Year 1 Nr. 1 09/2008

The Expert responds

Bimonthly technical publication by
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In this issue we are going to discuss:

Diesel engines applied to model 5000

The need to decrease fine dust emissions (particulate) and harmful gases in the environment is a continuous focus of attention for the European Community which, through Directives 1999/30/EC and 96/62/EC has fixed limits for such emissions. The mod. 5000 sweepers are equipped with diesel engines that comply with such regulations.
The Evolution version in particular mounts an IVECO type NEF F4HE9484A engine, with 4 cylinders, turbo intercooler, and maximum power of 110 Kw (4485 cc) while the Veloce version mounts an IVECO type NEF F4AE3681B engine, with 6 cylinders, turbo intercooler and maximum power of 160 Kw (5880 cc). The technology used in these engines to dampen the PM10 emissions uses the following components:

- COMMON RAIL . This component is a sort of manifold that is common to all the injectors into which diesel is pumped at 1450 bar and kept constant for all of the injectors. This pressure level facilitates the atomization of the fuel inside the cylinders, thereby optimizing combustion. A valve installed on this manifold controls the pressure.
- high pressure fuel PUMP with the capacity to reach a pressure of 1450 bar and to regulate fuel consumption through an electric fuel control unit.
- electrically controlled INJECTORS with the capacity to control the injection time and phase.
- ELECTRONIC DIESEL CONTROL UNIT (EDC) that optimizes the operation of the engine, processing the input data arriving from the various sensors fitted on the engine and comparing them with the optimum operation parameters, in order to activate electronic components designed to control the output.

The control unit performs the following functions:

1- Self-diagnosis: it checks the signals arriving from the sensors and compares them with the programmed limit parameters;
2- At start-up, it activates of the fuel and air pre-heating devices if the temperature is below 5C°;
3- It checks the point and duration of injection, regulating the injectors on the basis of the engine rpm;
4- It regulates the injection pressure and the quantity of fuel by adjusting the regulator on the pump;
5- It limits maximum speed and injection opening time, deactivating them at 3000 RPM;
6- It limits fumes during acceleration and deceleration, controlling the quantity of fuel delivered through the regulator installed on the pump according to a predefined mapping.

Any questions?

Write to info@dulevo.com specifying the object "The Expert responds" and in the next issue, you might just find the answer to your question!