

MARINE TECHNOLOGY REPORTER

July/August 2015 www.marinetechologynews.com

10th Annual

MTA
1000



Start-Up of the Year

Blue Robotics Inc.



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 CEO/President: **Rustom Jehangir**
 No. of Employees: 4
 Annual Sales: **\$360,000**



The T100 Thruster
 won the **“Cool Idea Award”** from Proto Labs in April 2014

Blue Robotics – operating out of a garage but planning to move into a new 1500-sq. ft. space – was founded in 2014 by Rustom “Rusty” Jehangir, Joe Spadola, and Josh Villbrant – young engineers who, when working on a marine robotics project, had trouble finding affordable thrusters. Searching for solutions, they found the need for affordable thrusters was prevalent across the industry.

The trio came up with what it calls a unique and capable design, a design which won the Cool Idea Award from Proto Labs in April 2014, covering the cost of its injection molding tooling. The company launched the T100 Thruster through a Kickstarter crowdfunding campaign in August 2014, raising \$102,000 over a 30 day period.

By November 2014, it had shipped its first batch of thrusters, and since then, the company reports it has shipped more than 800 thrusters and sold more than 1200 thrusters, serving a broad range of customers, from middle school MATE teams to researchers at Woods Hole Oceanographic Institution, in 25 counties.

It released new products, including the T200 Thruster and the BlueESC, in April 2015, and there are a number of other products in development for 2015.

The Big Picture

The team’s long term goal is to become the definitive source for marine robotics parts, components, and supplies

to the student, hobbyist, and low-end commercial market, spurring innovation and new technologies. The technology is based around a three-phase brushless motor like you’d find on a model aircraft or drone. The motor was designed from the ground up for use in water. The motor windings themselves are designed for low-speed operation suited to a propeller in water. The windings are protected from corrosion with a multi-layer protective coating. The typical steel bearings were replaced with high-performance plastic bushings designed for use underwater. This eliminates the need for lubrication and leaves the thruster with a single moving part.

The structure of the motor is built entirely of injection molded plastic that is UV resistant. Because the motor is completely immersed in water, there are no enclosed air or oil cavities, eliminating traditional pressure limitations. To date it has tested the thrusters to maximum depth of 3000m with no damage. The expectation is to operate at even greater depths with no issues.

It also developed an electronic speed controller that is waterproof, water-cooled, and designed to mount directly to the T100 and T200 thrusters. An electronic speed controller (ESC) is required to operate the brushless motors. It is highly compact and offers a digital communication interface to minimize the number of wires that must pass through the vehicle hull.