

# Caracol

## Large Format Robotic Additive Manufacturing

### APPLYING ROBOTIC LFAM IN THE PRODUCTION OF PERSHING GTX116 AERODYNAMIC GRILLES

February 2025

Industry: Marine

Material: ASA GF

Technology: LFAM



Produce by Pershing, one of the seven brands of Ferretti Group, the yacht Pershing GTX116 leverages LFAM technology for some of its main superstructures: air grilles and visor above the windshield are additively produced with the Heron AM system to achieve aesthetically interesting geometries with reduced weight and delivering groundbreaking innovation in the manufacturing process of this vessel.

In the luxury yachting industry, innovation in materials and manufacturing processes is critical to ensure high performance, exclusive design and reliability. Ferretti Group, a global leader in the design, construction, and sale of luxury motor yachts and leisure boats, chose to commission Caracol for the realization of the first 3D printed air grilles for the Pershing GTX116, as part of its new range of sports yachts combining elegance, comfort space and the signature Pershing thrill.

Pershing GTX116 is a 35-metre yacht, with a sporty nature yet elegant style, and an extreme livability to elevate the seagoing experience to a new dimension. This sporty yacht optimizes all onboard weights to achieve high performance.

The application of Caracol's Heron AM platform demonstrates how large-format additive manufacturing can effectively be used to revolutionize yachting and luxury boat production, enabling the fabrication of complex superstructural parts with intricate geometries. In this project, Heron AM manufactured key elements, including side air intake grilles and visors, demonstrating its capability to deliver high-performance, customized solutions for the luxury yachting industry.

### **From Traditional Manufacturing to Additive Manufacturing**

Yacht air grilles and other superstructures are traditionally produced through manual lamination of fiberglass on molds. This process requires multiple molds depending on the complexity of the geometry and involves intensive manual work by highly skilled labor, impacting both production time and costs.

In contrast, large-format 3D printing eliminates the need for master molds and tools entirely, streamlining the production process. With Heron AM, composite components featuring intricate geometries and highly customized designs can be produced directly from the digital model, bypassing the manual lamination phase. This significantly reduces prototyping and production times, enabling rapid iterations and design optimizations. Moreover, the process only requires finishing operations such as gel coat application, further cutting down on labor-intensive steps.

Heron AM also enables the use of lightweight yet strong materials, improving component performance while reducing material waste, making the process more sustainable than traditional methods. Its flexibility allows for small-batch or fully customized production, catering to the specific needs of each project.

### **The Additive Manufacturing Process and its Benefits for Pershing GTX116 Air Grilles**

System: Heron 300

Extruder: High Accuracy (HA)

Nozzle size: 3 mm

Material: ASA + 20% GF

Printing time: 72 hrs.

Weight: 40 kg

Size: 4200 x 400 x 400 mm

Finish: Gel coat to ensure weather resistance and flawless aesthetics

The adoption of 3D printing technology to produce yacht air grilles has brought significant advantages over the traditional production methods. LFAM has optimized production processes, improving not only efficiency but also sustainability and the quality of the final product. The main benefits found include:

Reduction in lead time: 50%

Reduction in scrap: 60%

Reduction in weight: 15%

### **Future Developments of LFAM in the Marine Industry**

The adoption of additive manufacturing is proving to be a key strategy for the marine industry, enabling the production of highly complex and tailored components, optimizing manufacturing processes and reducing time-to-market. In this context, Caracol's Heron AM technology emerges as a cutting-edge solution, capable of delivering excellent performance and greater versatility than traditional methods.

In this specific project, the quality and flexibility of Caracol's robotic platform have led to shorter lightweight air grilles production time, improved efficiency and reduced material waste, with a positive impact on both costs and the environment. Heron AM technology has proven to be not only a valuable ally in making lighter and stronger structural components, but also a catalyst for innovation, opening new perspectives in the design and production of unique and highly customized yacht superstructure.

