

Contributed By Harmsco

Filters Help Preserve Shipwreck

Harmsco filters provide maximum performance for ship's excavation.



To most people, water clarity is important, but the nautical archaeologists at Texas A&M University know that to rebuild a 300-year-old ship, it is essential.

Rene Robert Cavelier, Sieur de La Salle, was a French trader and explorer who also started the first European colony in Texas. In 1682, he had traveled the length of the Mississippi River and claimed the territory for France. Ultimately, this land was the subject of the Louisiana Purchase in 1803. La Salle left France again in 1684, and returned to the New World with four ships. One of his ships, the *Belle*, ran aground and sank in the Gulf of Mexico in 1686.



The *Belle*, a small 17th-Century French frigate, was discovered in July 1995 in Matagorda Bay, Texas, in 12 feet of water. Approximately one-third of the ship had survived. A cofferdam was constructed around the ship and water was pumped out, exposing the *Belle*. In 1997, the Texas Historical Commission completely excavated the ship and then brought the remains in more than 400 pieces to the Texas A&M University Conservation Research Laboratory for conservation as well as to reassemble the ship and preserve several thousand artifacts.

The delicate nature of the waterlogged wood meant it could not be allowed to dry out. For two years archaeologists carefully pieced the remains of the ship back together in a concrete tank 60 feet long by 20 feet wide by 12 feet deep that contained more than 100,000 gallons of water.

An elevator platform was built to allow the ship to be reconstructed in and/or out of water as necessary and to keep the ship submerged when it wasn't in use.

When it was time to plan the water treatment, several things came under consideration including the staff's safety within the water and the wood's preservation. It would be critical for the water to be kept free of particulate to allow for maximum penetration of polyethylene glycol (the conservation solution) into the wood. The water also would need to remain free of algae and bacteria growth, which would cause a permanent discoloration of the wood and interrupt the preservation process. In addition, since the laboratory staff were required to be in the water with the ship, only mild sanitizing agents with low mammalian toxicity could be added to inhibit bacterial and fungal growth.

This is when Harmsco, a filter manufacturer and filtration engineering company, was brought in. Harmsco

provided four Hurricane 170 filters, 5- and 20-micron cartridges and several hours of technical support. With the ability to filter 175 gallons per minute (gpm), the laboratory's pumps now cycle all the water in the vat through the filters twice during a 24-hour period.

In the end, the system made it possible to obtain maximum performance during the entire delicate process.

"This shipwreck is spectacular, and to see her underwater with this much clarity, we couldn't be happier," notes Kim Jobling, project manager and

research associate at Texas A&M University. "We are excited that Harmsco was able to join the team and provide its filtration engineering and technology experience."

The preserved hull eventually will be partially disassembled and shipped to a museum where it will be displayed. **WQP**

About the Contributor
Harmsco is a manufacturer of filters and filtration equipment.

For more information on this subject, write in 1011 on the reader service card.

Location: *Belle*, a 17th Century French frigate in Matagorda Bay, Texas.
Problem: The water storing the ship must be free of particulate, algae and bacteria and may contain only chemicals safe for the staff to work in. Water also must be kept particulate-free in order for the conservation solution to work properly.

Solution: Harmsco Hurricane 170 filters.

Results: The ship's wood is preserved and staff members are able to work inside the tank without the worry of strong chemicals. Also, bacterial and fungal growth is inhibited and particulate is minimized, creating clear water.