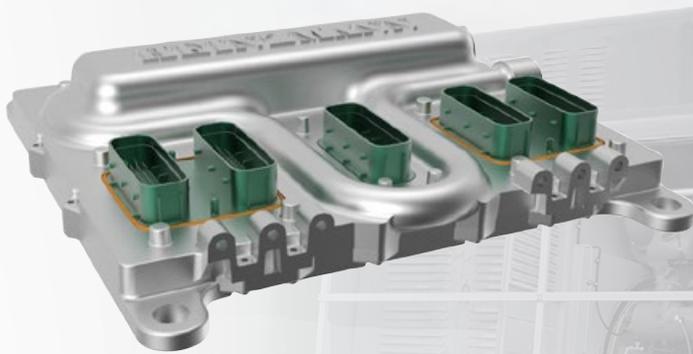


PEGASOS



Traction Control Systems

- ▶ Conventional or electronic fuel injection control
- ▶ For all engine types & sizes
- ▶ Supply of all system components like interface panels & sensors
- ▶ Excitation control for diesel electric drives
- ▶ Retrofit & modernisation
- ▶ High flexibility & proven reliability

PEGASOS

HEINZMANN's PEGASOS Locomotive Control Systems meet the specific requirements of the railway market for both diesel-hydraulic and diesel-electric drives.

The speed and load control has galvanically isolated inputs and outputs and power supply to protect the internal control electronics from the adverse locomotive electrical environment. The combined speed/load control ensures maximum traction efficiency with its variable excitation control.

The HEINZMANN PEGASOS solutions are available for conventional fuel injection as well as for Electronic Fuel Injection (EFI) systems in connection with a complete common rail solution, E-PPN or PNU.

A range of selectable speed setting modes makes the PEGASOS eligible for many different engine control systems.

PEGASOS Traction Control Systems are suitable for almost every locomotive and engine type and proven in multiple installations worldwide.



PEGASOS CONTROL SYSTEMS FOR LOCOMOTIVE APPLICATIONS

PEGASOS offers an universal retrofit system for locomotive end users as well as for OEMs.

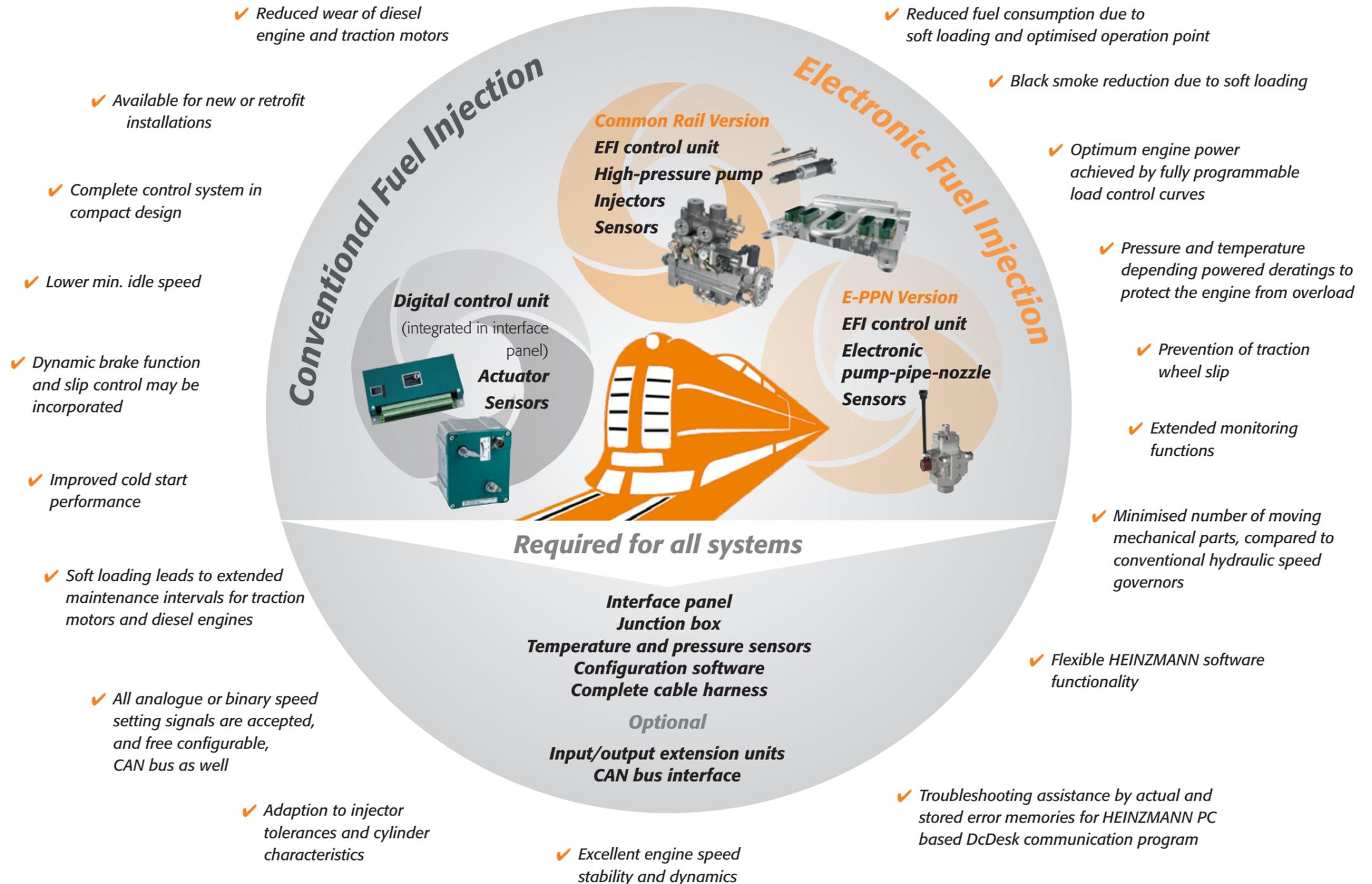
Inputs for up to 16 notches, speed demand via CAN bus or current/voltage signals allow a variable speed setting. The setpoint may be adapted individually by internal speed ramps.

A fully programmable load control provides optimum engine power for each speed level and prevents traction wheel slip. A wide range of load control amplifier versions is available to suit all customers' excitation control requirements.

All actuators are fully electric and require no mechanical

drive. Sensors for engine pressure and temperature monitoring may be incorporated into the system.

PEGASOS can be equipped with an extended error memory on request (recordings related to engine running hours, including environmental data).



PEGASOS CONVENTIONAL INJECTION CONTROL SYSTEM

The PEGASOS Conventional Fuel Injection Solutions are proven in numerous railway applications. The HEINZMANN HELENOS control unit DC 2-02 forms the core of the system in combination with a choice of HEINZMANN actuators.

Further system components for diesel-electric locomotives are an interface panel containing a DC/DC converter for supply voltages > 24 VDC and a locomotive interface.

Diesel-hydraulic locomotives with up to 24 VDC supply don't require additional equipment and can omit potential separation. The systems are completed by various sensors for temperature and pressure, a complete cable harness, a junction box and the HEINZMANN configuration software DcDesk. Optional are input/output extension units and CAN bus interface.

Digital control unit

HELENOS DC 2-02

HEINZMANN's DC 2-02 is a digital control for medium-speed engines. HELENOS is established in the field for decades in multiple applications but especially tailored for the control of diesel-hydraulic and diesel-electric locomotive drives.



DC 2-02

The highly efficient HELENOS speed governor is based on a 32-bit microprocessor. A speed ramp for slowly changing of speed value and an anti stick-slip device for traction applications are part of its features. HELENOS allows start fuel limitation with respect to engine temperature for an optimum fuel quantity during start and run-up phase and reduction of start-up smoke to a minimum. Governors dynamic characteristic (PID) can be adapted to speed, load and engine temperature.

The HELENOS DC 2-02 control unit can be combined with a range of actuators for different engine sizes.

Actuators

HEINZMANN supplies a wide range of reliable actuators for any size, type and make of engine. A strong regulation torque working in both directions, quick response time and a low current consumption on change of load form part of their features. For the PEGASOS Conventional Fuel Injection System the actuators StG 2080, StG 16/30/40 or StG 6/10 are applicable, dependent on engine size and application requirements.

StG 2080

A very powerful actuator installed in medium-sized and large diesel engines. It has a torque output of 11 Nm at 36° rotation or 8.4 Nm at 68° rotation.



StG 2080

StG 6 / StG 10

The main application of StG 6 and StG 10 actuators is on diesel engines, which require less than 6 and 10 Nm torque respectively to move the fuel rack or the fuel metering valves. Rotation is 36°.



StG 6 / 10

StG 16 / StG 30 / StG 40

These actuators are utilised on industrial diesel engines in traction systems to move the fuel rack or fuel metering valves. They work with HEINZMANN digital controls respectively HELENOS in traction applications..

They have a torque output of 15, 31.5 or 44 Nm at 42° rotation.



StG 16 / 30 / 40

PEGASOS EFI LOCOMOTIVE CONTROL SYSTEM

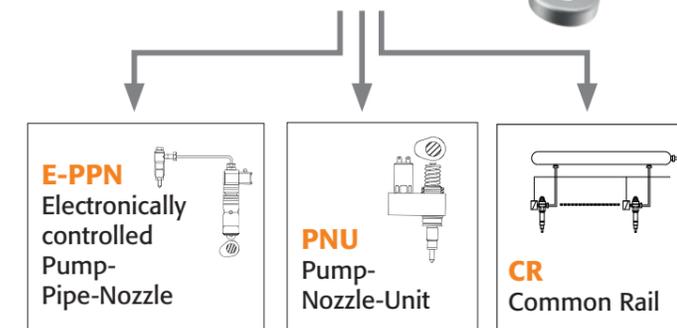
HEINZMANN has long-term experience in EFI technology and in EFI engine commissioning.

DARDANOS EFI versions have been running under different conditions in several countries and on various

traction applications for several years. HEINZMANN electronic fuel injection controls can be used with E-PPN, PNU and common rail diesel engines up to 24 cylinders.



MVC 01-24



DARDANOS EFI control units

The DARDANOS series are designed as universal speed controllers for engines with electronically-controlled injection systems. In addition to their primary purpose of controlling speed, these controllers provide further features that offer other benefits for your diesel engines as monitoring and safety functions. HEINZMANN EFI control units are available for engines up to 24 cylinders.



MVC 01-20

Common rail components

HEINZMANN also provides a complete package of common rail fuel injection components such as various sizes of injectors and high-pressure pumps, sensors, application software and spare parts.

HEINZMANN high-pressure pumps have a uniquely robust and highly efficient design and are able to generate rail pressures of up to 2,500 bar.

High-pressure pumps



High-pressure pump HDP-K3

Injectors

HEINZMANN injectors are available in many sizes and provide the flexibility to be adapted as required for engines with cylinder output between 15 and 1,250 kW.



Electronic fuel injectors

LAVINIA Electronic Pump-Pipe-Nozzle (E-PPN)

HEINZMANN provides a universal solenoid activated injection control valve for precise fuel injection timing in order to achieve optimised combustion. Due to its modular design the valve can be easily adapted to existing high-pressure pumps and injectors of different manufacturers. No major changes are required with diesel engines for E-PPN valve installations.



HEINZMANN provides a comprehensive choice of inductive and Hall-effect speed sensors, as well as temperature and pressure sensors.

TECHNICAL DATA

Actuators

Technical data	StG 2080	StG 6	StG 10	StG 16	StG 30	StG 40
Output shaft travel	36° / 68°	36°	36°	42°	42°	42°
Maximum torque at	11 Nm / 8.4 Nm	4 Nm / 6 Nm	10 Nm	15 Nm	31.5 Nm	44 Nm
Ambient temperature in operation	-25 °C up to +90 °C					
Weight, approx.	8.6 kg	3.5 kg	4.3 kg	12.3 kg	12.3 kg	12.3 kg

For further information refer to the leaflet *Actuators* and the manual *PEGASOS for Locomotive Operation DG 96001-e*.

DARDANOS Electronic fuel injection control

For up to 24 fuel injectors or E-PPN valves	
Supply voltage	nom. 24 VDC (15 ... 33 VDC)
Inputs	32× universal inputs 8× PWM 5× pickup or frequency
Communication	CAN 2.0B, RS-232, RS-285
Protection grade	IP6K9K
Dimensions (L×W×H)	396 × 394 × 110 mm
Weight	approx. 8.5 kg

HELENOS Digital control unit

For electrical actuator	
Supply voltage	nom. 24 VDC (12 ... 32 VDC)
Inputs	4× analogue 4× binary 2× temperature 2× pickup
Communication	optional CAN 2.0B, Modbus, RS-422, RS-485
Protection grade	IP55
Dimensions (L×W×H)	400 × 400 × 120 mm
Weight	approx. 11.5 kg

For further information refer to the product leaflets *ODYSSEUS Complete Common Rails Systems*, *DARDANOS Electronic Fuel Injection Control Systems*, *LAVINIA Electronic Pump-Pipe-Nozzle (E-PPN)* and the manuals *DG 07 001-e Control Devices for Conventional Injection with Actuators*, *MV 09 001-e DARDANOS Basic Information* and respective data sheets.

PEGASOS RAILWAY INSTALLATIONS

HEINZMANN locomotive control systems are in operation all over the world, for example in Austria, Finland, France, Germany, Hungary, Sweden, Switzerland, Russia, Ukraine, China, Thailand, Vietnam, India, Australia and USA.

They are installed as retrofit systems or in OEM installations and cover all fuel injection technologies like conventional or electronic fuel injection solutions as well as multiple monitoring functions.



Meet emission standard with PEGASOS Common Rail System on Ganz GM185V-VG-CR

HEINZMANN has successfully completed the dressing of a Ganz Motor GM185V-VG-CR engine with the Common Rail Fuel Injection System ODYSSEUS. By using the HEINZMANN system components HDP-K3 high-pressure pump, magnetic valve control MVC 01-20 and the ICR-DS 200 injector system for prechamber injection, the target to fulfil the emission standard Stage IIIA according to Directive 97/68 EC was met.



EFI retrofit with HEINZANN E-PPN System on Kolomna D49 reduces fuel consumption

HEINZMANN has converted a Russian TEM7 locomotive in field use from conventional to electronic fuel injection control. The electronically actuated E-PPN injection control valve was used to supplement the mechanical fuel injection system of the Kolomna D49 combustion engine. By means of HEINZMANN's turnkey solution, fuel consumption of the locomotive was reduced by over 10 % and operating characteristics as well as maintenance requirements were improved.



Complete PEGASOS Conventional Fuel Injection Systems for Deutsche Bahn

HEINZMANN has equipped series of locomotive diesel electric drives for German Railways. The complete PEGASOS systems installed on the established Kolomna engines include HELENOS control units, actuators, interface panels, temperature and pressure sensors, complete cable harnesses, junction boxes and configuration software. The solutions is proven in the field for two decades and appreciated for its high reliability.

More installation examples can be found on our website www.heinzmann.com.

HEINZMANN Group

Quality & Precision
since 1897

The Group started in 1897 with
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and now includes
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solutions, as well as exhaust
gas aftertreatment solutions,
for industrial combustion
engines and turbines. It also
encompasses automation
systems, primarily for the
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