

# PANTHEON

## Integrated Gas Engine Management



- ✓ All functions integrated in one control unit
- ✓ Modular system from one single supplier
- ✓ Tailored for your needs
- ✓ All gas qualities from natural gas to wood gas



## **PANTHEON**

### ***Integrated gas engine management***

All gas engine management functions controlled by one central unit – the new HEINZMANN generation of PANTHEON systems makes it possible.

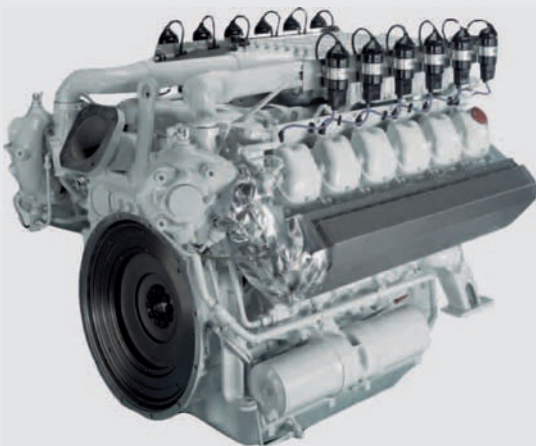
The integrated gas engine management unit PANTHEON takes care of all aspects of a complete gas engine control system. Speed, load, AFR, ignition, turbocharger, protections; all control tasks are covered.

Together with the broad range of HEINZMANN modular gas engine products, PANTHEON offers a multifunctional gas engine management system with unique flexibility.

Generator management can be included as an extra option.

### ***PANTHEON the optimal solution***

- O** verall control system
- P** roven technology
- T** ailored solution
- I** ntegrated approach
- M** odular configuration
- A** ccessible development and service teams
- L** ow costs



## **PANTHEON Functions**

### ***Gas engine management***

- ✓ ***Speed/load control***
- ✓ ***AFR control***
- ✓ ***Turbocharger control***
- ✓ ***Ignition control***
- ✓ ***Knock control***
- ✓ ***Misfire control***
- ✓ ***Engine protection***
- ✓ ***Monitoring***
- ✓ ***Integrated HMI***
- ✓ ***Data logging***
- ✓ ***CAN bus interface (CANopen, DeviceNet, SAE J1939)***
- ✓ ***ModBus interface***
- ✓ ***PC access by DcDesk 2000 software***

### ***Generator management***

- ✓ ***Genset protection***
- ✓ ***Automatic sequencing***
- ✓ ***Synchronising***
- ✓ ***Voltage matching***
- ✓ ***kW load control***
- ✓ ***kW load sharing***
- ✓ ***Peak shaving***
- ✓ ***Import/export control***
- ✓ ***Power factor control***
- ✓ ***kVAr load sharing***
- ✓ ***Real time alarm/data log***

## PANTHEON

The integrated control unit is an all-in-one device which covers the whole range of gas engine management.



*PANTHEON Integrated Gas Engine Management*

HEINZMANN also supplies PANTHEON as a complete control panel in several versions.

The full version contains PANTHEON plus a THESEUS control for generator management, an XIOS I/O module and a PANOPTES HMI mounted on the control cabinet.



*Control cabinet*

## PANTHEON functions

### Speed/load control

Starting throttle limitation

- Starting speed ramp
- Speed, temperature and boost pressure-dependent throttle limitation
- Synchronisation digital (increase/decrease speed) or analogue (sync device)
- Integrated power governor or external load control (ex. LMG)
- Load derating (exhaust temperature, altitude, knock level, ambient temp)

### AFR control

- Starting fuel limitation (fixed or variable in case of gas quality changes)
- Speed and load-dependent lambda setpoint
- Ambient temperature dependent lambda setpoint correction
- External lambda setpoint correction (analogue or CAN)
- Various methods implemented for air/mix flow measurement (manifold sensors, gas mixer sensors, air mass flow sensor)
- Flexible closed-loop feedback signal (engine load, lambda sensor, CH<sub>4</sub>-sensor, NOx sensor)

### Turbocharger control

- Speed and load-dependent boost pressure setpoint map
- Wastegate/bypass/variable turbine geometry
- Load impact strategies available
- Specific chrome steel material for bearings and shaft
- Different throttle housings available
- Removable shaft/throttle

### Ignition control

- Complete ignition solutions including all required components
- 1 or 2 pickups (inductive/Hall) configuration
- High energy capabilities (280 mJ)
- In operation on 22 bar bmep engines
- Variable energy level to reduce spark plug wear (32 levels 25-280 mJ)
- Speed and load-dependent ignition timing maps
- General ignition timing offset possible during load transients (load anticipation)
- Individual cylinder spark angle offsets, depending on knock levels

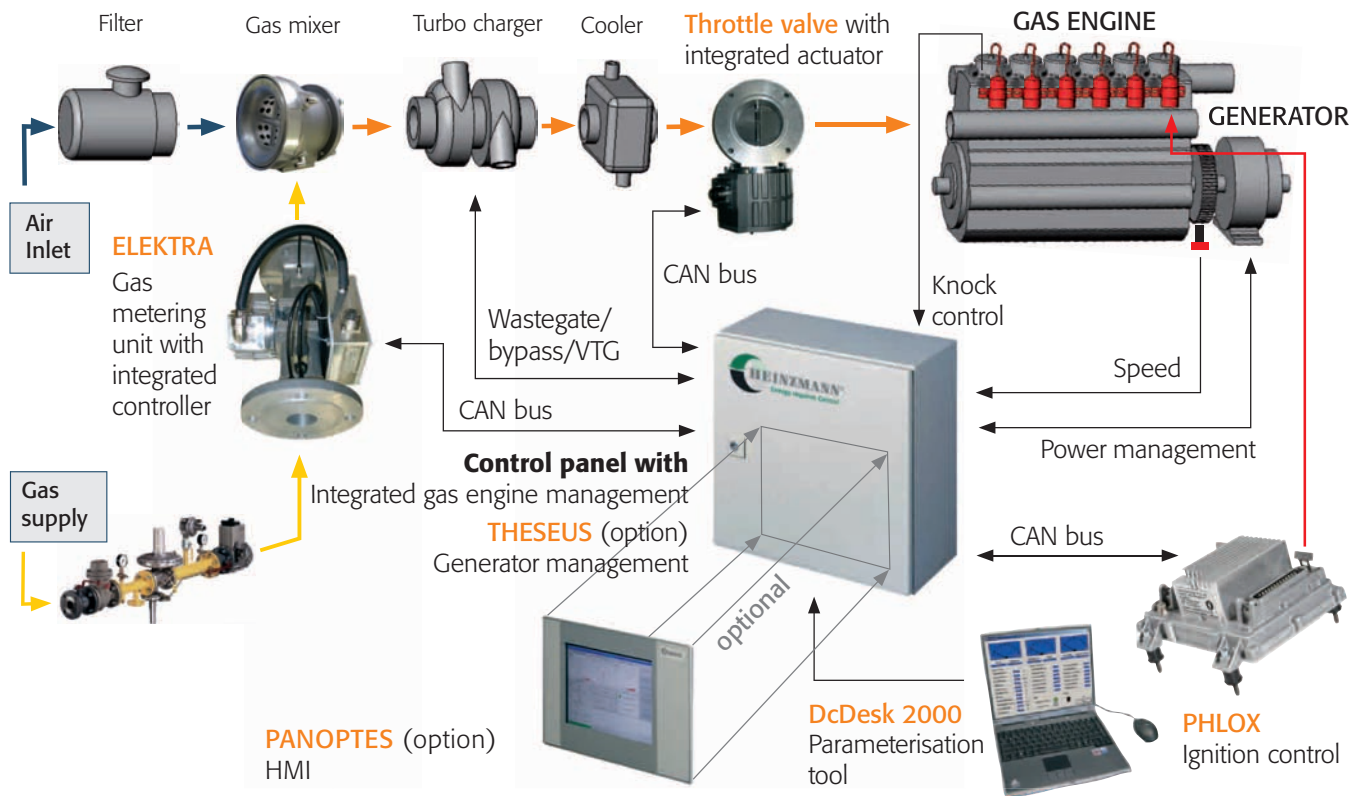
### Engine protection

- Knock control, misfiring detection, monitoring of all engine sensors

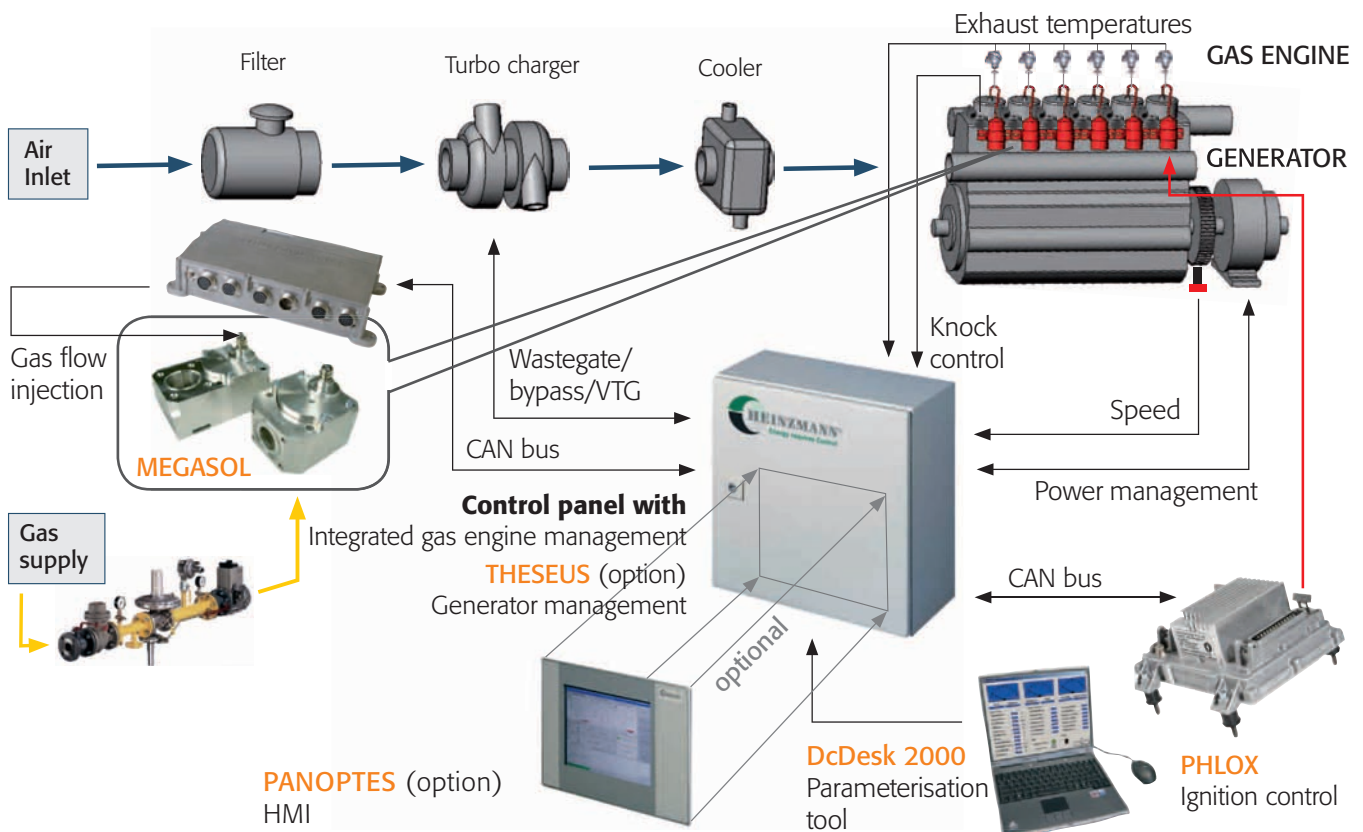
**HEINZMANN**  
*Clean Engine  
Technology*

# CONFIGURATION EXAMPLES

## PANTHEON for single-point continuous gas supplied engines



## PANTHEON for multi-point sequential port gas injection engines



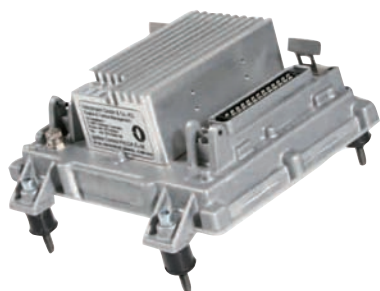
# PANTHEON MODULAR SYSTEM COMPONENTS

## PHLOX control units IC series

PHLOX control units are highly flexible high-energy capacitive spark ignition control devices.

Its flexibility and I/O possibilities allow easy integration into any gas engine management system.

HEINZMANN delivers all ignition control accessories as: pickups, coils, wiring rails, cable harnesses, ignition leads, trigger discs and spark plugs.



*PHLOX control unit*

## KRONOS 40 gas injection control unit

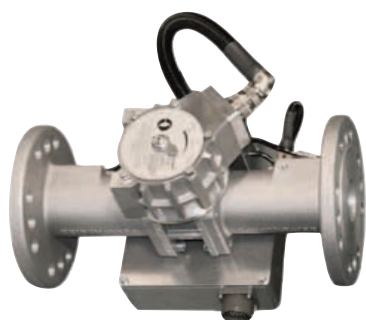
KRONOS 40 is a gas injection control system for solenoid valves. The system can handle cylinder outputs from 100 to 600 kW for up to 20 cylinders.



*KRONOS 40 control unit*

## ELEKTRA

The ELEKTRA is a high-precision gas metering unit as part of an air fuel ratio control system. It is available in different configurations and sizes.



*ELEKTRA gas metering unit*

## Actuators

HEINZMANN provides a wide range of actuators including direct acting actuators, actuators with gears and actuators with integrated positioning electronics and brushless motors.

The large range of actuator models cover rather any application and sector. This means that customers can find a product tailored to their exact requirements.



*StG 2040-P / 2080-P*



*StG 30.90-P / 40.90-P*

## MEGASOL gas admission valves

MEGASOL (Metering of Gas by Solenoid) is HEINZMANN's product family of electrically actuated gas valves for gas injection into manifold. Each cylinder requires one MEGASOL.

The MEGASOL valves ensure the proper gas quantity for each cylinder and allow for a gas flow compensation from cylinder to cylinder.



*MEGASOL 1000*



*MEGASOL 200*

## Gas mixers

The gas mixer is an indispensable component of the fuel system.

Whilst the throttle valve controls the quantity of the mixture, the mixing unit manages the mixture quality. HEINZMANN mixers provide very homogeneous air/gas mixtures and optimal Air to Fuel Ratio (AFR) over the entire speed and load range of the engine.



Gas mixer



Wastegate throttle valves

## Throttle valves

HEINZMANN butterfly throttle valves control the quantity of the gas/air mixture. Furthermore, in special applications, the throttle valve can be used as gas valve to control the mixture quality. The sizes range from type DK50 up to DK300 and the sealed design covers a wide output power and operation pressure range.



Throttle valve

## XIOS 1

The HEINZMANN XIOS is an extended input/output system. With the XIOS I/O capability, different kinds of engine controllers can be expanded in a simple cost-effective way. Each XIOS unit consists of a powerful carrier board serving communication functions and CPU power and I/O boards that can be simply attached to the mother board. Each single I/O board can be configured separately.



XIOS 1

## Wastegate and turbocharger bypass

HEINZMANN supplies wastegate throttle valves for turbo boost control and wastegate actuators for deflection control of the wastegate throttles (with and without water cooling).

We also offer turbocharger bypass: actuators with integrated throttle valve optimised for high pressures and temperatures.

## Gas system auxiliaries

HEINZMANN can also supply the remaining components of the fuel system such as the complete gas line, sensors and zero pressure regulators.



Gas train

## **THESEUS DGM-02**

HEINZMANN's digital generator control, management and protection system. Suitable for stand-alone and mains parallel operation with real kW and reactive kVAR load management functions for soft loading, load sharing and import/export control. External communication via CAN protocols or ModBus.



*DGM-02*

## **PANOPTES HMI**

PANOPTES stands for HEINZMANN's Human Machine Interface (HMI) device. This display and operating device is suitable for integration into cabinet doors and control panels.



*PANOPTES HMI*

## **DcDesk 2000**

HEINZMANN'S Windows® based software to be used with our digital controls. It supports system configuration and parameter settings and allows programming control functions. Additionally it provides various display and recording functions, as for example, error logs to assist monitoring and system diagnosis.



*DcDesk 2000 configuration program*

## **PANTHEON GAS ENGINE MANAGEMENT**

### **Multifunctional**

PANTHEON offers complete control for gas engines, covering speed and load control, AFR control, ignition, knock control, misfire detection and, if necessary, generator management.

### **Modular and flexible**

The philosophy of PANTHEON is to integrate all customised system functions with maximum possible flexibility and extendability in one system. The modules cover the whole functionality which is needed for this kind of application. All components are based on well-known HEINZMANN products.

### **Customer oriented**

Operator orientation and a high degree of system accessibility and transparency is one of the main features of PANTHEON. A highly multifunctional touch screen panel allows for very flexible and easy handling, with access to all important system functions.

Remote monitoring reduces service costs and increases system availability.

### **Efficient and reliable**

The integration of all modules into one system means time saving installation, set-up, operation and maintenance. It is a cost and space efficient reliable solution with the best possible interaction of all components to meet your expectations.

### **Worldwide competent service**

Service is our strength. Our service team guarantees fast response and competent support wherever you are.



**Head Office:**

**Heinzmann GmbH & Co. KG**

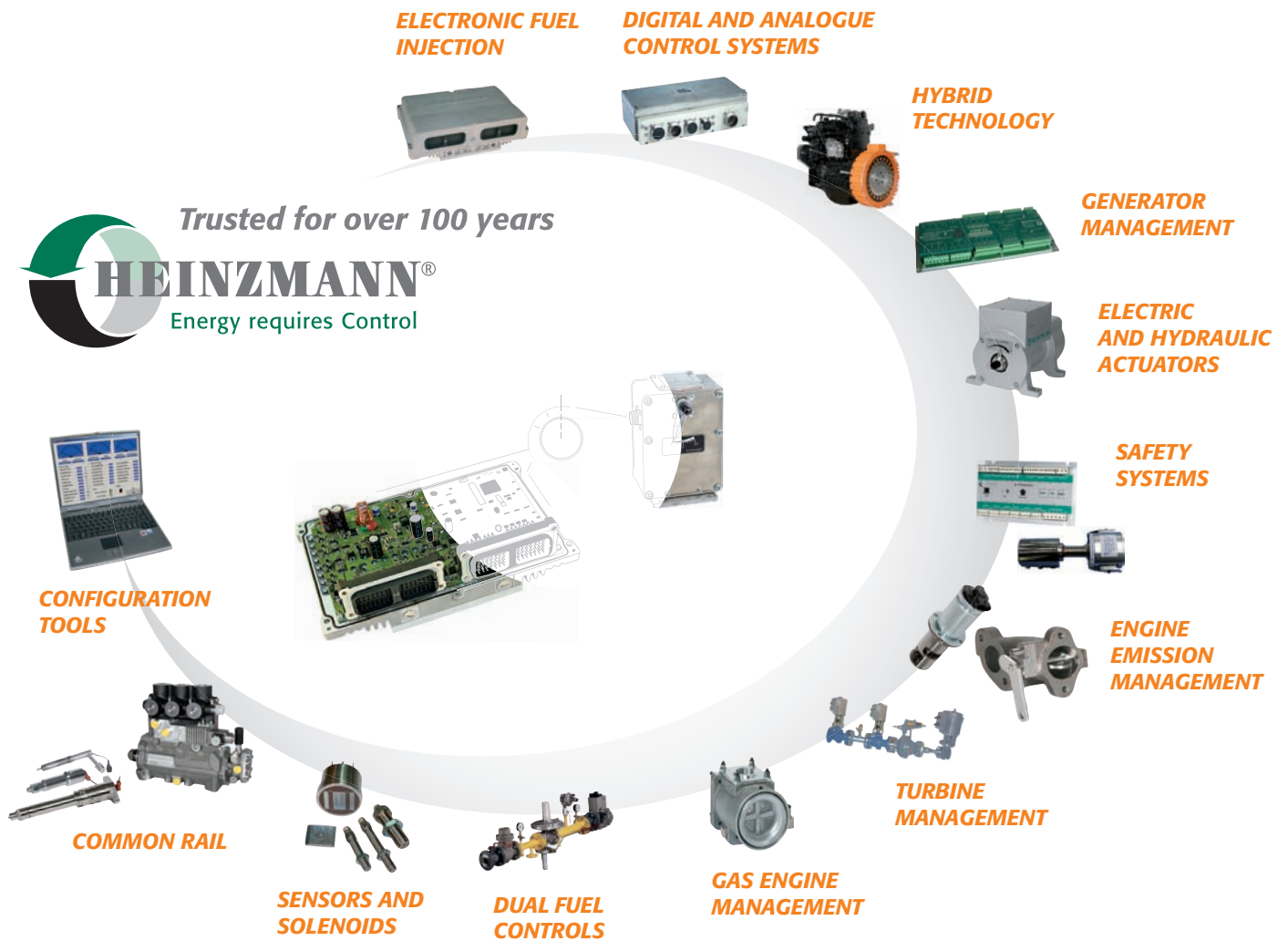
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