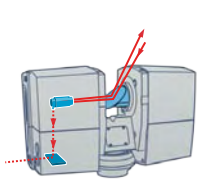
LS Spectrum 09/09

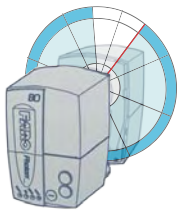
FARO at Intergeo 2009 shows a new and unique Laser Scanner technology

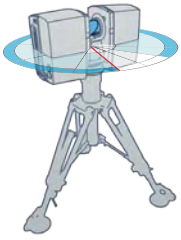
FARO presents innovative portable laser scanners, tools and software solutions in Hall 1, Booth 1210 at Intergeo

FARO´s new Photon 120 and 20, along with the new version of the FARO Scene V 4.6 software, are a new Laser Scanner Generation with 8x higher speed and 50% more range compared to conventional machines.

The new laser scanners can capture up to 976,000 measuring points per second. With a range of 120 meters, the Photon 120 has the world's longest range in the category of phase-shift laser scanners. The new Photon 20 version has been designed for scanning objects at up to 20 metres. Compared with manual processing, the new release of the FARO Scene 4.6 scan processing software enables users to post-process scans automatically up to 90% faster. "In a joint presentation with Siteco, FARO exhibits the Road Scanner system to map entire streets. This system constitutes the next generation of mobile mapping systems (MMS)," says Bernd Becker, Director of 3D Laser Scanner.



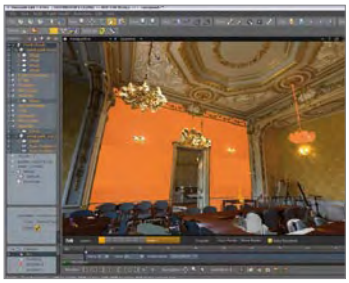


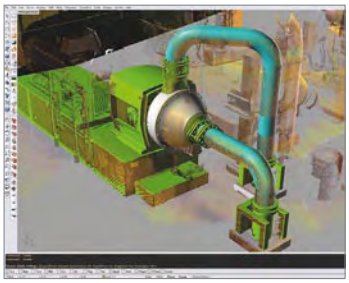


Visitors of the FARO booth can also find out about the latest developments in laser scanning processing software for sectors like process, power and piping, road mapping, architecture and heritage, aerospace, engineering, georeferencing, surveying, tunnel and mining and many more.

Pointools: Fly or walk?

POINTOOLS *provide solutions for visualizing, editing and producing videos from scan data with market leading performance. The Pointools range of products handle large point cloud projects with ease complementing the high density, high quality data output from the Faro Photon Scanner.*





FARO now added Pointools Edit to the range of Pointools products. Pointools Edit builds on the features of the successful Pointools View Pro, adding a new set of tools and enhancements in key areas without compromising performance. Like View Pro, Edit is also based on the Vortex point cloud engine designed to deliver enhanced productivity with large data sets.

Edit has been designed as the post-registration toolkit that prepares point cloud data for production of deliverables reducing the overall project production time. Edit has been tested rigorously in production environments to ensure it delivers, even for most demanding projects. Point layers are one of Edit's most unique and powerful features. For example cleaning noise from an interior room scan is made easier by moving the walls into another layer, allowing the user to focus on the interior. Once a user grasps this methodology, editing that may have in the past taken many hours can now take minutes.

RGB values in point clouds can be re-touched using a colour matching and 3d brush with layers for masking and precise control. Where the presentation of the point cloud data is important, this can fix mis-mapped obstructions or sky areas on scan data as well as scanner 'circles' not covered by photography.

Companies in surveying, forensics, engineering, manufacturing, industrial and many other markets are already reporting enhanced productivity with Pointools Edit with data being segmented and transferred directly into Pointools Model and 4Rhino for downstream production of 3D models and drawings. The Pointools product range is used extensively by thousands of professionals across the world as the most powerful platform for working directly with point cloud data.

JRC Reconstructor - The most advanced software for cultural preservation

GEXCEL *continues the improvement of JRC RECONSTRUCTOR software, combining high level software solutions, on field survey experience and cooperation with laser manufacturers.*

JRC RECONSTRUCTOR has been widely accepted by engineers, architects, geologists, for cultural heritage.

JRC RECONSTRUCTOR offers a complete solution for processing 3D laser data, and 2D images and it is sold in four main modules: CORE, LOCK, SURFACE, and Photon.

The CORE module is the fundamental tool for importing and managing large cloud of points. It allows cross section and orthophotos extraction, volume calculation, creation of flight through videos and it can be linked to AutoCAD. CORE module includes the innovative virtual scan tool to merge, reorganize and improve the quality of scan data.

LOCK provides all the tools for scan registration (through best-fit) and geo-referencing. It is ideal for those applications where positioning of target is problematic or time consuming. SURFACE is the module for mesh creation with intelligent geometry simplifications. It includes an inspection tool for automatic change detection between models.

With The Photon module, any external image from an uncalibrated camera can be used for texture mapping and photo-realistic model creation. The new CONTROL module is specifically designed to control the FARO laser scanner and the camera mounted on the top of the scanner. It works with different cameras and focal lengths and automatically produces high resolution coloured point clouds and calibrated full resolution images to be projected onto the mesh model.

BUBBLE view is a new function to set your view in the scanner position without any shadowing effect; it simplifies the navigation, the point selection and measuring The IPERLINK tool allows linking JRC Reconstructor object with any external data base.

With the scan CLASSIFICATION filter it is now possible to use any image editor to edit scan reflectance, range or inclination image and to apply the result to 3D Points.

Haption - Is this an easy fit?

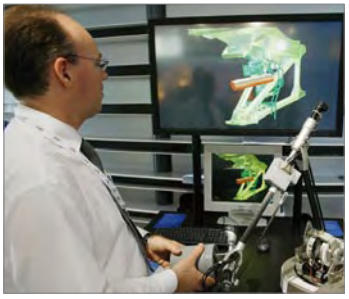
INTERACTIVE FITTING *with real world data – a world premiere.*

How can you validate complex changes in buildings, plants, manufacturing and development? Haption and FARO provide first time world wide a unique solution with force feedback real-time collision detection in the virtual world in order to check the fit of CAD-Objects in real life laser scan data.

Haption force feedback arm enables you as well to feel the collisions and have much more realistic experience for a intuitive realistic validation with immediate results. We invite you to experience this amazing 6D force-feedback technology, which is already used worldwide in research, automotive, aerospace, energy and medical applications.

The analysis of maintenance operations and production processes help simplify complex tasks and train personnel on the digital model. "The benefits are immeasurable" says Nicolas Chevassus from EADS. "Validating an assembly/ disassembly study that used to require over a week with conventional methods could now be completed in only a few hours."

The Haption technology helps you to complete your projects much faster and be better organized for a successful operation. The software is already integrated in SolidWorks, Catia, Delmia, Virtools, 4Dcom, DV Mockup, Design4assembly. Catia users can even



use the Human Builder manikins in a total immersive environment with a Haption real-time software module to operate the manikins as if they are alive for complex ergonomic posture quotation with realistic results for process optimization, ergonomic and security studies.

The manager of the PSA Peugeot Citroën Virtual Reality Center Thierry Voillequin says: "The Haption force-feedback and software technologies are integrated in our VR environment since 2006 and our project teams appreciate the benefits for more realism in manual simulation tasks. Problems are detected very early, because of a real interaction between product and process design. The Haption technology contributes to the company goals: faster development and reduced costs with improved quality."

SITECO announces the new mobile road scanner system

THE FARO LASER SCANNER *technology suits the world of MMS (Mobile Mapping Systems) by collecting data in a safe and innovative way, without holding up the traffic flow.*

The exploitation of the scan data is an excellent answer to the growing demand of georeferenced 3D data for Geographical Information Systems, applied to the road infrastructures management.

The road scanner mapping vehicle allows high productivity and high precision road surveys by means of an integrated positioning system, 5 high-resolution cameras and a laser scanner. The system is fully operational since one year, and has already been tested on 10.000 km of roads. The post-processing software allows to obtain the geo-referenced imagery and the point clouds in the most used GIS and CAD systems. The system has been conceived starting from the most advanced MMS technology in terms of position and image acquisition. It combines these features with an innovative multitasking integration of the FARO helical laser-scanner to allow a full and accurate survey of the complete infrastructure. Running at 40- 70 km/h speed, the system collects images and laser scans, synchronized with the positioning information. The positioning system integrates data coming from the 2 GPS antennas, the IMU and the odometer, and calculates the vehicle position and orientation 200 times per second. The postprocessing software allows automatic mapping of the vehicle route, geo-referencing images and scanning, and integration of all

data in a GIS database. One of the most interesting components of the system is the Road-SIT Survey photogrammetric application, used to combine and overlap the scan data with images. The Asset Inventory and the detailed topographic survey can be collected on a relational geo-database in a very simple and quick way.

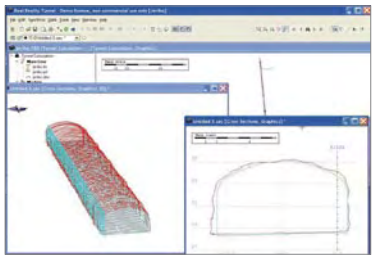
The images are collected every 2-5 m. The laser scanner collects 120.000 points per second with a precision of ±2 mm at 10 m. In a short time a complete survey of all the components of the road infrastructure can be achieved: routes, pavements, signs, markings, carriageways, sidewalks, slopes, retaining walls, tunnels, bridges, guardrails, etc. This technique can smartly be applied for/to the production of as-built surveys of new infrastructures. The road scanner includes special equipment and software to analyse the Pavement conditions: Dynatest profilometer for evaluating the roughness, IRI survey, and IDS ground penetrating GeoRadar for the inspection of the asphalt layers and of the sub-base conditions.

Incredible success in tunnel & mining

3D LASER SCANNING AND ATS *RRT in combination with good "on site" methods and efficient data processing is a very efficient alternative to traditional tunnel surveying.*

With FARO Photon 3D scanner and ATS Real Reality Tunnel software (RRT) a complete package is available for most customer needs in tunnelling and mining.

The RRT software is optimised



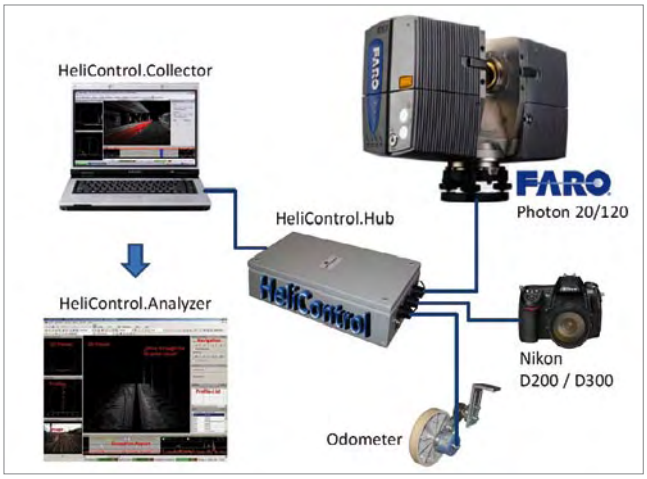
for FARO scan points. For a quick check of crucial parts, users can directly display a measured tunnel and compare it with a theoretical tunnel by displaying sections, offsets and distances to the theoretical tunnel. Also included is triangulation of tunnel shape, longitudinal contour lines and export of extracted point for e.g. under break areas. General problems with large data files from 3D-scan and overload in the calculation programs are solved with dedicated functions. The RRT preprocessing of the FARO scan clouds optimises the data for tunnel calculations. The resulting volume report and the drawing functions create a detailed report and enable full control of the tunnel project.

Helical Scanning – endless 3D measurements made simple!

HELICONTROL *is a product of Metronom Automation GmbH and is used with the FARO Photon Laser Scanner in the Helicalmode. During this setting the Laser Scanner is moved on a user-defined rover system. The scan process generates a "sampling screw line (Helix)".*

Metronom the German specialist for high-end Laser applications, introduces at INTERGEO 2009 a solution consisting of hardware and software for the use with the FARO Photon Laser Scanner in the Helical-Mode. The Scanner operates in 2-D profiling-mode, were only the rotating mirror axis is used, while the vertical axis stays locked. Due to the motion of the Scanner along a known track, a longitudinal profile is generated in form of a screw line.

Typical applications for this technique can be found in railway clearance detection. HeliControl consists of a stand-alone controller-unit, a data acquisition software and a software for fast data analysis. Additionally to the FARO Laser Scanner, a digital camera to record equidistant images, as well as an odometer (measuring wheel) to record the distance travelled can be connected to the controller-unit.



ProCoat – well sheltered in a rough and uncomfortable environment

PROCOAT *is an innovative dust- and weatherproof protection for the FARO Photon Laser Scanner, which protects the housing as well as the most important optic units reliably against a rough environment.*

If the Laser Scanner is used outdoor at rough weather conditions like quarries, tunnels and mines etc. it is recommended to protect the scanner against falling rocks, dust, rain for example. Additionally ProCoat protects the Laser Scanner in contaminated areas such as nuclear- or petrochemical- industry. ProCoat serves thereby as a "raincoat" and at the same time as a "hard hat". The closed Scanner is safely protected against dust and splash water and can even be left on the tripod. The open Laser Scanner can be used during the measuring operation without restrictions. It is possible to use the digital camera, which is necessary for the Color-Option. When the Laser Scanner is closed, a metal housing protects the middle section. In order to open the ProCoat, the handle

has to be folded aside so that the protective cover can swing open. The carrier handle, allows a secure and comfortable transport of the measuring system.

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