INFORMATION ABOUT USE OF BIO FUELS

GENERAL INFORMATION

Biodiesel is a clean and ecological fuel which comes from vegetable oils such as soya-bean, sunflower and rape-seeds. Its characteristic is to have similar chemical-physical properties to oil which it is a substitute for, whether in pure form or mixed with it.

Use of this fuel in heating systems - pure or mixed - allows reducing the polluting substances of the combustion in a considerable way. The unburned hydrocarbons, the carbon monoxide (CO) and the smoke number are lower than with traditional fuels. Moreover, in biodiesel there are no noxious substances such as lead, cadmium, vanadium and others; it doesn't contain sulphur and therefore polluting emissions - due to sulphur oxides (SO_X) - are practically inexistent. Finally in total balance production of carbon dioxide (CO_2) is equal to zero.

The caloric power of biodiesel is lower than oil because its molecule contains a high percentage of oxygen (about 11%), which enables to obtain a complete combustion, using a lower quantity of air than necessary for combustion of the same quantity of fuel oil. As a rule, to reach the requested capacity, biodiesel working pressure is slightly higher than the traditional fuel oil due to differences in density and viscosity. The proper regulation of the fume temperature and the air quantity necessary for combustion enables an improved performance without noticeable variations in consumption by changing from fuel oil to biodiesel.

INSTALLATION

Over time biodiesel can cause swelling and ageing of some elastomers and natural rubbers like Butyl (NBR). So some precautions are necessary, especially replacement of seals and pipes being into contact with fuel with compatible material, especially when it is used pure or with mixtures higher than 30%. In the special version for biodiesel (type BV), Delta pumps are equipped with O-Rings and seals made from a Fluorelastomer (Viton®), and also with a special gasket for the cover.

The biodiesel has to be stored in tanks which do not contain oil dregs; the product segregation is also later on necessary to avoid mutual contaminations and interferences which could distort the behaviour. The tanks should be kept well closed to avoid possible water infiltrations.

To use the biodiesel, it can be adopted in the same procedure used for the conventional fuel oil, storing it in a dry and clean place without excessive sudden thermal changes. The tanks can be made from steel material, polyethylene or polypropylene fluorine, while it is better not to store biodiesel in concrete tanks because of possible disintegrating action with this kind of material.

Use of biodiesel is suggested in brand-new applications, but it is also possible to switch to biodiesel while the system is already working with traditional fuel oil by taking some precautions:

- Empty the remaining fuel oil.
- Clean carefully tank and pipes.
- Replace system parts which contain not compatible material (flexible pipes, filter, pump, seals).

These precautions are necessary because the biodiesel has a higher solving power than traditional fuel oil, and it causes removal of deposits accumulated inside the tanks or pipes before used with common fuel oil. These deposits may cause the clogging of the filters, (including the filter inside the pump), and also blocking or damage to the pump.