The use of the **IPCO Power WFE system** (FID Injector) will result in more effective combustion, lower fuel consumption and a reduction of NOx, Soot and PM pollutants, while the engine’s combustion chambers, pistons, exhaust system and lube oil will stay much cleaner.

The benefits are coming from the 2 parts of treatment:

**Homogenizer:**

Firstly, the fuel homogenizer reduces fuel droplet size to 3 micron and smaller. Smaller fuel droplets enhance combustion, lower emissions and improve fuel economy.
**Adding water to the fuel:**
Secondly the WFE system the FID Injector is a combustion improvement system designed to create a stable “water in fuel” emulsion. The system is installed before the mixing tank. The implementation of emulsified fuel significantly enhances fuel atomization and distribution in the combustion chamber.

Schematic representation of combusting fuel emulsion:

1. Water in fuel emulsion as it enters the cylinder
2. When the air/fuel mixture is compressed in the combustion chamber, the water starts to evaporate
3. The water turns to steam, in this process the fuel droplets are atomized thoroughly
4. The forming of steam and the thoroughly atomized fuel causes a better and more complete combustion of the fuel (more surface area of the fuel and more oxygen from the steam). The steam also reduces the peak flame temperature, thus reducing NOx
Examples:
The soot reduction was confirmed for example by the Seabourn Odyssey. After installation of the WFE system they had half of the soot waste during the monthly cleaning of the EGB.

Steam pipes before and after the installation of the IPCO WFE system.

FAQ:
1. **We need to remove water, why we now inject water to the fuel?**
   *Because we add clean and distilled water in a controlled manner to the fuel.*
2. **How will you be able to control the injected water?**
   *We add the water to the fuel between booster feed pump and mix tank (before the circulation). So, you will only add water when required.*
3. Do we need to start and stop the system?
   The system will operate automatic based on temperature, pressure and flow. Will switch from running to standby and will restart again when requirements are within range.

4. Will the system block the fuel flow when it’s off?
   No, there is a distance between rotor and stator and will always be able to flow through the system.

How to start:
1. If the system was really off you first need to go to the alarm overview or K3 with the older screens and press ACK.
2. Now you can go to the Process overview or K2 with older screens. Press 5% and press Enter.
   Afterwards you can press the start button.

Learn more about the system:
https://www.youtube.com/watch?v=dldH4KpXyF1

Maintenance manual:
https://www.dropbox.com/s/3ylosm0jxh7ggt8/FID%20Injector%20Maintenance%20Manual%20v2.7.pdf?dl=0

Issues?
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