Testing New Waters: Maritime Industry Adopts 3D Printing for Ship Models and Parts

Raise3D Case Study
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Maritime Industry Additive Manufacturing Applications

Designing a yacht is as hard as it sounds. Quite like the sailors tinkering on their vessels, Naval Architects and Designers spend hours perfecting designs that not just appear beautiful, but are safe and weather-worthy. To complete such a difficult task, many different designs need to be tested to determine the ideal design features and scale. Brazilian naval ship and yacht model-maker, Carlos Eduardo Mariano of Atelier Naval **adopted additive technologies like 3D printing**. This model architect now uses Raise 3D printers to help create models that closely resemble the final product for yacht companies like Intermarine or the Brazilian Navy.

Rapid Prototyping Using 3D Printing: Better, Faster, Cheaper.

3D printing applications have changed the way we design and produce architectural scale models, enabling industrial-level dimensional accuracy while printing highly complex geometries. Did we mention better, faster, cheaper? Only by using 3D Printing Additive Technology, Carlos has accomplished a faster turnaround of the model, building multiple iterations and options while increasing complexity and detailed features of the objects produced.

3D Printing for Customized Products

Before incorporating the **Flexible Manufacturing** technology used by Raise3D, Carlos was using the CNC machining process to create these designs, an arduous and complicated process. First, the hull, deck, and superstructure were made with a polyurethane resin, then the windows and floor were laser cut. Finally, the remaining hardware would be added using brass or stainless steel. Not only was this process complicated, but it was also limited – certain angles, sharp corners, and edges could not be created this way. While traditional manufacturing methods are still great for mass production, Additive Manufacturing with 3D printing is far superior and cost-effective for creating small-scale, customizable objects.

WHILE TRADITIONAL MANUFACTURING METHODS ARE STILL GREAT FOR MASS PRODUCTION, **ADDITIVE MANUFACTURING WITH 3D PRINTING IS FAR SUPERIOR AND COST-EFFECTIVE FOR CREATING SMALL-SCALE, CUSTOMIZABLE OBJECTS**

The combination of a Raise3D's large volume enclosed build chamber and the ability to use PVA water-soluble support material thanks to electronic dual extruders allowed Carlos to take full advantage of the benefits of Flexible Manufacturing. Not only does the 3D print have to be dimensionally correct and appealing to look at, but it also has the requirement to function as a perfect replica. Since switching his prototype production methods, Carlos has been able to provide a clear representation of these yachts to the public.

Maritime Application with Raise3D Printers – No Tinkering Required

After creating a CAD file using a 3D design software, he uploaded the file to Raise 3D's patented slicing software ideaMaker to establish the print settings and determine how to assemble all the various pieces. Then, he created all the individual pieces of the hull and structure out of PLA. The swappable dual extruders support dual color prints (as shown) as well as an unmatched resolution that translates to a beautiful, smooth finish on the miniature ships. Lastly, he used adhesives and solvents to weld all of the individual pieces together during the assembly process. Using Raise 3D printers freed Carlos up to focus on what matters most: getting the model designs out the door fast and kept 3D printed prototypes cost-effective for maximum ROI.

To see more of how Carlos used Raise3D printers to complete this project visit:
https://ateliernaval.wordpress.com/2017/05/06/impressao-3d/

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For more information about Raise3D printers and services, browse our website, or schedule a demo with one of our 3D printing experts.