FARO Laser Scanner Focus^{3D}

The Leader in 3D Documentation

FARO®

FARO® Laser Scanner Focus^{3D} X 330

Being the leader in 3D documentation but following our customer's needs and expectations we decided to further develop the success story of the FARO Focus^{3D} "taking" the laser scanner outdoors.

Xtra range - 330 m

Due to the xtra-long range of Focus^{3D} X 330, laser scanning of high or long objects has become possible: bridges, dames, excavations, towers, pillars, cranes, facades – you name it.

Xtra scanning - even in bright sunlight

Xtreme flexibility to perform outdoor scanning projects every time, everywhere. Even in the brightest sunlight.

Xtra productivity

The laser scanner's xtra range greatly improves the user's productivity. Distant or large objects, excavations or objects in demanding outdoor terrain can be surveyed with fewer scans and therefore considerably quicker and more accurate than ever before.

Universal - indoor and outdoor measurements

Ideal for surveying, BIM, 3D documentation, construction supervision, reverse engineering, historic preservation or forensic crime scene documentation – thanks to its simple controls and compact design, the Focus^{3D} is ideally adapted to all sorts of applications.

Xpand your horizon!

Fast and exact indoor and outdoor measurements in three dimensions: Simply at your fingertips

FARO now offers an ideal solution for measurement every time, everywhere – no matter of time or location. New features such as xtra long range - 330m, scanning in full sunlight and integrated GPS make the Focus^{3D} X 330 user capable to perform eye-safe laser scanning especially in outdoor environments: surveying sites, construction, architecture, historical preservation or forensics.

FARO's laser scanner records up to one million measurement points per second and produces a precise, three-dimensional image of its surroundings. With suitable apps in FARO's 3D App Center this image can be analysed and imported into a wide range of software applications.

The fast and accurate laser scanner Focus^{3D} offers everything you might expect from a professional 3D laser scanner – with FARO's established and well-known level of simplicity.

Our brand new, highly convenient data sharing solution: SCENE Webshare Cloud offers the opportunity to easily and securely share your scan data for worldwide presentation and collaboration without the hassle of setting up and maintaining servers and software.

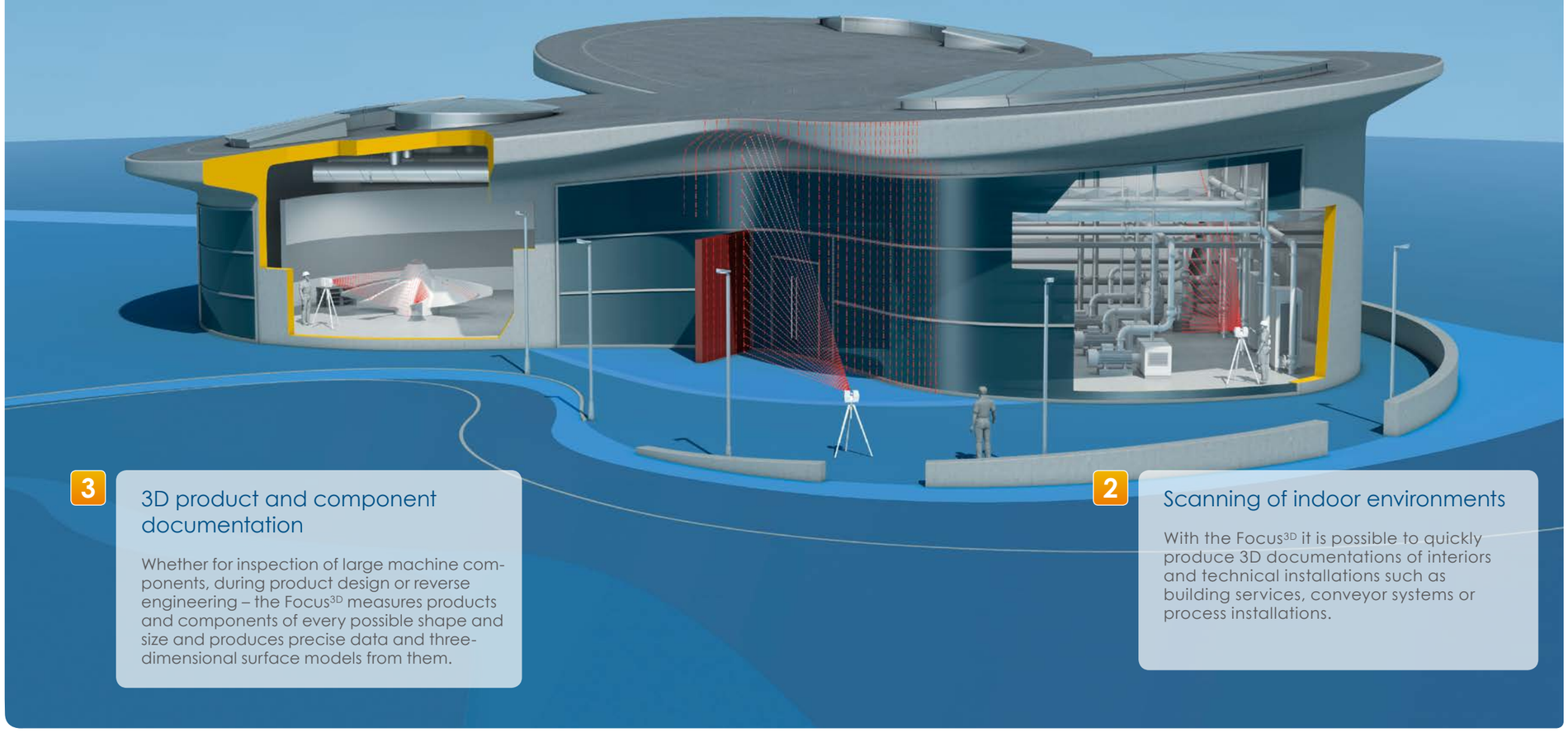
Xtra-Safe - with the best laser class

With the class "1" laser, the Focus^{3D} X 330 ensures non-hazardous operation for the user.

Xtra positioning - integrated GPS

Effortlessly determine the position of the scanner. This helps to facilitate the registration process and provides the exact time and location of the users' scans.

One 3D Documentation System – a multitude of possible applications



1

Scanning of outdoor environments

The Focus^{3D} is well suited to 3D documentation of buildings, building sites, roads and landscape features. Objects within a distance of 330m can be easily recorded - even in full sunlight.

2

Scanning of indoor environments

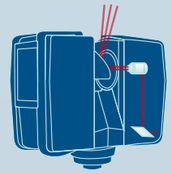
With the Focus^{3D} it is possible to quickly produce 3D documentations of interiors and technical installations such as building services, conveyor systems or process installations.

3

3D product and component documentation

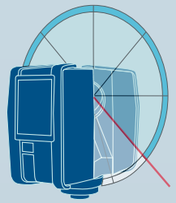
Whether for inspection of large machine components, during product design or reverse engineering – the Focus^{3D} measures products and components of every possible shape and size and produces precise data and three-dimensional surface models from them.

Measurement method



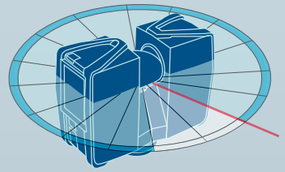
Distance

The scanner uses a laser beam which is reflected back to the scanner by an object. The distance is measured in millimetre-accuracy by the phase-shift between the sending and receiving beam.



Vertical angle

The mirror deflects the laser beam in vertical direction onto the same object. The angle is encoded simultaneously with the distance measurement.



Horizontal angle

The laser scanner revolves 360° horizontally. The horizontal angle is encoded simultaneously with the distance measurement.

Computation of the 3D coordinate

Distance, vertical angle and horizontal angle make up a polar coordinate (**d, α, β**), which is then transformed to a Cartesian coordinate (x, y, z).

Performance specification Focus^{3D} X 330

Range Focus^{3D} X 330	0.6 –330m
Measurement speed	up to 976,000 points/second
Ranging error[2]	±2mm
Ranging noise	@10m – raw data: 0.3mm @90% refl. @25m – raw data: 0.3mm @90% refl. @10m – raw data: 0.4mm @10% refl. @25m – raw data: 0.5mm @10% refl.

Integr. colour camera	Up to 70 mio. pixel
Laser class:	Laser class 1
Weight	5kg
Multi-Sensor	GPS, Compass, Height Sensor, Dual Axis Compensator
Size	240 x 200 x 100mm
Scanner control	via touchscreen display and WLAN

For the latest specifications please visit www.faro.com

Performance specification Focus^{3D} S

Range Focus^{3D} S 120[1] Range Focus^{3D} S 20	0.6 – 120m 0.6 – 20m
Measurement speed	up to 976,000 points/second
Ranging error[2]	±2mm
Ranging noise	@10m – raw data: 0.6mm @90% refl. @25m – raw data: 0.95mm @90% refl. @10m – raw data: 1.2mm @10% refl. @25m – raw data: 2.2mm @10% refl.

Integr. colour camera	Up to 70 mio. pixel
Laser class:	Laser class 3R
Weight	5kg
Multi-Sensor	Compass, Height Sensor, Dual Axis Compensator
Size	240 x 200 x 100mm
Scanner control	via touchscreen display and WLAN

For the latest specifications please visit www.faro.com

Surveying

Xpand your horizon!

Industries such as surveying, construction, civil engineering and BIM depend on reliable, fast and accurate data. Information and spacial reference are essential through all phases of surveying and construction projects.

FARO's Laser Scanner Focus^{3D} X 330 with its 330m scan range, integrated GPS and the possibility to scan in full sunlight offers the user the ideal outdoor solution, smoothing the workflows, making processes faster and more efficient, delivering accurate data and satisfying statutory requirements.

Applications

Scanning of large or distant objects: Due to the xtra long range of the Focus^{3D} X 330, all kinds of high, long or difficult to access objects can be easily scanned and analyzed.

Project supervision: Whenever there are excavations, bridges, towers, open-pit mines, roads, railways, reservoirs, dams, pipelines to be built, there is a need for close monitoring of the individual project phases to meet the project's requirements.

Deformation monitoring: Determining if the surveyed structure or object is changing shape or moving. Saves time and rework during construction.

Large volume calculation: When measuring loose material in bulk, e.g. in barges, silos or in warehouses, large volume determination on a regular basis is an important consideration. Laser scanning allows for fast, accurate and reliable dimensional calculations.

Quality control: Precise laser scanning ensures that the final as-built condition fit design intent and minimizes the chance of potential problems.

Benefits

- Time-saving, rapid, simple and complete recording of the current condition of surveying or construction sites
- Real-time, digital 3D data capture and analysis of materials, volumes, structures, topography.
- Due to xtra long range, enhanced registration of data and rapid capturing of high resolution data increases users' productivity
- Precise positioning due integrated GPS

Architecture, BIM and Civil Engineering

Building documentation easier than ever

With the Focus^{3D}, FARO provides architects and civil engineers with an efficient tool for rapid, seamless and precise documentation of the current status of buildings and building sites of every kind.

Weighing just five kilograms, the Focus^{3D} laser scanner is ideal for mobile usage on the building site. It records foundation excavations, building shells and complete buildings in 3D – completely, quickly and cost-effectively.

Applications

Facades inspection: 3D dimensional inspection of building shells and facade components before final assembly.

Structural analysis and maintenance: Rapid and cost effective control of the specified load-bearing capacity of supporting structures as well as wear and tear.

Construction progress monitoring: Seamless capture and monitoring of construction progress for legal and technical documentation.

Built environment: Precise geometrical recording of existing properties as the basis for conversions or extensions.

Free-form components inspection: Precise dimensional check of complex components such as free-form shape elements.

Deformations control: Documentation of deformation processes and monitoring of countermeasures.

Space optimization: By prior creation of 3D models.

Benefits

- ✓ Rapid, simple and complete recording of the current condition of buildings and building sites
- ✓ Immediate processing of the data in all commonly used CAD programs.
- ✓ Simple variance comparison in the construction process and in the case of final building inspections.
- ✓ SCENE WebShare Cloud for simple and secure online sharing of scan data via the Internet
- ✓ Revolutionary price/performance ratio

Inspection and Reverse Engineering

True magnitude shown in the 3D scan

Particularly in the case of very large or very complex components and shapes, conventional measuring instruments quickly reach their limitations.

With the Focus^{3D}, even these shapes can be precisely captured, inspected and re-engineered.

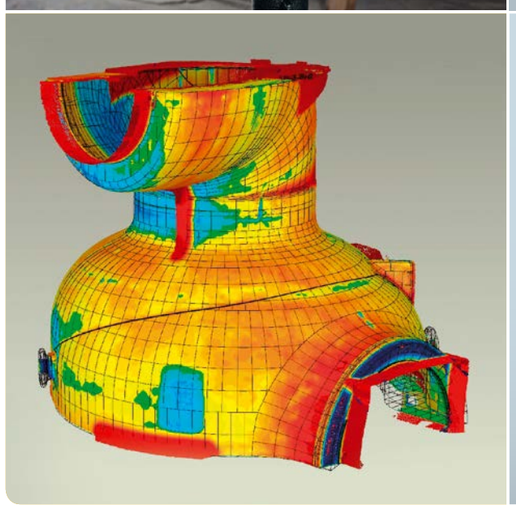
Applications

Reverse engineering: Copies of products and components for which there are no construction plans and/or CAD data available.

Interior fixtures and fittings: Precise 3D CAD documentation of complex interiors of ships, cars or aircrafts as a basis for planning of conversions.

Manufacturing documentation: Complete 3D documentation of the manufacturing status of complex machine components.

Quality control: Precise 3D documentation and dimensional inspection of large and complex components such as rotor blades, turbines, ship propellers, etc.



Benefits

- Cost-efficient, quick and accurate 3D capture of as-built geometry of large products
- Automated in-process control of production allow for comprehensive 3D inspection and monitoring of parts
- Reduced scrap and rework due to early and comprehensive 3D quality control

Process Industry and Digital Factory

Precise 3D data saves time and money

Technical plants like refineries, power plants and production sites are complex structures which require exact 3D CAD data in order to convert, repair or extend them.

With the FARO Focus^{3D} complete and precise 3D as built data can be captured easily, precisely and completely.

Applications

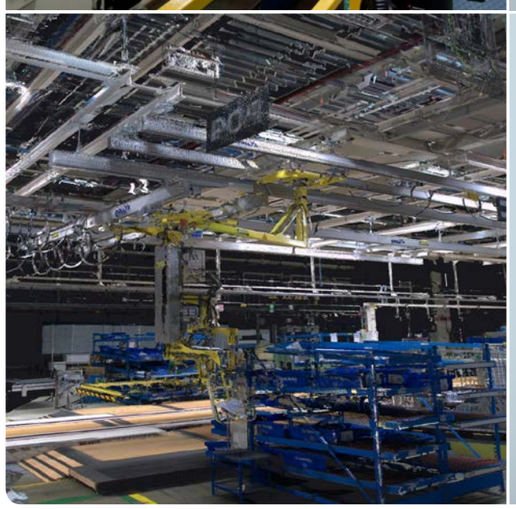
Conversions and extensions: Precise 3D documentation of the current state of the property as the planning basis for conversions and extensions.

Offsite production: Possibility of precise-fit off-site assembly, thanks to exact 3D CAD data and dimensional control.

Asset management: Simplification of facility management and maintenance through comprehensive 3D documentation.

Training: Virtual access to remote facilities allows for off-site training an simulation.

Site supervision: Improved coordination between different trades and comprehensive documentation and supervision of all work.



Benefits

- Extreme time savings and high fidelity for 3D documentation of complex factory and plant installations
- Risk minimisation in brownfield projects where access is difficult or expensive and where schedules are tight
- Brownfield costs can be reduced by 5-7%, contingencies for rework to less than 2%. Schedules can be compressed by as much as 10%
- Efficient control and monitoring of health and safety as well as environmental regulations

Shipbuilding

Tough industrial environments

3D laser scanning is used in naval engineering to aid assembly, and to assist repair and retrofit activities.

To ensure accurately fitting parts, it is necessary to continuously perform measurements in each phase of the production process.

Applications

As-built documentation: 3D laser scanning solutions ensure that ship hulls and components can be digitized when original drawings are missing or inaccurate (as it is often the case with old vessels).

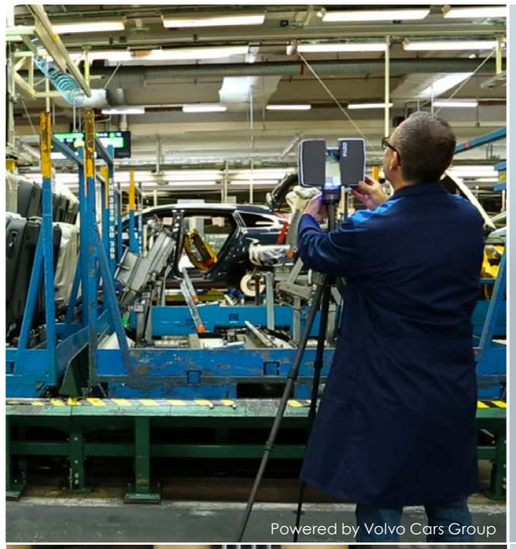
BWT Retrofit: Upcoming legislation requires the installation of Ballast Water Treatment systems onboard all ocean-going vessels. 3D laser scanning can overcome challenges such as measuring the limited space in engine rooms, and capturing reliable data for the retrofitting installation process.

Ship repair: Providing a fast and accurate way to inspect ship parts during repair, 3D laser scanning can be used to verify design specifications to ensure proper fit.

Benefits

- A fast and reliable technology to capture complex as-built situations in engine and pump rooms
- Complete 3-dimensional information of the actual conditions
- Risk minimization in projects where access is difficult and schedules are tight

Facility and Asset Management



Efficient processes with 3D scans

Three-dimensional building data offers facility managers valuable assistance – from technical facility management through to property management.

The FARO Focus^{3D} provides complete and precise 3D documentation of the current status of buildings and building sites as well as their assets such as power components, machinery and pipe work

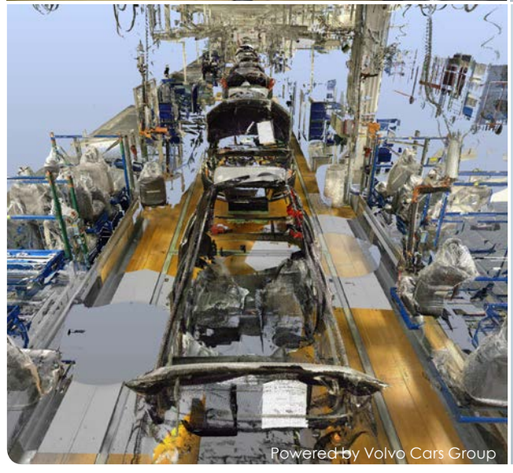
With the Focus^{3D} the required data can be recorded with ultimate ease. This scan data can be used for building management, collision detection for retrofits, as-built documentation for CAD modelling and other plant design tasks.

Applications

Documentation: The Focus^{3D} accurately records the inventory data that is needed by Facility Managers – be it the structural situation on a production plant or the building services equipment in an office block.

Planning of structural alterations: The scan data provides an accurate three-dimensional model of the actual status of the building. As a result Facilities Managers can run through the usage options for rooms even before planning actually begins.

Replanning of technical modifications: Changes to technical equipment, such as pipes, air ducts and electrical supply lines, can be depicted and checked in advance in the virtual model. This offers a stable basis for replanning.



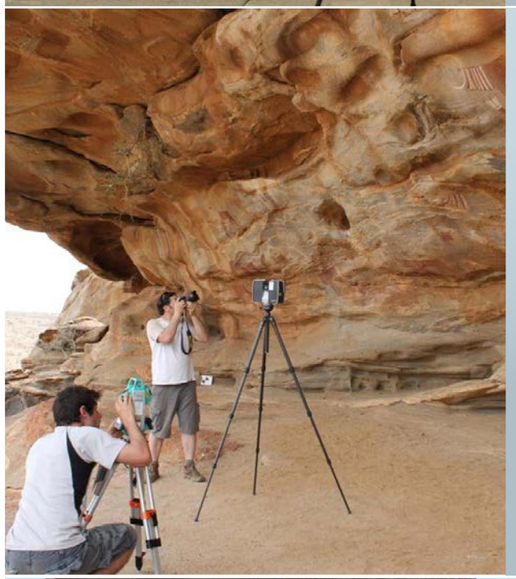
Benefits

- Complete and precise 3D documentation of the current status of buildings and building sites
- It is especially suited to facilities managers, architects, construction engineers, construction experts and surveyors
- The optimum basis for the planning and execution of building projects as well as for the management of properties

Heritage & Archeology

Bringing historical sites back to life

Whether for restoration or scientific analysis purposes, for securing protected buildings or for virtual presentations of historical sites, the FARO Focus^{3D} offers the possibility of complete and detailed 3D documentation of historical structures and excavation sites. Thanks to its integrated colour camera, photo-realistic 3D images can be created instantly.

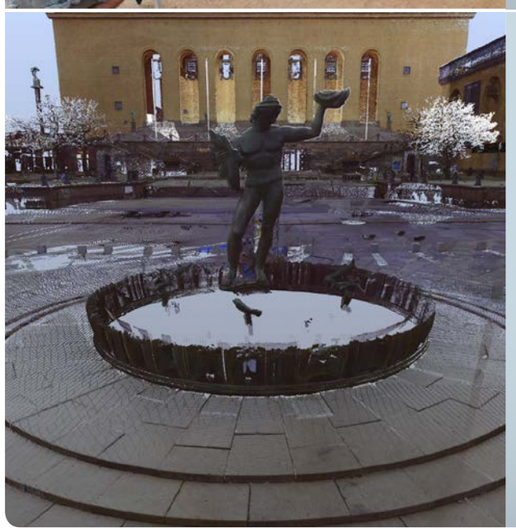


Applications

Reconstruction: Detailed 3D data for reconstruction of lost appearance of components of historical sites or archeological objects.

Restoration: Creation of 3D models for restoring purposes preserving the original building substance without the necessity of scaffolding usage.

Conservation: Precise 3D CAD documentation for preservation and protection of historical/archeological material and inventory.



Benefits

- Simple, fast and complete recording of the current condition of heritage sites or archeological objects
- Digital 3D capturing of complex forms of historic buildings at a high level of detail
- Enhanced registration of large object data and remote functionality connect multiple data sets accurately
- An ideal device, particularly when there are no up-to-date construction plans

Law Enforcement & Forensics

Built for the field

The fast and accurate Focus^{3D} is an ideal tool suited to performing rapid and complete 3D recordings of crime and accident scenes, insurance damage or passive car safety testing. The scanner converts weeks work into hours.

All details of relevance in any subsequent reconstruction of the crime or accident are covered. Similarly, in order to develop appropriate safety concepts for events, laser scans deliver the relevant 3D topography information.

Applications

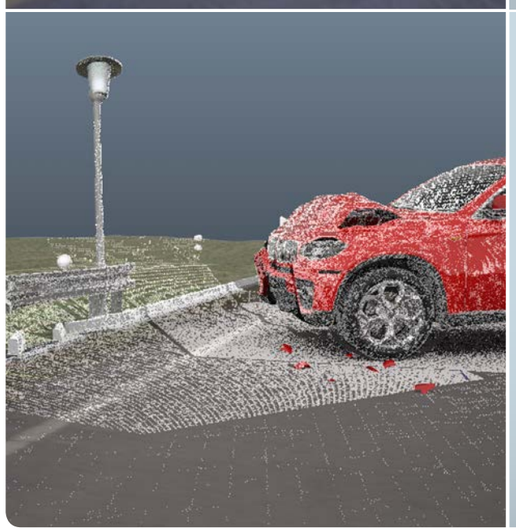
Crime scenes investigation & analysis: Complex and timely investigations made easier and faster by the Focus^{3D}.

Bullet path reconstruction: Quick and accurate reconstruction of bullet paths made possible by combinig traditional investigative methods with cutting-egde laser-scanning technology.

Crash investigation & analysis: Handling, investigating and analyzing road incidents, their cause and impact made fast and reliable using FARO laser scanners.

Passive safety of cars: Reducing consequences of accidents with laser scanner tested passive safety systems can be vital for passenger survival.

Fire Investigation: Detailed fire scene reconstruction.



Benefits

- Fast, accurate and reliable data
- Authentic, complete and precise 3D copy of reality
- Reproducible 3D documentation at your fingertips
- Easy conversion of captured scenes to ortophotos and CAD

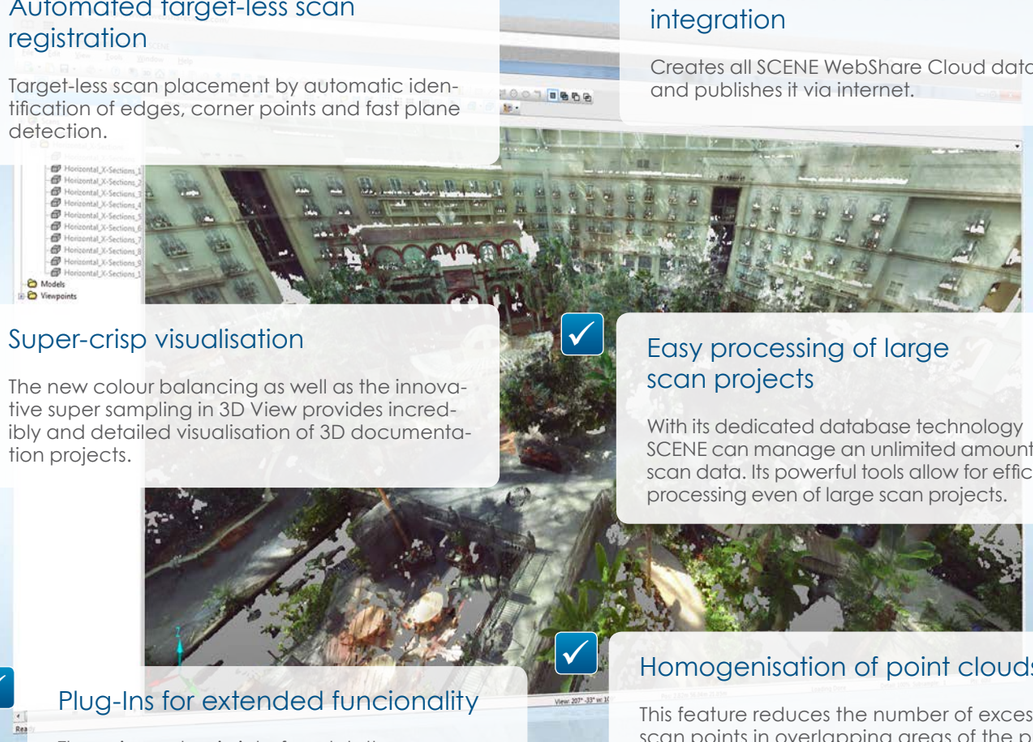
SCENE

Automated target-less scan registration

Target-less scan placement by automatic identification of edges, corner points and fast plane detection.

SCENE WebShare Cloud integration

Creates all SCENE WebShare Cloud data and publishes it via internet.



Super-crisp visualisation

The new colour balancing as well as the innovative super sampling in 3D View provides incredibly and detailed visualisation of 3D documentation projects.

Easy processing of large scan projects

With its dedicated database technology SCENE can manage an unlimited amount of scan data. Its powerful tools allow for efficient processing even of large scan projects.

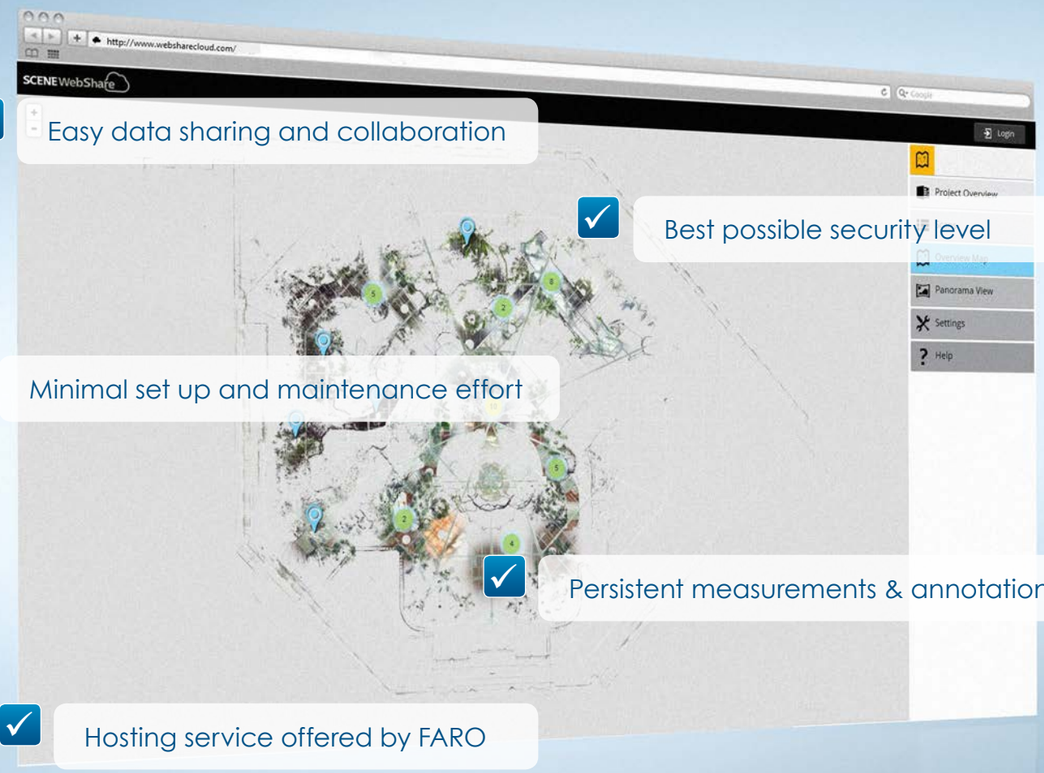
Plug-Ins for extended funcionality

The unique plug-in interface lets the user extend SCENE´s functionality by installing additional apps. All available apps can be found on the FARO 3D App Center.

Homogenisation of point clouds

This feature reduces the number of excess scan points in overlapping areas of the project point cloud. Due to the reduced amount of data, the whole workflow form SCENE to the final result in 3rd party software becomes more efficient.

SCENE WebShare Cloud



Easy data sharing and collaboration

Best possible security level

Minimal set up and maintenance effort

Persistent measurements & annotations

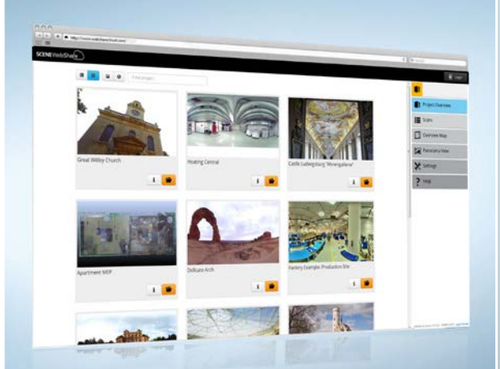
Hosting service offered by FARO

Support for mobile devices

Real virtuality software

SCENE is specifically designed for all FARO laser scanners. The software processes and manages scanned data both efficiently and easily by using the automatic object recognition and scan registration.

SCENE is an extremely user-friendly software that allows scans to be automatically combined. The resulting point cloud can be viewed in three dimensions. All the scans are available in colour and as high-contrast intensity images.



Data sharing without limits

With SCENE WebShare Cloud, FARO offers a comprehensive service to provide users with simple access to 3D documentation. Neither technical training nor specialist skills in 3D laser scanning are necessary to work with the intuitive user interface.

Digital data, such as 3D documentation, often has to be available to many different project partners. Previously, users having their own internet server, could use SCENE WebShare to present their laser scan projects to clients an project partners. Now FARO goes considerably further, offering the SCENE WebShare Cloud solution, a hosting service with various packages at different prices.

Check it out on our demo server at:
www.webshareclood.com

Accessories

Surveyor‘s Kit for the Focus^{3D} X 330

All in one

The kit includes: Focus3D-X330, PowerBlock battery, Power Dock, 32GB SD card, SD card reader, SD card cover, optical cleaning set, quick charge power supply, car power supply, ruggedized protection and transport cover in aluminium, panorama Quick Release, rugged transport case with wheels,license SCENE software, 1 year maintenance contract for SCENE software.

Tripods

Stable base

Light weight tripod
Enables the mounting on any support such as a fixed post, robot arm, rail etc.

Surveying tripod
Elevating tripod with double gear reduction and included extension to reach 290 cm. Anodized aluminium parts are weather-proof.

Adapters

Secure grip

Panorama Adapter Quick Release
Fits to standard photo tripods with 3/8" screw and Surveyor tripods with 5/8" screws

TMS Adapter
With its two standard “Wild-studs”, it can hold two prisms. They support the quick survey of the scanner position.

Suitcase / backpack

Always at hand

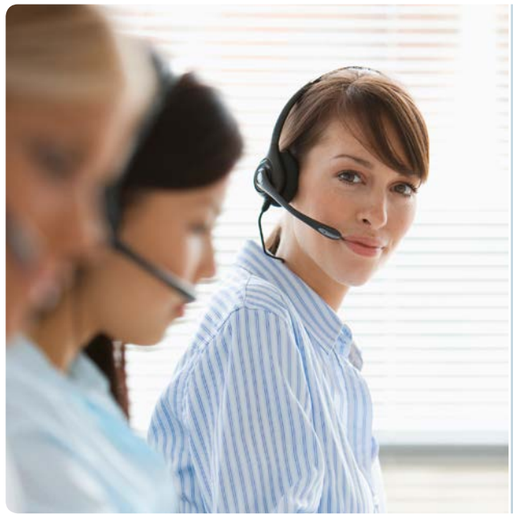
In addition to a waterproof and extremely sturdy Pelicase with lots of compartments for important accessories, a light and elegant Rimowa case and an ergonomically designed backpack including tripod holder are also available.

You are in good hands

Learn more

Discover the possibilities

The Focus^{3D} has an intuitive control concept, enabling even inexperienced users to get started straight away. Valuable tips and suggestions are to be found in a training video that can be watched on the touchscreen of the scanner. However we also offer workshops, seminars and training courses for specific applications and tasks. In these, we teach you how you can use your Focus^{3D} even more effectively.



Customer service

We are there for you

On the phone: Our customer service staff is available from 8am to 5pm from Monday to Friday.
Telephone number: +49 7150 9797 400 or 00 800 3276 7378
E-Mail: support@faroeurope.com

Maintenance contract

Within the scope of the FARO maintenance contract, our experts conduct inspection, maintenance and calibration. Customers with a maintenance contract get a 10% discount on accessories, as well as free recertification, repairs, software updates and advice.

Software compatibility

The Focus^{3D} and it's SCENE software are compatible with the most common CAD software applications. SCENE can be used to export scan data to over 50 common software solutions, such as:

- General CAD: AutoCAD, Microstation, Rhino
- Plant construction: AVEVA PDMS, Intergraph PDS, AutoCAD Plant 3D, Microstation, Rhino
- Architecture: AutoCAD Architecture, REVIT
- Civil engineering / Surveying: AutoCAD Civil 3D, PolyWorks Surveyor, Carlson, Microsurveys
- Heritage: 3D Reconstructor
- Quality control: Geomagic Qualify, PolyWorks Inspector, Rapidform XOV
- Forensics: AutoCAD, SCENE Forensics
- Reverse engineering: Geomagic Studio, PolyWorks Modeler, Rapidform XOR
- Tunnelling: RR Tunnel, TMS
- Visualization: Pointools

Standorte

Global Headquarters
FARO Technologies Inc.
250 Technology Park
Lake Mary, FL 32746
USA
info@faro.com

European Headquarters
FARO Europe GmbH & Co. KG
Lingwiesenstrasse 11/2
70825 Korntal-Münchingen
Germany
info@faroeurope.com
Tel: +49 7150 9797 400

Faro Technologies UK Ltd
9-10 The Cobalt Centre
Siskin Parkway East
Middlemarch Business Park
Coventry, CV3 4PE
United Kingdom
uk@faroeurope.com

Distribution (EMEA)
FARO Swiss Holding GmbH
Wiesengasse 20
8222 Beringen
Switzerland
distribution@faroeurope.com
www.faro.com/distributors

www.faro.com/focus

Free Call: 00 800 3276 7253