

DUATOP FUEL INJECTION SOLUTIONS FOR LOW SULPHUR FUEL APPLICATION

The International Maritime Organization (IMO / MARPOL ANNEX VI) is an agency which has been formed to promote maritime safety and to prevent pollution from seagoing ships. In recent years, international and regional legislation on emissions from shipping has driven the maximum permissible sulphur content of marine fuels down.

In order to be prepared for this situation and to offer to our marine customers the best possible engine performance with Low Sulphur Fuel, **DUAP started to adapt the DUATOP Plunger & Barrels and Nozzles to the Low Sulphur Fuel conditions already in 2007.**

We as Fuel Injection System Manufacturer have to take up this challenge and implement our products consequently to these higher requirements.



Coated Plunger & Barrel

DUATOP products were developed by **DUAP** specifically for fuel savings and longer durability. This also includes higher resistance against Low Sulphur Fuel. Improvements include among others:

- Specially selected high quality material
- Special heat treatment (by **DUAP's own** in house heat treatment department)
- Special surface treatment for low friction
- Special coating for higher tribological performance

The Low Sulphur Emission Control Areas (ECA's) are from January 1st 2010 in the Baltic Sea, North Sea and English Channel (refer to yellow marking on the map).

Starting from 2012 the following areas will be also covered by the Low Emission Control Rules: Eastern and Western coasts of North America (see blue marking on the map).



Low Sulphur Emission Control Areas (ECA's)

EUROPEAN UNION

As from 1st January 2010, ships at berth for longer than 2 hours within ports in the European Union are required to switch to 0.1 % sulphur content marine fuel oil under Article 4b of Directive 2005/33/EC.

Destination: Port inside an ECA

- Global cap 4.5 (3.5) % S, Heavy Fuel Oil, heated
- ECA 1.5 (1.0) % S, Heavy Fuel or Distillate Oil, heated or unheated
- At Berth 0.1 % S, Low Sulphur Distillate Oil, unheated or cooled

Destination: Port outside ECA

- Global cap 4.5 (3.5) % S, Heavy Fuel Oil, heated
- At Berth 0.1 % S, Low Sulphur Distillate Oil, unheated or cooled

MARPOL Annex VI – 2008 Sulphur limits

The sulphur content of any fuel oil used globally shall not exceed:

- 4.50% m/m S prior to 1 January 2012
- 3.50% m/m S on and after 1 January 2012
- 0.50% m/m S on and after 1 January 2020

The sulphur content of any fuel oil used in designated Emission Control Areas (ECA) shall not exceed:

- 1.50% m/m S prior to 1 July 2010
- 1.00% m/m S on and after 1 July 2010
- 0.10% m/m S on and after 1 January 2015

Especially the fuel changeover from heavy oil to diesel oil leads to a very high load on the fuel injection components, which results in problems such as:

- loss of lubricity in low sulphur diesel fuel
- temperature stresses, because of the fuel temperature differences (thermal shock, HFO-DFO low viscosity)
- high wear of the injection pump parts



With our technology, DUAP is able to gain many new end-user customers, ship owners, vessels, cruise ship-lines and other coastal operation companies.

For additional questions or enquiries contact:



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