

Emulsion fuel system promises fuel savings, emission reductions  
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An system that allows ships to make emulsion fuel onboard could help ship operates save on bunker cost while also ensuring compliance with global and regional emissions standards, according to the company that makes it.

The unique "emulsion combustion unit" (ECU) from **Nonox Ltd.** "produces an on-the-spot, water-in-oil emulsion fuel that reduces NOx, black carbon/soot and other air pollutants concurrent with significantly reducing fuel consumption," according to the company's website.

"With so much going on about fuel costs and how to deal with them, there seems to be a dearth of knowledge about emulsion fuel as a viable fuel saving/emissions reduction option," Florida-based Paul Badeau from Nonox told Bunkerworld and Sustainable Shipping.

The company claims that with typical fuel savings of at least 5%, the return on investment (ROI) for installing an ECU from Nonox could be just 56 sea days for a ship burning on average 80 metric tonnes (mt) of heavy fuel oil (HFO) per day.

That calculation was based on a HFO price of \$675 per mt and a 5% daily fuel saving, though the company says fuel savings up to 15% can be achieved.

The investment cost in the cited case is \$150,000 and the installation requires little or no downtime, Badeau said.

"Retrofitting is not required as the install does not affect engines or injectors. Installation requires an intermediate connection between the fuel source and engine/boiler and a connection to a water source," he explained.

The Nonox emulsion fuel system requires fresh water, typically 7% to 20% and bunker fuel "to create 'just-in-time' emulsion fuel enabling MARPOL compliance with continued use of bunker fuel concurrent with cleaning it up and reducing costs," Badeau told Bunkerworld and Sustainable Shipping.

Nitrogen oxide (NOx) reduction achieved with the system is typically 25% to 50% and particulate matter (PM) or soot reduction ranges from 60% up to 90%, according to Nonox.

"Nonox marine users ensure compliance with the MARPOL Annex VI, the US Clean Air Act, The EU Emissions Standards and the Asian Standards," Badeau said. He did not specify if the system reduces sulphur oxides (SOx) emissions.

When asked how the emissions reductions were measured, and whether they have been verified by a third party, Badeau said it had been verified by such agencies as the Department of Energy and the **Environmental Protection Agency (EPA)** in the United States.

"US Patents pending process began in 2005 and were granted with all claims in May 2011," he added.

Badeau said Nonox emulsion fuel systems have been used aboard ships during several years of development and practical usage, and it is currently in use on four ships.

Two of the vessels using it are the vessels *Taiko* and *Tortugas* owned by **Wilh. Wilhelmsen**, according to Nonox.

It cited the operator of the ship as saying: "Since first installing the ECU on board *Tortugas* we are seeing positive trends with regards to reduced fuel oil consumption, cleaner inside engine, economizer and boiler and reduced NOx-emissions."

**Unni Einemo, London News Desk**, 6th January 2012 17:00 GMT  
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**Nonox says the ECU investment gives quick payback**