

VICTORY TEAM – DUBAI

Throttling up the development of high-speed powerboats with SolidWorks software



SolidWorks software provides Victory Team with the collaboration tools it needs to maintain its competitive edge.

The roaring engines, blinding speed, and adrenaline-pumping excitement of high-speed powerboat racing make it one of the more intense competitions on earth. Pitting two-man crews—a driver and a throttler—and 42-foot-long boats with twin 900-horsepower engines against each other, Class 1 offshore powerboat racing features a host of international teams that strive to gain a competitive edge. Like racecars, powerboats must adhere to a set of strict design requirements. Winning teams are those that can combine talented racers with skilled boat engineers to optimize performance.

One of the most successful teams in the history of powerboat racing, Dubai-based Victory Team realizes that it must continue to improve its boat development processes by leveraging advanced technologies to produce reliable powerboats that consistently win. To sustain its reign as world champion, the team decided to upgrade the AutoCAD® 2D software it once used to a 3D CAD package, according to Edmond Hussein, head of the technical office for Victory Team.

“We wanted to standardize on a single 3D CAD system to accelerate the development of assemblies, improve visualization, and eliminate production issues,” Hussein notes. “We believed that having all of our designers and engineers working on a single 3D platform would enhance communication, encourage collaboration, and enable each of us to work from our strengths.”

The racing team benchmarked two 3D CAD applications—Pro/ENGINEER® and SolidWorks®—against each other before choosing SolidWorks Premium. Victory Team chose SolidWorks software because it is easy to use, represents a better value, and has a very active user community.

“We spent a lot of time researching the packages and contacting companies that use them,” Hussein recalls. “SolidWorks software is simply the best package for us. It’s a lot easier to use—and with all the modules included with SolidWorks Premium, it gives us the capabilities we need at an attractive price.”

Challenge:

Maintain the team’s high-speed powerboat, championship-winning position by pushing and optimizing boat performance within tight development cycles and specific design requirements.

Solution:

Implement SolidWorks 3D design, analysis, and motion simulation software to optimize hydrodynamics and aerodynamics, improve weight-to-performance ratios, and boost overall performance.

Results:

- Shortened design cycles by 25 to 30 percent
- Reduced time to manufacture a race-ready boat by 15 percent
- Realized fewer failed prototypes
- Increased project throughput

Reducing design time

Since implementing SolidWorks software, Victory Team has cut its development cycles by 25 to 30 percent, primarily due to faster modeling times and improved internal communications. "The level of collaboration that we can achieve with SolidWorks software has become a real advantage," Husseini explains. "We have found SolidWorks software is so easy to use that we are able to complete more projects in the same time window. In fact, we have convinced many of our suppliers to move to SolidWorks software as well."

Husseini adds that the associated move to SolidWorks software by many of the team's vendors has minimized production problems related to file incompatibility. "When we send 3D files to our machine shop, we encounter many fewer production issues compared to 2D," he says. "We need to spend as much time on the water as possible, and less time developing the design and working in the shop. With SolidWorks software, we have cut the time it takes to produce a race-ready boat by at least 15 percent."

Achieving consistent quality

Using SolidWorks Simulation and SolidWorks Motion, Victory Team has reduced design errors, improved quality, and increased the group's understanding of the physical behavior of the boat, critical assemblies, and components.

"With Collision Detection, we have improved the quality of our propeller and power train assemblies," Husseini says. "SolidWorks Simulation allows us to assess how well parts of the boat will sustain the stresses of racing, while SolidWorks Motion enables us to conduct torque and acceleration analyses. All of these tools have contributed to having fewer failed prototypes since moving to SolidWorks software."

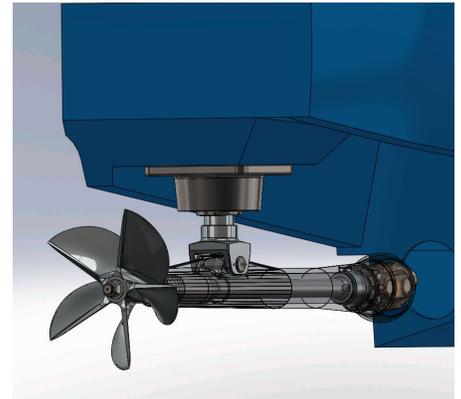
Visualization drives innovation

For Victory Team, an important benefit of 3D modeling in SW software is the greater understanding that engineers gain regarding the physical forces at work.—In turn, this knowledge leads to design changes that produce innovation. From optimizing the boat's hydrodynamics and aerodynamics to improving its weight-to-performance ratios, SolidWorks software provides the design visualization tools the team's designers need to advance the state of the art in powerboat design.

"We are currently in the process of modeling the entire boat assembly in 3D," Husseini points out. "Once that is completed, we will be able to accurately correlate the boat's center of gravity with the model's center of gravity, opening the door to using weight distribution and moments of inertia as means for delivering more performance. The goal is to reduce lap times while improving reliability. SolidWorks software gives us the tools we will need to continue winning championships in the future."

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Edmond Husseini,
Head of Technical Office



With SolidWorks software, Victory Team engineers gain a greater understanding of the hydrodynamic and aerodynamic forces at work.



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