

FARO® TrackArm

The most versatile 3D measurement and scanning system

FARO



Maximum size, accuracy and flexibility 3D scanning and measurement system

The FaroArm and Laser Tracker are two stand-alone portable CMMs that can be used independently or in combination to create the FARO TrackArm, a versatile portable 3D measurement system that brings together the long range and high accuracy capabilities of the FARO's Laser Tracker with the flexibility and consistency of the FaroArm (AACMM).

The **seamless combination** of these metrology devices expands the FaroArm's working volume, allowing it to be quickly repositioned anywhere within the Laser Tracker's measurement range, while remaining in the **same coordinate system** with a **single software interface**.

The Arm has a limited measurement range volume, typically up to 3,7m, but has **no line-of-sight restrictions** and can reach, locate and measure hidden geometric entities which are not directly visible from the tracker position.

On the other hand, the Tracker has a very **long and accurate reach**, necessary for the design and manufacturing of large objects.

The TrackArm system is therefore used for big, but very detailed/complex parts and components, which are difficult to measure with the Tracker – because of the line of sight – and too big for a simple FARO measurement Arm.

When used with a FARO Laser ScanArm (a FARO measuring Arm equipped with a Laser Line Probe), the Tracker is effectively provided with a **wide-area, surface-scanning capability** and the entire system is called FARO Track ScanArm. Users can exploit the advantages from each device (Tracker, Arm and Laser Line Probe) to create a maximum size, accuracy and flexibility 3D scanning and measurement system.



How it works

The FARO TrackArm uses a FARO Laser Tracker to re-position a FARO measurement Arm within the large working volume of the tracker. The Arm is equipped with an **attached retroreflector** like a second probing tip, and is moved to different positions around a large object from where it can access features of interest.

Before probing or scanning with the Arm, the **alignment** between the two systems has to be performed. This occurs as follows: Within a few seconds both Arm and Laser Tracker collect thousands synchronized point data of the Arm-attached retroreflector. The software calculates then the position of the FaroArms and reports the transfer accuracy as soon as the synchronisation has been done. From then on, all measurement data of the FaroArm will be collected automatically into the Tracker coordinate system. The software can then be used as usual to setup a part coordinate system that contains both Arm and Tracker measurements.

The Arm can also be seen as a long-reach probe (6DOF: 3 positions and 3 angular orientations) which the Tracker locates anywhere within the Tracker measurement range. Both Arm and Tracker are **wirelessly connected** to one laptop with one single software license and in the same coordinate system, so that users can measure anywhere using all the six degrees of freedom without having to worry about cables, sight lines or references.

FARO CAM2 Measure 10 **software**, InnovMetric PolyWorks or other third party software solutions handle the front end, while the Tracker and the Arm can operate seamlessly together allowing an unprecedented level of measurement flexibility.

Benefits

The seamless integration of a FaroArm and a Laser Tracker into a single portable 3D measurement system provides the **ideal combination of flexibility and accuracy for a complete and versatile large volume solution**.

The flexibility of the FARO measuring Arm makes it very easy to align it to the Tracker and measure real hidden entities hard to reach with other competitive systems on the market by probing or scanning within the Arm range.

Each device shares the same reference coordinate system allowing users to **instantly switch to the measuring system that is most suitable** (in term of position, execution speed and accuracy) **for the specific measurement task**.

Mobility is another important advantage related to TrackArm: in fact for its use the **device does not require a metrology room** with controlled temperature and humidity. An important difference compared to the fixed coordinate measuring machines, which supports additional usage possibilities.

The level of freedom is even higher when considering the **different mounting options** of the devices. In case of production plants, the Laser Tracker can even be mounted from the ceiling, which ensures good coverage of several work areas while it will only takes a few minutes to take it down and relocate it for a different measurement task.

Moreover the TrackArm is a **modular system**: the FaroArm/ FARO ScanArm and the Laser Tracker are stand-alone portable CMMs that can also be used independently and simultaneously for different jobs, what can be crucial to avoid bottlenecks at the production sites.

Finally, the TrackArm is very cost effective compared to other solutions available on the market, enabling large volume measurement at a **fraction of the cost of comparable systems** with the additional advantage of having two extra stand-alone portable CMMs, perfectly suited for specific tasks at the production sites.

Features

The FARO TrackArm presents several technical features that further optimize the measurement processes:

- The 6-Degrees-of-Freedom Probe that ensures **6DOF capabilities** with no line of sight limitations and no hidden point restrictions.
- TruADM Technology and the latest generation of TriMap encoders which allow the Tracker to reach a very high level of **accuracy***.
- The SmartFind function that supports **instant laser beam acquisition** on the Arm side: thanks to the MultiView cameras, the laser beam is recaptured automatically with the retroreflector.
- **Simple synchronization** of Laser Tracker and Arm by simply collecting points in space.

*For technical specifications please visit www.faro.com

Typical Applications

Leading companies within the automotive sector are using the FARO TrackArm to improve their measurement processes.

Due to distances and part complexity, the measurement processes of cars on a production line can become more efficient when a Laser Tracker and a measuring Arm are used jointly as a TrackArm solution.

Cars, car components or fixtures can be as big as 10 or 15 meters, therefore unreachable by an Arm alone. A stand-alone Laser Tracker can't scan surfaces or measure hidden entities without using several probes or adapters. Even the need to continuously change measurement position can be a very time consuming activity.

The TrackArm (Track Scan Arm) is therefore the ideal tool for interior (hidden points) and exterior measurements, the measuring of complete cars, car bodies, bodies in white, tools, fittings, fixtures, parts and components, cubings and master jigs during pilot and production phases.

Similarly other typical FARO TrackArm applications include measurements of large detailed machined parts, foundry parts or plant building.

Also in the aerospace industry the use of the TrackArm presents significant advantages if you need to measure big parts or components with hidden details.

For further information

Web: www.faro.com/trackarm
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