

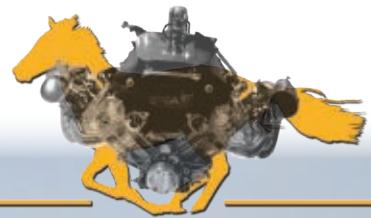
# 2012 NEWSMAKER OF THE YEAR

## INNOVATIVE USES OF HORSEPOWER



+ Technology Of Clean Air  
+ Hydraulic Horizons

# Innovative USES OF HORSEPOWER



Triton Logging's new Sharc underwater harvester can reach submerged trees in relatively shallow lakes, depositing them in floating bunks for transportation to a mill.

## HARVESTING UNDERWATER FORESTS

New diesel-powered harvester helps logging company claim sunken treasure

BY CHAD ELMORE

Using specialized machinery developed in-house, Triton Logging has become a significant source of some of the world's most sustainably harvested lumber, milled from trees that have not experienced the miracle of photosynthesis in more than 50 years.

In Ghana, vast forests ended up on the bottom of a 250-mile-long lake when the Volta River was dammed in the 1960s. Volta Lake is now the world's largest reservoir, with a surface area of 3283 square miles. Two years ago Triton, based in Saanichton, B.C., Canada, won a 25-year concession on 1351 square miles of the lake to remove dead trees and harvest what it could.

Many of the tree species in the lake are quite valuable, such as odum, sapele and ebony. Submerged logs are kept in an anaerobic state, where

the lack of oxygen hampers decomposition and preserves wood in near-perfect condition.

"The industry of underwater harvesting is relatively new," said Sean Helmus, controller, Triton Logging. "When they built these dams 50 years ago, overharvesting forests was not an issue. And in a lot of cases dams were put in areas that had been completely inaccessible to loggers, but with water now covering the forests we can get in there and claim wood that would have been lost."

The company was founded in 2000 by a man who got his feet wet salvaging logs that sank years ago during timber operations. After seeing a submerged forest, he believed there was more value in old stands than sunken logs. But underwater logging on the scale the new company

anticipated required that it design a special suite of tools.

Triton's latest underwater harvester is the diesel-powered Sharc, which can harvest standing timber in water up to 80 ft. deep, important for tropical waters that can hold valuable hardwood. "We have one Sharc in operation in Ghana right now, and there's a second one in the country that will be operational by the end of the year," Helmus said.

The Sharc is a barge-based harvester designed to cut and collect timber down to 80 ft. below the surface. At the center of the Sharc is a modified 91,000 lb. Caterpillar 330D FM forestry excavator with a Cat C9 diesel engine rated 268 hp. Triton purchased the machine from Finning Canada, although the harvester's patented design could use any brand of excavator.

*continued on page 36*



Both barge and boom are powered by a Caterpillar C9 diesel engine. One engine is in the Caterpillar 330D forestry machine, the other in a power unit driving the barge.

The excavator is mounted to a purpose built, sectional barge propelled by three pods, which are powered by a separate Caterpillar C9 diesel power pack mounted on the barge. From his seat in the excavator, the Sharc operator can fully control all harvesting activities as well as pilot the barge from tree to tree. While the operator focuses on harvesting the tree, integrated control systems keep the Sharc stationary using GPS coordinates.

The working end of the Sharc is a grapple and saw mounted to an extendable boom. The grapple holds the tree when it is cut, then lifts the tree to the surface where it is placed on a floating bunk.

"The operator controls the excavator's boom movements as well as those of the barge from within the cab of the Cat," Helmus said. "The barge moves to the correct location using sonar and GPS, which also controls the barge's three props to keep it in position without dropping an anchor. Multiple monitors and warning lights give the operator a clear view of what's happening on the barge as well as underwater."

The barge was built to Triton's requirements by Alberni Engineering, a shipbuilder in Port Alberni, B.C. "The barge is sectional so we can take it apart and ship it overseas easily," Helmus said. "It also holds all of the cabling, fuel tanks, and props.

When it comes to shipping, the excavator is a roll on/roll off unit, which is expensive but a lot of people have done it. We would have a really hard time shipping a full barge."

The excavator can drive off the barge for maintenance, but the crew tries to do that as little as possible to save time and money. Otherwise, it could spend its entire working life on the barge.

The Sharc joins the Sawfish in Triton's arsenal of underwater logging equipment. Developed 10 years ago for the deep reservoirs found in British Columbia, the Sawfish is a tethered, electric-over-hydraulic, remote-operated vehicle that's the size of a minivan, with a 55 in. chainsaw to harvest trees 328 ft. below the surface. Because waterlogged wood does not float, the Sawfish attaches and inflates air bags that lift the cut logs to the surface for collection.

In creating its own harvesting equipment, the company believes it has a decided advantage. "Our competitors are divers with chain saws," Helmus said. "They can compete on small projects, but for large-scale commercial harvesting opportunities, they just don't have the speed or the scalability that our machines have. And they're definitely not as safe."

Volta Lake is very large, but it's not the only reservoir hiding valuable lumber. A registry maintained by the Paris-based International Commission on

Large Dams puts the total number of dams higher than 15 m (49 ft.) at 37,641 worldwide. Triton estimated that means hundreds of millions of valuable trees.

Triton is not interested in selling its machines to would-be competitors, however. "From the beginning, the concept was for Triton to be an end-user of equipment," Helmus said. "But the business actually got started with Triton as an equipment developer. We don't sell the harvesting equipment we develop, and we have no intention of doing so."

As new opportunities open up, Triton Logging will build more machines, Helmus said. "Brazil is another big opportunity for underwater logging due to the value of its wood and all of its reservoirs."

A new revenue stream opened this past September. Triton Logging worked as a consultant for a mine in British Columbia that needed to clear trees with no commercial value from the surface of its tailings pond. "We worked with their guys to modify their own barge and excavator to do the work, creating a short-term solution," Helmus said. "It was a neat project that we hope we can turn into a new line of business. We have completed consulting projects for Puget Sound Energy and Rio Tinto using our own equipment, but this is the first time we've been able to do something like this using standard equipment available anywhere."

While underwater logging can bring valuable wood to market, there is another important benefit. The trees can be a hazard in Volta Lake. The lake is busy with private boats and state-run ferries, and the submerged forests have proven deadly. *The Ghanaian Times* reported in May that 10,000 trees had already been removed by Triton, clearing one ferry channel, and of those half were sent to a lakeside mill run by the firm's subsidiary. The wood is sold locally and exported around the world. **dp**

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