This new type of valve reduces the amount of waste products and gives better combustion properties. The elimination of the sac volume also saves fuel, as fuel used to drip from the sac on to the piston topland.

The spray pattern of the fuel is further optimised and therefore leads to an improved combustion process. This results in less deposits throughout the gas ways and a reduction in overall emissions, such as HC, NOx and particulate matter. The visible smoke level is also greatly reduced as a result of the improved combustion.

The need for maintenance is reduced with the cleaner gas ways, and testing procedures are simpler thanks to the improved design.

Benefits of Retrofitting
The two photographs illustrate a key benefit of retrofitting the slide fuel valve. The first photo shows an exhaust valve bottom piece with substantial deposits caused by an incomplete combustion process. The right hand side of the photo shows the same valve seat after the slide fuel valve has been installed. The photo was taken after 890 running hours with the new slide fuel valve. No additional cleaning or scraping was done when retrofitting the new type of fuel valve.
How to Retrofit the Slide Fuel Valve

As shown by the photo, the tool required to modify the cylinder cover is compact and easily transportable. Indeed, the tool fits in a small briefcase. The components needed are quickly and easily assembled and can be used by any suitably trained staff.

Implementation Options

The options for retrofitting the fuel valves vary. These include:

- MAN Diesel & Turbo completing all installation work
- Company’s own staff purchasing the tools and completing the work

Note: For the subsequent engine balancing, we recommend an MAN Diesel & Turbo superintendent to be present.

Case Story

The Don Juan (Wallenius Lines, Sweden), a 15,199 dwt vehicle carrier, has confirmed reductions in NO\textsubscript{X} emissions of 30%.

Per Croner, Technical Director of Wallenius Lines, said, “The first slide valves were tested in 2000 during shop trials in Japan. The results were better than expected, 12.5 g/kWh NO\textsubscript{X} at 75% engine load without any increase in fuel consumption!”

He continued, “The fact that MAN Diesel & Turbo has succeeded in reducing NO\textsubscript{X} emissions to the normal level of a four-stroke engine without increasing fuel consumption, and without any secondary method such as using urea as a catalyst, must be considered an extraordinarily good result.”

Features

- Improved low load performance
- Better combustion process
- Reduced fouling of gas ways and exhaust gas boiler
- Reduced fouling of piston top land
- No drips – no sac volume
- Less visible smoke formation
- Lower HC, NO\textsubscript{X} and particulate matter emission levels

Variables

- Choice of who performs the work – MAN Diesel & Turbo or ship’s staff
- Purchase or leasing of required tools

Changes

- Fuel valves
- Cylinder cover modification
- Pressure testing procedure
- Overhaul procedure
- Fuel pump setting

Emissions

- Amendment to the existing Technical File or issuing of the “Component Guarantee Statement” regarding pre-2000 engines

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- Slide
- Conventional

Engine Power %
All data provided in this document is non-binding. This data serves informational purposes only and is not guaranteed in any way. Depending on the subsequent specific individual projects, the relevant data may be subject to changes and will be assessed and determined individually for each project. It will depend on the particular characteristics of each individual project, especially specific site and operational conditions.

MAN PrimeServ – a service brand of MAN Diesel & Turbo