

FLOATING TO THE RESCUE

Briggs & Stratton engine provides the power for Neoteric's newest rescue hovercraft. By **Mike Brezonick**

Each year in the U.S., nearly 8000 people drown after falling through the ice on frozen lakes, ponds, rivers and streams. Rescuing someone from that predicament often involves ladders, poles and ropes and it's an often chancy proposition in which would-be rescuers can end up needing to be rescued.

But an Indiana company has developed a solution to ice and other difficult rescue scenarios. Neoteric Hovercraft is a 62-year-old company founded in Australia that moved to Terre Haute, Ind., in 1976. Most recently, the company launched a two-person hovercraft targeting primarily rescue and recovery operations that is powered by a Briggs & Stratton Vanguard V-twin marine gasoline engine.

"When we originally started manufacturing hovercraft in the U.S., we were using Volkswagen flat-four engines," said Chris Fitzgerald, president, CEO and one of the co-founders of the company. "They were very heavy and we gradually went away from them because of the weight.

"Hovercraft are flying machines and the only thing you can put in a hovercraft that doesn't weigh anything is nothing. Everything you put in there, you've got to lift. So weight is always a concern."

B&S SUPPORT KEY

After VW, the company has mostly utilized two-cycle aircraft engines imported from Hirth in Germany. "We went to the two-cycle because of the high power-to-weight ratio," Fitzgerald said. "But we decided to revisit the concept of using a four-cycle engine because of the

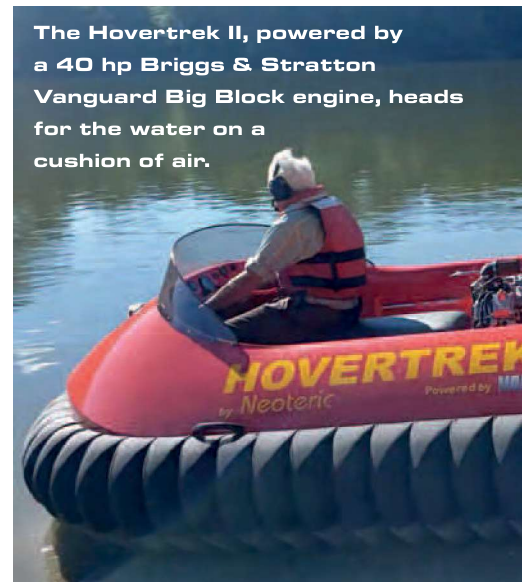
cost and the environmental aspects – a four-cycle is not as polluting as a two-cycle."

What ultimately brought the Vanguard marine engine aboard was the extensive Briggs & Stratton support network. "There are customers that need the technical support that companies like Briggs can provide," Fitzgerald said. "Hirth is a smaller company and doesn't really have the kind of technical service network Briggs has. Those were some of the advantages we were looking for in using this engine."

The Briggs & Stratton engine used in Neoteric's newest Hovertrek II hovercraft is a two-cylinder, air-cooled 993 cc Vanguard Big Block gasoline engine. Incorporating a mostly aluminum construction, the engine weighs 125 lb. while delivering 40 hp (30 kW) at 4200 rpm.

The engine drives a Wingfan 28 in. (711 mm) diameter, nine-blade 45° axial fan through a transmission system that incorporates a centrifugal clutch that connects to the fan shaft through a Gates PolyChain carbon fiber belt. The system

The Hovertrek II, powered by a 40 hp Briggs & Stratton Vanguard Big Block engine, heads for the water on a cushion of air.



delivers a fan speed of 2840 rpm.

The fan provides the airflow to both inflate the hovercraft skirt and provide vertical lift as well as directional thrust.

"This is what's called an integrated hovercraft where one fan does both the thrust and lift," said Fitzgerald. "Typically, one-third of the total air volume – or one-third of the horsepower – goes into the lift system. That's just using a simple splitter in the thrust duct. It splits off one-third of the airflow and that airflow is constantly going underneath the craft."



Neoteric Hovercraft President and CEO Chris Fitzgerald [center of photo] explains how the Hovertrek II can be used for rescue and recovery duties.

SIMPLE MANEUVERING

While most of Neoteric's hovercraft incorporate thrust-reversing buckets to aid in braking and maneuvering, as the smallest and most basic machine in the Neoteric lineup, the Hovortrek II relies on a cascade of rudder blades to steer and



PHOTO: NEOTERIC

change direction.

"Many years ago, we started the development of the reverse thrust system and it does give you the ability to control your speed, especially in wind," Fitzgerald said. "But because of the additional cost and weight of the reverse system, we've left the reverse thrust system off.

"But without reverse thrust the craft is still very useful, because if you consider a typical rescue scenario, especially over ice, ice doesn't require very much thrust as there is little resistance to forward motion, allowing this craft to perform really well on ice. To stop, the craft can be pirouetted 180° and full thrust applied for braking."

The Hovortrek II is 12 ft. (3658 mm), expanding to 13 ft 8 in. (4166 mm) with the skirt inflated. The body is constructed of hand-laid fiberglass composite urethane foam core designed to provide a rigid, durable and buoyant craft that, at just under 600 lb., can be carried by four people.

The craft, which is steered through a

handlebar assembly, is designed for two people and a 5 gal. fuel tank provides approximately 1.5 hours of operation.

"A fire or police department can use this as an entry-level machine," Fitzgerald said. "Two firefighters can go out and do a rescue. If they're wearing flotation suits, one of the rescuers enters the water and helps the victim into the craft. Then the other firefighter hovers the victim back to shore and then goes back and recovers his or her partner."

OTHER USES

Beyond rescue, the Hovortrek II can be used for a range of other recreational and professional applications, Fitzgerald said.

"The applications are as broad as you can imagine," he said. "It's a very practical, inexpensive, entry-level machine that can be used to save lives, provide pleasurable experiences and perform industrial tasks that no other vehicle can achieve."

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