- CANopen
- DeviceNet

### Power supply

- 3-phase or single-phase AC to DC power conversion
- Optional battery backup

# POSEIDON CONTROL SOLUTIONS FOR CONVENTIONAL OR ELECTRONIC FUEL INJECTION

From conventional injection control systems to electronic fuel injection management up to complete common rail solutions: HEINZMANN's POSEIDON systems are the tailor-made control solutions for any

make of marine diesel engine.

All POSEIDON control units are configurable with the HEINZMANN DcDesk 2000 software.

## CONVENTIONAL INJECTION CONTROL SYSTEMS

### Digital control units

The HEINZMANN digital control units of the product series HELENOS I, II and III and PRIAMOS I, II and III are destined for the control of main and auxiliary engines.

For controlling the on-board mains supply the digital THESEUS generator control system can be used.

Depending on engine size, scope of functions and housing protection type, there are different versions of control units available.

The basic functions of the POSEIDON control devices and the generator control system are described in block diagrams below.

### 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 2-01

### PRIAMOS digital control unit

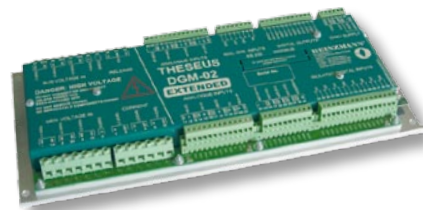
HEINZMANN's digital control for medium- and large-sized engines and turbines in a IP 55 enclosure that can drive HEINZMANN's most powerful actuators rated up to 300 Nm torque. It has assignable I/O with a dedicated cable harness. External communication via various CAN protocols.



PRIAMOS DC 1-03

### THESEUS digital generator 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



Control cabinet for generator management

### Actuators

HEINZMANN offers a big variety of actuators for an engine power range of 100 - 10.000 kW and more. On request they are available with brake.

As they are powered electrically, there is no need of any mechanical drives.



StG 250 EC



StG 180

# ELECTRONIC FUEL INJECTION SOLUTIONS

## FOR COMMON RAIL (CR), PUMP-PIPE NOZZLE (PPN) AND PUMP NOZZLE UNIT (PNU)

### ODYSSEUS control units

#### DARDANOS EFI control series

The DARDANOS series is designed as universal speed controllers for engines with electronically controlled injection systems. In addition to their primary purpose of controlling speed, these controllers provide additional features that offer other benefits for managing diesel engines.

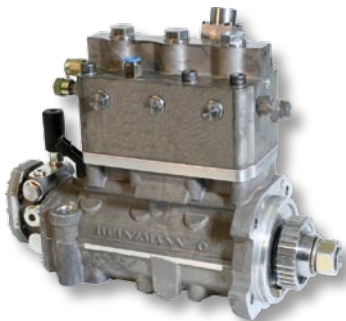
They offer optimised fuel efficiency, increase of engine power, lower environmentally harmful emissions and reduced smoke, especially during start-up and acceleration according to engine designers requirements.



DARDANOS MVC 01-20

### 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 2000 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-K3 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 500 kW.

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

For further information please refer to the respective product leaflet or manual.

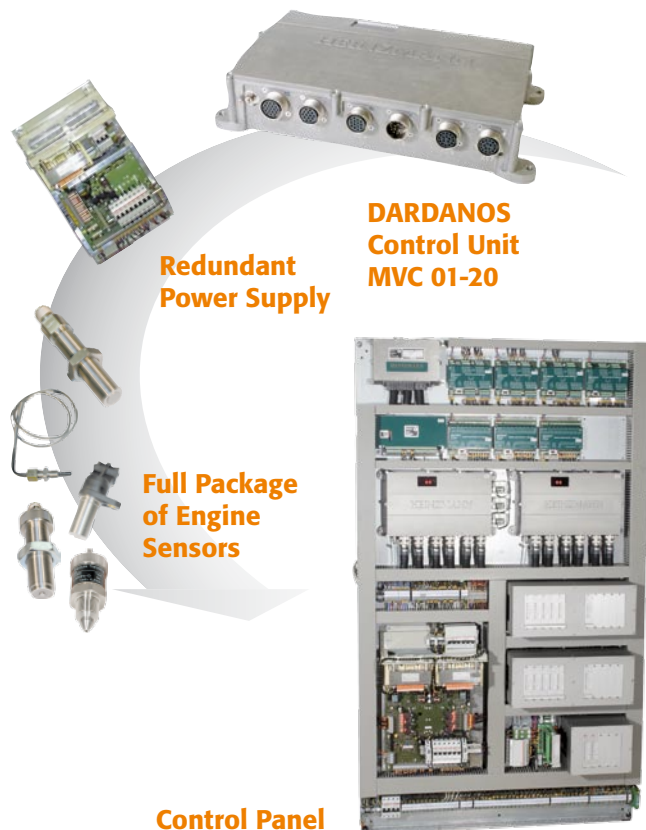


ODYSSEUS ICR-DS-500

### Electronic fuel injection systems

#### Application example:

#### HERMES - redundant EFI control solution



The DARDANOS control units for single main propulsion engines are the core elements of the extended control systems 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

Besides the full redundant speed governor the solution includes an engine monitoring and a safety shutdown system. A power supply with triple redundancy completes the various functionalities. A sophisticated HMI provides the possibility of remote control and diagnosis.

The benefits of this complete system are:

- ➔ Double independent supply from the mains with accumulator backup

- ➔ Full diagnosis and control via monitoring system
- ➔ Optimised decision strategy for redundant control signals
- ➔ Easy service and maintenance (hot plugging)
- ➔ Increased system safety by independent shutdown system

## FOR ALL SYSTEMS

### ***DcDesk 2000 configuration and visualisation tools***

Thanks to its design as a Windows®\* program, the HEINZMANN DcDesk 2000 software offers a lot of graphical features, printouts and records of data for documentation purposes. Using DcDesk 2000, 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.

The SATURN technology expands the HEINZMANN PC program DcDesk 2000 by a remote control functionality. All features of DcDesk 2000 are available remotely. SATURN can be used with any of the digital HEINZMANN systems.



*Remote communication system*

### ***Accessories***

#### ***Sensors***

HEINZMANN supplies a full package of engine 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 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.

#### ***Overspeed protection***

Overspeed protection is required to be independent of the speed governor. For this purpose the HEINZMANN Frequency Switching Device FSchG 02-2 may be used.



#### ***Professional service worldwide***

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 authorised 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.

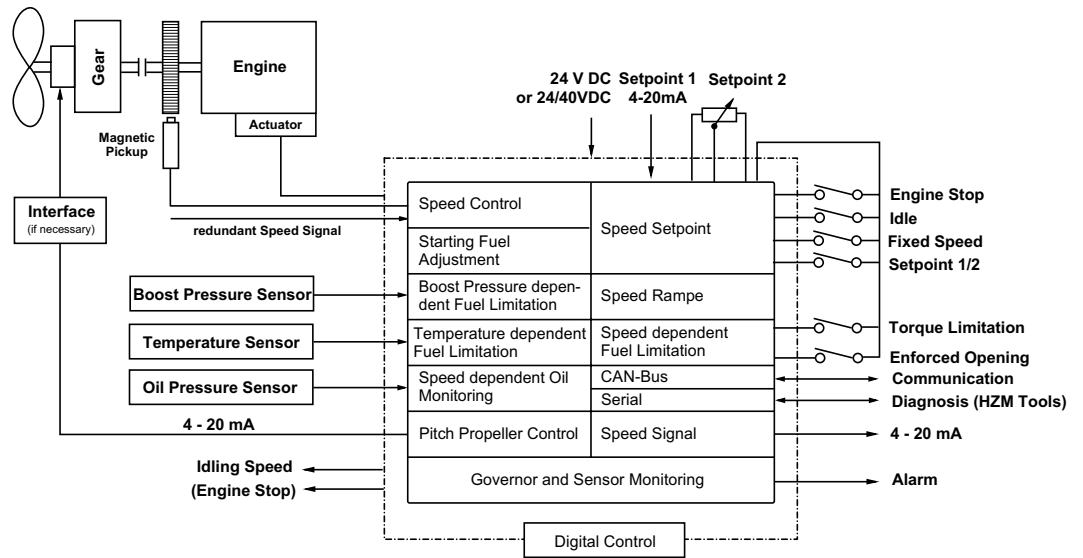
#### ***Certificates***

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

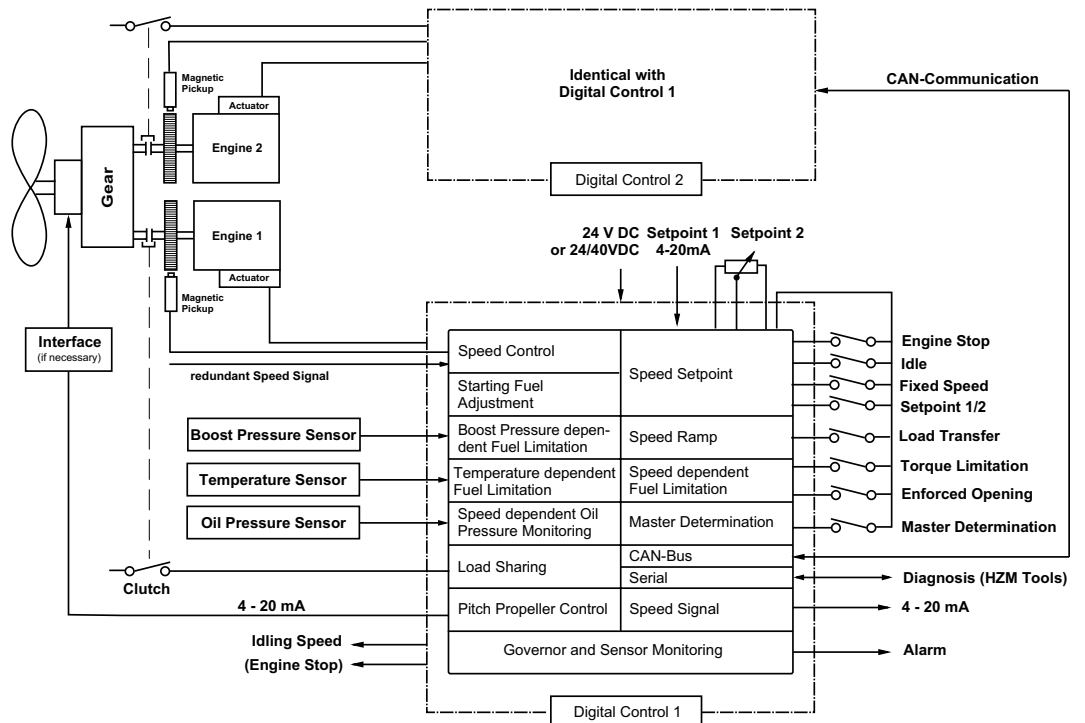
\* All trademarks are the property of their respective owners.

# FUNCTIONAL BLOCK DIAGRAMS

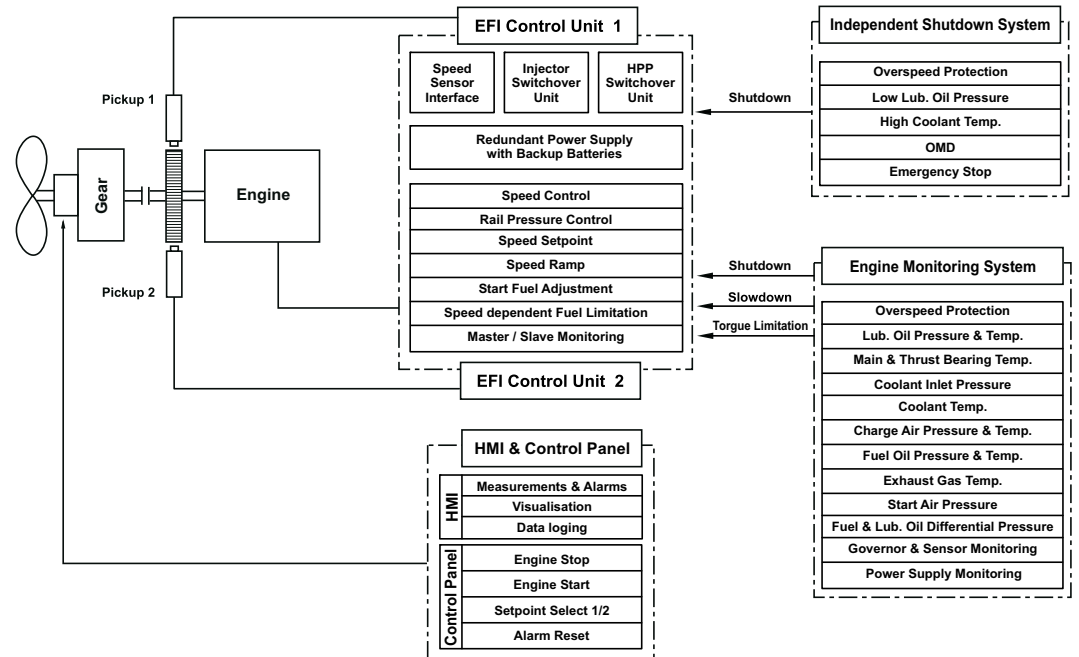
## Main propulsion single engine installation



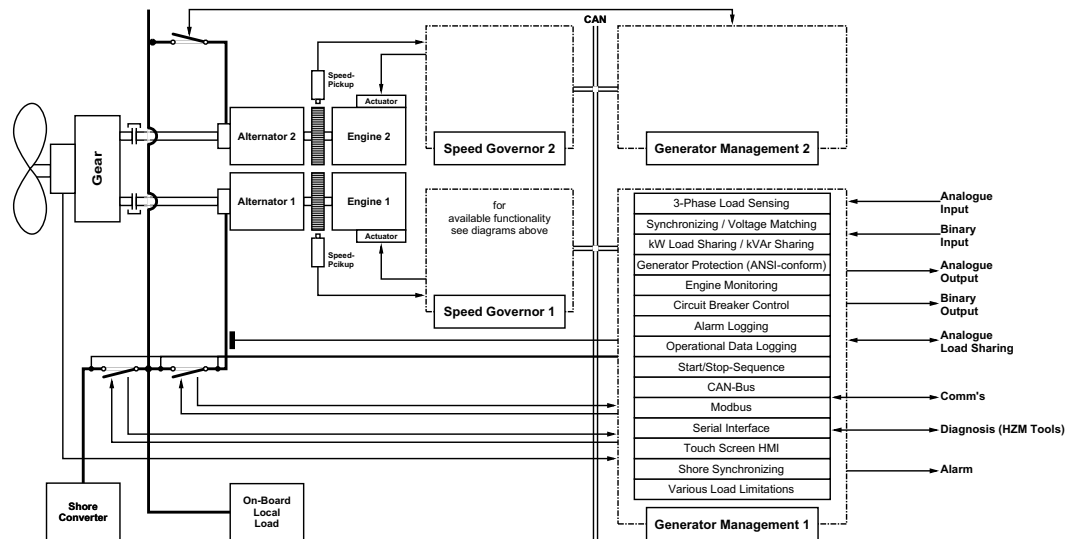
## Main propulsion twin engine installation



## Single main engine with redundant EFI control system



## Isolated parallel operation with shore synch. option





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## **Selection of HEINZMANN products**

### **Wide range of digital and analogue control units**



### **Different sizes of electrical actuators for 1 Nm to 500 Nm**



### **Electronic Fuel Injection control system (EFI) - control units from 4-cyl. up to 20-cyl. engines**



### **Common Rail systems**



### **Range of analogue and digital generator management units**



### **Gas engine management**



### **Digital control systems for gas turbines**



### **Sensors & solenoids**



### **Hydraulic governors & actuators**



### **Electric components of hybrid drive systems**



**Quality & Precision since 1897**



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