
Commercial Marine

# POWERING NEW YORK CITY FIREBOAT WITH THE WORLD'S GREATEST PUMPING CAPACITY

**Who** Fire Department of New York

**What** Four MTU 12V4000 M70 diesel engines totaling 8,980 hp and the MTU Callosum ship automation system on board the *Three Forty Three*

**Where** New York, New York, USA

**Named in honor of the 343 members of the New York City Fire Department who made the supreme sacrifice in the line of duty on September 11, 2001, the city's newest fireboat, the *Three Forty Three*, can reach fires quickly and pump huge quantities of water to douse flames like those that spewed from the World Trade Center.**

For both propulsion and pumping capacity, this waterborne firefighting marvel relies on four MTU 12V4000 M70 diesel engines totaling 8,980 hp. For the utmost in reliability, the fireboat is also equipped with the MTU Callosum ship automation system, which controls the propulsion system and continuously monitors various critical areas and functions of the ship.

A Rolls-Royce solution

"The name of this ship will remind every person who sees it in action protecting the Port of New York and the surrounding waterways, and every firefighter who operates aboard it, of the supreme sacrifice made by so many of our members on 9/11, ensuring that we never forget," said Fire Commissioner Salvatore Cassano, who commissioned the vessel along with New York City Mayor Michael Bloomberg.

### Advanced fireboat brings impressive capabilities to the job

In his remarks, Cassano also called the *Three Forty Three* "the most technically advanced fireboat in the world." At 140 feet long and with a 36-foot beam, the vessel has a top speed of 18 knots and can pump up to 50,000 gallons per minute (gpm), reportedly the highest volume of any fireboat ever commissioned. The need for such tremendous pumping capacity was made clear in the aftermath of 9/11, when FDNY fireboats supplied the only firefighting water available for many days following the attack on the Twin Towers.

The *Three Forty Three* is the first of two such vessels to be commissioned by New York City officials. The second, named *Fire Fighter II*, is currently undergoing sea trials. The two new vessels replace the FDNY's longest-serving fireboats, both of which are more than 50 years old. Designed by Robert Allan Ltd. of Vancouver, B.C., and built by Eastern Shipbuilding Group of Panama City, Fla., the *Three Forty Three* can carry 27 firefighters along with a seven-person operating crew.

### Rolls-Royce provides power for propulsion and pumping

The distinctive red MTU engines are designed with two sets of performance characteristics, depending on whether they are being used for propulsion or water pumping. Each engine is equipped with a fire-pump clutch and pump assembly driven off the front of the engine. Pumping capacity for each fireboat is 25,000 gpm on two engines (when the vessel is in motion while fighting fires) and 50,000 gpm on all four engines (when the vessel pumps water from a fixed location).

Even with such powerful capabilities, the MTU engine delivers low lifecycle costs, long service life and easy maintenance, as well as environmental benefits. For example, individual four-valve cylinder heads allow for more efficient breathing characteristics.

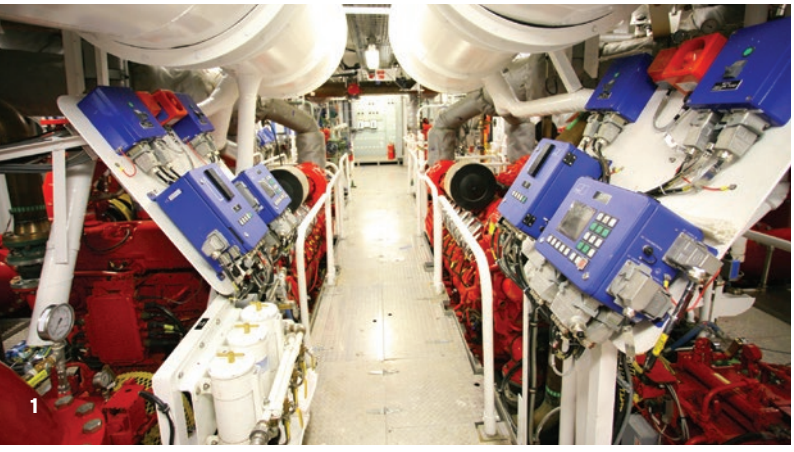
A large ratio of cylinder displacement to horsepower and low break mean effective pressure (BMEP) ensure low fuel consumption and less mechanical stress on engine components.

With an EPA-certified Tier 2 rating, these engines have lower exhaust emissions than many other available engines. The common rail fuel injection system allows for significant reduction of soot emissions, especially at low speeds. Sequential turbocharging with charge air cooling means the turbochargers can more closely match and respond to the engine airflow requirements and deliver faster throttle response.

"The boat is tremendously fast," said Edward Mauro, one of 14 pilots being trained on the *Three Forty Three* and a member of the fire department for 29 years. "We're all firefighters from the beginning, but to pilot a boat like this is a thrill. The automation is unbelievable. Between the pumping power and maneuverability, the boat is twice as fast as anything we've had before and gets us where we need to be in a hurry."

1 In the engine room of the *Three Forty Three*, four MTU 12V4000 M70 diesel engines deliver propulsion and pumping. The Callosum ship automation system (blue boxes) controls the entire propulsion system and displays the information on one of four touch screens throughout the vessel.

2 "The most technologically advanced fireboat in the world" protects the Port of New York and surrounding waterways. Powerful MTU engines deliver low lifecycle costs and environmental benefits.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### Complete package includes control and monitoring

A key element in the vessel's overall performance is the MTU Callosum control and remote monitoring system, a modular system that enables the crew to monitor the power plant and propulsion system in addition to most other systems throughout the ship. MTU BlueVision engine controls interface with the Callosum system.

"The controls and monitoring system complete the package we were able to deliver, which was an important benefit for the fire department," said Ken Houle, marine sales manager for Stewart & Stevenson Atlantic in Lodi, New Jersey, the area distributor for MTU. "This comprehensive system not only controls the engines, it controls the entire propulsion system and displays the information on one of four touch screens throughout the vessel. Among other advantages, this means a third-party monitoring system wasn't needed, which saves space in the wheelhouse and simplifies overall boat operation."

*"We are committed to training to help transition from older technology to state-of-the-art technology."*

**Ken Houle**
Marine sales manager, Stewart & Stevenson Atlantic

For example, the Callosum system automates control of the Hundested variable pitch propellers. "The pitch of the blades changes based on throttle position," said Houle. "We programmed them so that the pitch and throttle work in conjunction; the operator does not have to control engine rpm and pitch separately."

In addition, the modular Callosum system includes a vessel security system for monitoring the boat's unique pressurized HEPA-filtered air chamber, which protects the crew from chemical, biological, nuclear and explosive agents. The monitoring system monitors doors, vents, stairwell dampers and other components.

Besides the monitoring and control and vessel security modules, the Callosum system provides an electronic diagnostic program that constantly monitors all propulsion-related processes. Each module features three-click technology, which means that every operation can be accomplished with no more than three clicks—a particularly important function on a fireboat where quick decisions are the norm.

### Commitment to the project

"We have been working closely with the fire department since planning for the boat first began," said Houle. "Both Rolls-Royce and Stewart & Stevenson Atlantic are committed to working with the shipyard by providing support for installation and operation on-site; now that the boat is in the commissioning phase, we are committed to training to help transition from older technology to state-of-the-art technology."

Upon completion of crew training, the *Three Forty Three* will begin patrolling the waterways in and around New York City. For many years to come, the *Three Forty Three* will fight New York's fires—and will also remind New Yorkers of the brave members of FDNY who made the supreme sacrifice the day the Towers fell.



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