



Sunseeker Track' Down FARO® and 'Project' a Quality Image

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FARO Laser Tracker is set up to inspect the key positioning of components on the boat's hull.

Within the demanding marine sector, the accurate positioning, alignment and assembly of components, especially larger, cumbersome elements such as boats' hulls, is a regular and often challenging requirement. Famous superyacht builder, Sunseeker has eliminated the difficulties associated with these tasks following the recent purchase of two complementary, laser-based technologies from FARO UK. The cutting-edge FARO products have enabled Sunseeker to significantly reduce its build times and to further develop the company's renowned quality standards.

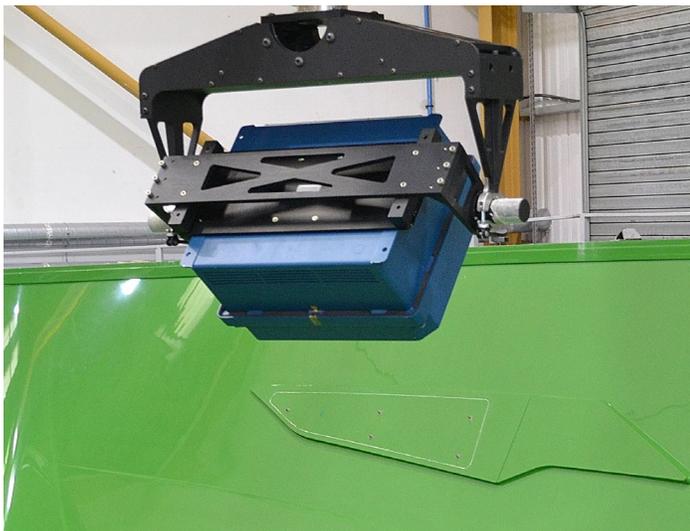
Examples of Sunseeker's celebrated luxury yachts can be found throughout the world's seas and harbours. Characterised by their stunning appearance, superb levels of luxury and outstanding performance, the famous company's boats are a product of Sunseeker's progressive design capabilities, the application of first-class craftsmanship, and the use of advanced materials and technologies. In order to remain at the technical cutting-edge of the boat building industry, the Poole, Dorset-based company's management continuously searches for innovative new production and inspection aids. For example, given his extensive Indy-Car and Formula 1 design experience, Sunseeker Composite Development Manager, Stuart Jones, was aware of the many advantages FARO's laser-based technologies deliver across various classes of global motor-sport. Therefore, he was confident that FARO products could provide Sunseeker with improved levels of speed and precision throughout all stages of each boat's build. A successful on-site demonstration of a FARO Vantage Laser Tracker and a FARO Tracer Laser Projection System validated Stuart Jones' opinion. Put through its paces in the presence of a group of relevant Sunseeker staff, the advanced FARO equipment was able to prove its impressive accuracy and remarkable ease and speed of use. As the demonstration verified the FARO systems' ability to considerably reduce boat build times, a rapid return on investment was calculated and an order was placed for a FARO Vantage^E Laser Tracker, four FARO Tracer^M Laser Projectors, FARO's CAM2 software and FARO's BuildIT Projector.

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Now in daily use across a wide variety of tasks, as anticipated Sunseeker's advanced new FARO products are making a major contribution to the precision and efficiency of the company's boat building activities.

Stuart Jones explained the use of the company's new FARO Vantage Laser Tracker:

"Having previously utilised conventional, time-consuming means of measurement and inspection, we have made a quantum leap by using our advanced new FARO Vantage Laser Tracker. We are now able to rapidly and accurately capture the 3D base geometry of, for example, our superyacht hulls and our large composite components and ensure that they adhere to the designs generated with the help of our in-house design and manufacturing software. Once obtained, this data is then used by our four new FARO Laser Projectors to project a variety of key datums, templates and location positions onto our hulls, allowing the precise fitting of key components during build."



FARO Laser Projector projects templates to locate positions on the hull.

"Having successfully applied it to capturing the base geometry of hulls and large composite components, the ease of use, accuracy and flexibility of our FARO Vantage Laser Tracker, meant that within days of its delivery, we discovered a multitude of other uses for it. For instance, we found that as it was an extremely precise and effective coordinate measurement system, we could use the FARO Vantage to accurately compare

many other key components against their original software models. Also, because of its relatively low weight, portability and robust construction, we are now able to bring our FARO Vantage Laser Tracker to our suppliers to assist in problem identification and to then take the relevant rectification measures."

"As many of our parts have extremely tight tolerances, our tracker routines allow us to accurately detect and quantify any deflection or change in the geometrical shape of components such as hulls that could cause later assembly issues. The use of the precise data gathered by our Vantage Laser Tracker means that we are able to take early corrective actions and avoid more problematic issues later in the build process."

Ideal for large-scale 3D measurement applications, FARO's Vantage is a high-performance laser tracker that enable users to maximise productivity and reduce inspection cycle times by 50% to 75%. The advanced metrology solution significantly increases precision and speed across a range of applications including, assembly, alignment, part inspection, machine installation and reverse engineering. Compact, portable and robust, the FARO Vantage offers an array of class-leading features, including ActiveSeek™ technology that allows the laser trackers to find and follow the target, even after the user passes behind obstructions. In addition, the widest field of view in the industry gives the user complete freedom to move throughout a large measurement envelope.

FARO's 6th generation iADM - integrated Absolute Distance Measurement System ensures exceptional accuracy with a data output rate of 1,000 points per second. That means that the Vantage provides feedback for high-speed motion control and high-density scanning, making it ideal for automated applications.

The Vantage^S and Vantage^E series Laser Trackers are the only portable CMMs that measures angle and distance with a single, Class 1 (eye-safe) laser. Whilst measurement reliability is improved as errors and drift associated with two-beam tracker technology are eliminated.

Stuart Jones continued by explaining Sunseeker's purchase and use of the company's four new FARO Tracer^M Laser Projectors. "Having identified several key potential applications for FARO's Tracer^M, in an impressive

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practical demonstration of the laser projection system operating in these areas proved its high-precision and speed capabilities.

“We now use our Tracer^M Laser Projectors to project precise, virtual templates that enable datums to be marked. This process allows the very accurate location of critical components such as bulkheads, longitudinal elements, stringers and engine beds. The benefit of the use of the FARO projections are that we are able to quickly and accurately complete the ‘right-first-time’ positioning of these important features in all three dimensions. The precision we achieve in establishing an accurate, solid base at this stage of a boat’s build provides many benefits later in the process.”

“In addition to the accuracy benefits our Tracer^Ms have delivered to our build procedures, they have significantly reduced our build times. The installation of wire-loom located on our deck liners is a typical example of the time savings we have achieved. Previously two people would have manually marked out the cable routes with a tape measure and marked their routes with marker pens, returning later to then fit the looms in situ. Now, our Tracer^Ms project our wire-loom design model onto the deck liner surface and the cable mounts and looms are then fitted in one rapid, accurate procedure.”

“The fitting of our liners, which had previously been a bottleneck in the build, were subsequently reduced by two days. Added to this, the use of our laser projectors has been instrumental in avoiding problems such as cable pinching during final assembly.”

Our association with FARO has proven to be extremely productive. Not only have we been very impressed with the efficiency and precision gains we have made through the use of FARO’s technology, we have also been impressed with the levels of service we have received from FARO UK’s knowledgeable staff.”

Steve Efford

Sunseeker Manufacturing Engineering Manager

FARO launched the ingenious Tracer^M laser projection system with the intentions of removing the need for physical templates, increasing users’ precision capabilities, eliminating the risk of human errors and reducing the expensive delays associated with the alignment and assembly of large components. FARO’s Tracer^M uses customers’ existing 3D CAD models to project a 0.5mm wide laser line onto a 2D or 3D target surface or object, creating an extremely accurate virtual template that enables the fast, accurate positioning of components with absolute confidence. Users are able to rapidly create virtual and collaborative 3D templates that help to streamline assembly and production applications, improve productivity and enhance quality functions. The ingenious system features precise, variable and long-range projection capabilities that cover an envelope of up to 15.2 x 15.2 meters. For larger assemblies and for use in space-constrained areas, multiple Tracer^M projectors can be controlled from a single workstation to provide large-scale virtual templates within a single coordinate system. Advanced Trajectory Control (ATC) is used by the Tracer^M to deliver fast projections. ATC provides superior dynamic accuracy and a rapid refresh rate which minimises flicker.

The Tracer^M uses BuildIT Projector, an easy to use, intuitive software solution that is able to be operated by both knowledgeable or less experienced staff. BuildIT Projector is able to import native CAD from all major

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formats (CATIA, Siemens NX, SolidWorks, PTC Creo, AutoCAD DXF/DWG, etc.). The software's capabilities cover the creation of the projections together with the configuration and operation of the projectors and their alignment features.

Sunseeker Manufacturing Engineering Manager, Steve Efford concluded. "Our association with FARO has proven to be extremely productive. Not only have we been very impressed with the efficiency and precision gains we have made through the use of FARO's technology, we have also been impressed with the levels of service we have received from FARO UK's knowledgeable staff. For instance, through working closely with FARO's sales engineer, our staff have quickly become proficient in our new FARO equipment's use. With FARO's help we have been able to quickly develop a range of manufacturing methodologies that have improved our precision capabilities and also reduced our build times. For instance, by using FARO's large range scanner we have found we can capture data from boat moulds or hulls and have a full colour map of points all in under an hour."

"Every application we have used our new FARO equipment on has sparked new thoughts for additional tracking and projecting opportunities. To further exploit the potential of our new FARO equipment we are already working on several future projects."

Summary

A key requirement within the marine sector is to ensure the accurate positioning, alignment and assembly of components. This can prove challenging due to the components being larger in size. In order for Sunseeker to remain at the technical cutting-edge of the boat building industry they invested in both a FARO Laser Tracker and FARO Laser Projector. Following Sunseeker's investment they have maximised productivity and reduced inspection cycle times by 50-75% increasing overall precision and speed across a range of applications.

Four Good Reasons

- 1 Quick and efficient** - The FARO Vantage Laser Tracker is a portable CMM device that follows a moving target, even behind objects and/or obstructions by reconnecting as soon as the target is in view.
- 2 Reduced inspection cycle times for large scale 3D measurement** - FARO Vantage Laser Trackers optimise workflow productivity for large-scale metrology applications allowing users to maximise productivity and reduce inspection cycle times by 50% to 75%.
- 3 Accurate, variable and long-range projection** - The FARO Tracer^M Laser Projector variable focus allows multi-range projection from 1.8 to 15.2 meters.
- 4 Advanced Trajectory Control** - The FARO Tracer^M Laser Projector provides fast projection with superior dynamic accuracy and a rapid refresh rate.



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