

## Danish surface hardening technology for stainless steel solves challenges for MAN Diesel & Turbo.

***The transition to cheaper and more environmentally friendly fuels is crucial to the future of the shipping industry, and MAN Diesel & Turbo is a major player in that market.***

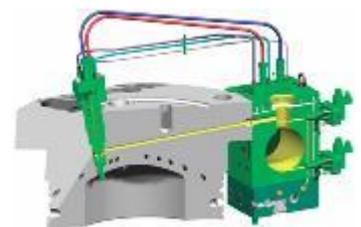
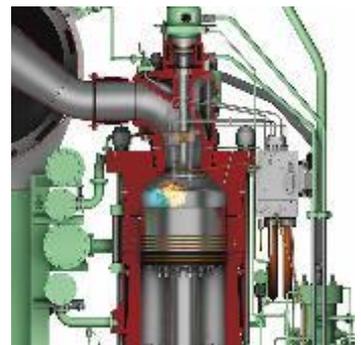
MAN Diesel & Turbo's newest generation of gasdriven engines already plays a key role in the sector's fuel conversion from oil to alternative energy. When developing the engine, Expanite and MAN Diesel & Turbo collaborated in solving the installation of their gas injection valve in the engine. An important part of the solution came from Expanite - a surface hardening technology that makes stainless steel extremely wear and corrosion resistant.

Per Brandt, manager at MAN Diesel & Turbo, says: "Originally, we had specified a chrome plating in our cylinder cap for mounting our gas injection valve, but it could not always stay tight as there were high requirements for chrome surface quality. We tried unsuccessfully with different solutions. Fortunately, someone had heard about Expanite's surface hardening, and although stainless steel is usually softer than chrome surface, it turned out to be the solution. A design change coupled with Expanite's hardening technology solved our challenge. In cooperation with Expanite we relatively quickly found a hardening that made our surface resistant against scratches and corrosion. The solution passed our test in service where the system remained sealed and tight and in addition the solution was also easy and cost efficient to implement."

### **A cheaper and greener solution**

Expanite is a Danish growth company established in 2010 by three experts in materials and surface hardening from the Technical University of Denmark. In short, the technology is a gas-based treatment of the surface of stainless steel or titanium, so that corrosion resistance is improved and the hardness is multiplied (eg up to 1200HV 0.05 in stainless steel). This eliminates wear and galling, and the lifespan of the parts is increased by a factor of ten. "Expanite's processes are significantly more environmentally friendly and sustainable as opposed to chrome baths," Claus Løndal, European Sales Director in Expanite, emphasizes. "With Expanite, we have the opportunity to change the rules and extend the limits for what qualities you can expect from stainless steel. In addition, our solutions have the advantage that the equipment and processes can be easily implemented directly by our customers."

It is expected to be a huge international market for Expanite, which technology is protected by patents. Expanite has already established service centers in Denmark, Germany, the US and China, and customers are today coming from automotive, medical, food and pumps & valves industry, but the demand for more resistant and durable stainless steel products is wide - also in the marine sector. "We have



had a very positive beginning with Expanite, and as the equipment is to deliver more and more and is pushed to the limits, the need for extra hardening of vital components will also increase," Per Brandt adds.

### **MAN Diesel & Turbo profile**

The German MAN Diesel & Turbo has roots dating back to the 18th century and is today the world's leading supplier of large diesel engines for the marine and stationary plants. The two-stroke engines department is headquartered in Copenhagen, which designs engines and propulsion solutions under the brand MAN B&W.

[www.mandieselturbo.com](http://www.mandieselturbo.com)

### **Expanite A/S profile**

Expanite is based on uninterrupted research since 2000 and founded in 2010 by leading experts in materials and surface hardening. The company is headquartered in Hillerød near Copenhagen and with hardening capacity in US, Germany and China. In addition, Expanite's solutions are flexible and can be tailored to be introduced into a customer's own production line as part of a licensing arrangement.

[www.expanite.com](http://www.expanite.com)

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**Caption:**

Parts after Expanite surface hardening