



Electronic Engine Control System for GE 7FDL Locomotive Engines

- ▶ Reduction of fuel consumption
- ▶ No visible smoke



Locomotive Control System (PEGASOS)



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

Estonia Railway Project

In March 2019 HEINZMANN implemented an Electronic Engine Control System on a GE 7FDL locomotive engine. The complete solution consists of two subsystems: the PEGASOS Locomotive Control System and LAVINIA, a system for electronic pump-pipe-nozzle control. The retrofit kit further offers optional systems for monitoring and safety.

A fuel injection control valve was adapted to the 7FDL.

The system is currently under validation by comprehensive performance and emission tests. No visible black smoke under all operating conditions, the overall operation is much smoother.



Project Data

Customer
AS Operail 

Locomotive
GE-C36-7i, built in 1985

Application
Freight transportation, shunting service within Estonia

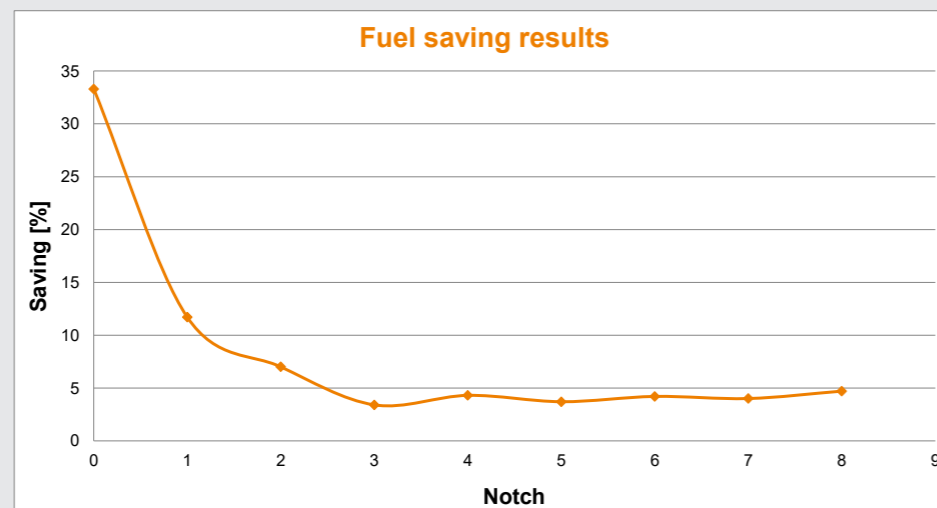
Retrofit
Performed in March 2019 on a GE 16 V 7FDL

Test results

The system has now been in continuous operation for 12 months. Significant fuel savings are achieved through electronically controlled injection. Over a wide operating range, fuel consumption is reduced by about 5 %. Further savings can be achieved by additional measures, for example on the turbocharger side.

The savings are particularly high at idling speed and in the range of small loads. Injection process optimisation leads to savings of more than 30 %.

Further system optimisations are still in progress.



Benefits

- ▶ Reduced fuel consumption
- ▶ No visible smoke
- ▶ Improved performance and engine safety
- ▶ High reliability of a proven design
- ▶ Complete retrofit kit from one source
- ▶ Significant savings in total cost of ownership and short ROI
- ▶ 25 years of experience in electronic fuel injection

Implemented HEINZMANN Solutions

- Complete turnkey engine control solution dedicated and proven for the GE 7FDL
- Mounting kit included
- Electronic fuel injection control by HEINZMANN E-PPN based on latest control strategies
- Speed/load and dedicated locomotive control with low idle speed function
- Extended monitoring and safety functions



HEINZMANN Retrofit Solutions

HEINZMANN develops, produces and delivers the full range of locomotive engine control solutions. For the Estonia Railway project the PEGASOS Traction Control System and LAVINIA, a system for electronic pump-pipe-nozzle control have been implemented.

PEGASOS Locomotive Control Systems

HEINZMANN 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 EFI systems in connection with a complete common rail solution, E-PPN or PNU.

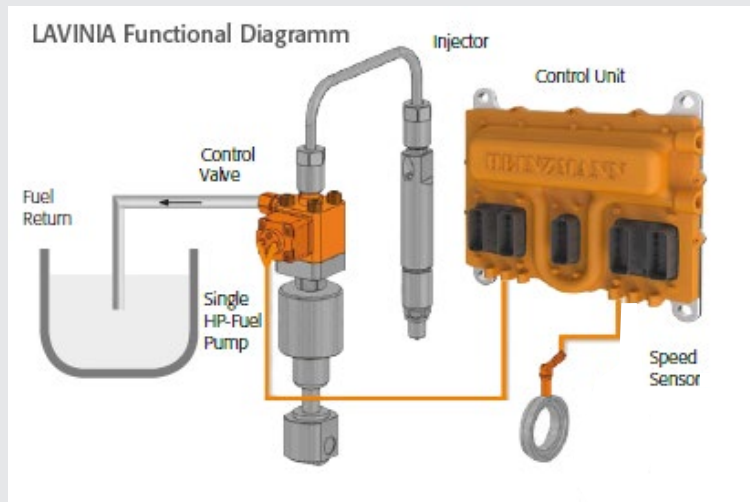
LAVINIA E-PPN System

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 optimised combustion under all 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.



Heinzmann GmbH & Co. KG
Am Haselbach 1
D-79677 Schönau/Germany

Phone: +49 7673 8208 - 0
Fax: +49 7673 8208 - 188
Email: info@heinzmann.de

www.heinzmann.com