What is Oily Water Waste?
Oily water waste is water that has been contaminated by oil. Besides containing oil, oily water waste might also contain solids, silt, metal particles, emulsifiers, cleaners, soaps, solvents, and other residues.

The disposal of oily water waste is heavily regulated by MARPOL Annex 1 and every ship must follow these guidelines for proper disposal of oily water waste.

- Oil and all oily mixtures be retained on board for on shore disposal
- Proceeding en route
- Oil content must be less than 15 parts per million
- Oil discharge monitoring and control system and oil filtering equipment needs to be operating

**Oily Water Waste Injection Systems**
Marine Engineering Technology, Texas A&M University at Galveston, Undergraduate
Authors: Tyler Gibson, Josh Lentz, James Riggs, Daniel Rowland
Faculty Advisor: Dr. Rudy Martinez

**Abstract**
This project is an attempt to dispose of oil contaminated water found in the bilge water of freshwater vessels through injecting the water into the combustion chamber. It is commonly believed that water in the combustion chamber of any internal combustion engine will damage it by removing the film oil lubricating the cylinder wall. The benefits for injecting water into the combustion chamber of diesel engines include:

- Lower NOx emissions
- Lower particulate matter emissions
- Lower SOx emissions
- Increased engine longevity

Despite the common belief that any water in the combustion chamber is bad, the benefits for proper water injection are internal combustion engines have been implemented in the design of industrial engines, and is also available in the form of modification kits for personal transportation vehicles.

**Engine and Water Injection Specs**
- 5.9 Liter Diesel Cummins
- Inline 6 Cylinder
- Bore: 4.02 in
- Stroke: 4.72 in
- Turbocharged
- 325 HP at 2900 rpm
- 460 lb-ft at 1600 rpm
- 17.5/1 Compression Ratio
- Injection Rate is 175 ml/min or 2.8 GPH
- Fuel Flow: 11.5 GPH

**Estimated NOx Reductions**

**Acknowledgements**
- Dr. Martinez - Senior Lecturer - Texas A&M University at Galveston
- Clayton Stegall - Shop Owner