ON THE ROAD WITH FARO

HELICAL SCANNING Perfect road mapping of Italian streets with Siteco Informatica

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Interview with CEO Ping Fu

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GEOMAGIC
PowerGAGE: So smooth!

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skf bearings
High altitude high precision

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MANNFAX
GO WIRELESS!

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QUANTUM FAROARM

THE TOP STORY

VISIT US @ WWW.FARO.COM
Dear Readers

We’ve completely revamped FARO News for you! It’s not only the format of our customer magazine which is new:

FARO has also introduced four brand-new measuring systems on to the market since autumn 2007. We will be pleased to do a demonstration in your company or at trade fairs during 2008. Our complete fair schedule is on the back page of the magazine.

Our special report is dedicated to a unique and exciting project: In cooperation with Siteco and two renowned Italian universities we assisted in the 3D recording of entire roads with our Laser Scanner. We were therefore able to make an important contribution to the capture of geographical 3D data, which today is necessary for the management of road infrastructure and navigation systems.

On page 13 we speak to the founder of the US software company Geomagic, Ping Fu, about pioneering new developments in measurement technology. Despite receiving many awards she still has both feet firmly on the ground and has revealed to us what really counts.

So just relax and flick through the following pages. We wish you an exciting read!

Daniela Renzo
Chief Editor

The FARO newbies

DISCOVER THE LATEST FARO PRODUCTS:
the top of the line Quantum FaroArm, the Fusion FaroArm, the Laser Line Probe V3 (LLP V3) for three dimensional scanning as well as our new revamped Photon laser scanner.

The Quantum FaroArm meets the highest quality demands with a measuring accuracy of +/- 0.018mm. New Feature: The measuring arm uses Bluetooth technology to communicate with computers without wires.

More for less: The new Fusion measuring arm, with an accuracy of +/- 0.036mm, is not only 15 percent more accurate than the proven Titanium series FaroArms which it replaces, it is also less expensive. By attaching a Laser Line Probe the FaroArm can also carry out optical measurements - becoming the so-called ScanArm. Scanning is now even more accurate than before with the new LLP V3. The ScanArm can now even scan dark, reflecting surfaces with absolute ease. This combination allows users to perform a tactile measurement of their objects via a hard probe or an optical measurement via the laser beam.

Digitizing of very large objects down to the very last detail: The new Laser Scanner models Photon 20 and 80 now deliver crystal clear 3D pictures. They have a measuring distance of 20 (Photon 20) and 76.6 metres (Photon 80) and a measuring speed of 120,000 points per second.

In addition to the new arm models, FARO has released a major upgrade of the top selling CAM2 software. The new CAM2 Q makes using FARO products even easier to use.

More information:
WWW.FARO.COM/QUANTUM
WWW.FARO.COM/PHOTON

Why these pictographs?

In the FARO News these icons will guide you through the different application fields of our 3D measurement technology:

CALIBRATION
Calibration is required if initial setups of e.g. machine tools can’t stand the test of time and deviations appear.

REVERSE ENGINEERING
Reverse engineering allows us to create virtually anything we can touch. To record and reproduce real items, they are digitized and displayed as fully surfaced CAD models using our 3D measurement technology.

INSPECTION
Inspection of parts and providing a measurement report are essential in today’s lean manufacturing world. They help reduce production waste and costs as well as non-conformance which can lead to production down time.

ALIGNMENT
Precise alignments of any machine, fixture or part can make all the difference in the quality of the finished product.

AS BUILT DOCUMENTATION
Our measurement devices are able to easily and quickly deliver documentation data of digitized buildings, process plants or objects.
"We now measure our parts with the Quantum arm directly in the tool machine – with no cable clutter whatsoever!"

DIRK MUNZIG, GROUP MANAGER FOR QUALITY TECHNOLOGY AT MPT PRÄZISIONSTEILE GMBH IN MITTWEIDA, GERMANY

MPT in Saxony, Germany has become the first company in the world to incorporate the new FARO Quantum measuring arm at their production site: “We are particularly impressed by the Bluetooth feature of this measuring arm. We can now measure our parts with the Quantum arm directly in the device and tool machine – with no cable clutter whatsoever,” as Dirk Münzig, Group Manager for Quality Technology at MPT Präzisionsteile GmbH, Mittweida, indicated.

The Quantum arm is used by the Saxon quality experts for measuring, both in production to check on brass and steel cages with a diameter of one to two metres as well as for setting up machines. “This measuring arm operates with utmost precision and provides us with what we have been looking for: high flexibility in operation and speedy results.” This is how the quality expert described the improvements in the factory: “We are now able to set up our machines much faster than before, and achieve clear intermediate and final test results.”

YOUR PARTNER AT FARO
Andrew Tagg, Regional Sales Manager, will be pleased to advise you on the application of our measuring systems in your company.

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FARO.COM/QUANTUM
**4 GOOD REASONS ...**

... for the Laser Tracker - the most precise tracker measurement system on the market. Measuring precision up to 0.025mm.

1. **Xtreme ADM:** The laser beam can be “intercepted” again in the air at any time so that measuring can be continued without delay. This is particularly helpful, especially in areas that are barely accessible.

2. **Instant-on:** The laser tracker is operational immediately without a warm-up phase.

3. **Smart Warm-up:** The broad range of working temperatures combined with temperature compensation to enable operation in almost any environment.

4. **SelfComp:** Automated compensation (re-adjustment of encoder) guarantees that the system measures with maximum precision even under difficult conditions.

**HOW THE LASER TRACKER WORKS:** It directs a laser beam onto a mirror reflector to determine the distance to the object to be measured. The reflector is guided to the object to be measured and projects the laser beam back to the Laser Tracker, which traces the movement of the reflector.

**A first-rate level technology**

Bermaq manufactures computerized numerically controlled machines (CNC) specially designed for working on wood, plastic, aluminium, polystyrene and epoxites. The company’s goal is to achieve a first-rate technology level which meets the demands of today’s industry and international quality standards.

“We plan to drastically reduce the assembly time for parts and to expand the use of the Laser Tracker for production.”

**RAMÓN VILADOMAT, QUALITY MANAGER AT BERMQAQ**

**THE CHALLENGE**

In the past it was not possible for Bermaq to measure large parts (some up to 25m) the company was supplied with. The smaller parts used to be measured by hand during all the stages of production, from parts assembly to final assembly. A very slow process that required a great deal of effort.

**A BIG STEP FORWARD**

By working with the Laser Tracker, Bermaq is taking a big step forward: The portable measuring system has a measurement range of 70 metres with a precision of 0.025mm and is directly used in the production process. The simplicity of aligning and assembling the parts enables the company to significantly reduce its delivery times. The Laser Tracker also helped Bermaq to increase productivity, reach a higher quality level and enhance the life time of the machinery.

Ramón Viladomat, Bermaq’s Quality Manager explains: “We plan to drastically reduce the time for parts assembly and to expand the use of the Laser Tracker for production. The Laser Tracker meets the technical requirements of our company. Besides the device being the most accurate tracker in the market, we highly value its excellent quality-price ratio.”

**THE FUTURE**

Thanks to the technological progress and the constant innovations applied to all departments today, they can adapt to their customers’ demands quickly, and implement the best solutions to ensure the quality of their machines.

Bermaq works for companies like Astondoa, Schaefer, El Pardo, Usiper Beneficadora Com, Tecmodel, the ALCOR group, Aernnova, Aerotecnic and Alcan, providing quality in the most demanding industries, such as aeronautics, the automotive industry, the nautical industry, renewable energy and the rail industry, among others.

**ABOUT BERMQAQ**

Founded in 1982, Bermaq, S.A manufactures CNC machines process different materials such as wood, metal and plastics.
Aerospace tooling

As the competitive pressure increases in the world of aircraft OEM manufacturers, there is a need to lower costs and push for on-going technological innovations. The demand for newer and lighter materials make for a tough manufacturing environment. Add in digital manufacturing and assembly technologies and the temperature rises, not just for the OEMs but also for the aerospace supply chain.

“FARO’s support and laser measurement technology was the key.”
HOWARD BENNETT, SALES DIRECTOR AT MANUFAX

Stockport-based Manufax Engineering is one such supplier meeting the challenges head on with a series of high profile success stories from major customers such as Airbus, BAE Systems and Bombardier.

A BIG RESPONSIBILITY
Howard Bennett, Sales Director for Manufax says: “Both our UK and global client base are looking for preferred suppliers to take responsibility for major tooling packages working closely with Automation integrators such as Thyssen Krupp.”

Manufax recently delivered a £3+ million contract for the supply of A330 and A340 Assembly Fixtures for Airbus, Filton. The turnkey contract included the design, manufacture and installation of steady state assembly fixtures.

TIGHT DEADLINES
To win the contract, Manufax offered Airbus an aggressive timing program to meet Airbus production demands.

“The assembly fixtures currently being installed at Airbus Filton are on time and on budget”, says Howard proudly. To meet the tight production schedule means working 24-hour shifts in-house at Manufax and during the installation phase at Airbus Filton.

Helping them to increase capacity to handle this contract was the deployment of two FARO Laser Tracker Xi.

“Lighter materials make for a tough manufacturing environment. The demand for newer and lighter materials make for a tough manufacturing environment.”

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A320 wing skin fixture

Manufacturing department

THE FUTURE OF COMPOSITE MATERIALS
"FARO’s support and computer aided laser measurement technology gave us one of the keys to achieve this project,” says Howard. “Looking to the future, composite materials will continue to play an ever-larger role in aircraft component manufacture, and the recent purchase of the FARO measurement systems will give our Company the additional flexibility and capability to manufacture and inspect the tooling to support this.”

"The assembly fixtures currently being installed at Airbus are on time and on budget.”
HOWARD BENNETT

A320 wing skin fixture

ABOUT MANUFAX
Manufax (a member of the MANe Group) offers a comprehensive range of engineering services ranging from the manufacture of jigs and fixtures, a full CNC machining capability through to a bespoke design, manufacture and project management service for major tooling packages.

WWW.MANUFAX.NET
WWW.FARO.COM/TRACKER

A heavy-weight in lightness

Based at Mortagne-sur-Sèvre, in France, SOMEGE manufactures high-precision parts for the aerospace and weapons industries, as well as for the maritime, rail transport, agro-alimentary and other sectors.

This mechanical engineering firm has earned a special reputation for the quality of its dimensional controls.

Until now, in order to carry out quality control, the workshop was equipped with traditional measurement instruments, a fixed coordinate-measuring machine and metering cubicles. In its 3D measurement room, the inspection department, the heart of the company, was regularly overwhelmed.

WITHOUT DISMANTLING
To accelerate the processing of the parts, Somege has obtained a FaroArm Platinum measurement arm. The system permits 3D measurement before the dismantling of parts, directly in production, and thus reveals any defects in circularity, in particular for large-sized parts.

Furthermore, Somege saves precious time with the FaroArm, which, once it is installed, carries out almost-instantaneous measurements. The operators at Somege have been rapidly convinced by the new system, also because of the short training period required in order for an operator to be able to use it, and thus inspect, reverse engineer and check measurements with regard to the CAD data of parts, tools and assemblies.
HELICAL SCANNING Road operators, planners, mappers or robot-vehicle designers are just some of the professionals who might be interested in the new generation of highly accurate 3D mobile systems for the automated mapping of road networks.

PERFECT 3D ROAD MAPPING

Whatever your application, you’ll want to gather your data safely and without interrupting traffic flow. You’ll also need accurate positioning and an easy automated data flow. You might want to impose point cloud data on photos to establish a 3D image or you might want stereoscopic video views combined with GPS positioning. All of this and more is now possible with Siteco’s new Road-Scanner system which depends on the FARO Laser Scanner to provide a previously impossible level of accuracy and ease of use.

>> PAGE 8
SCANNING A ROAD

To measure roads, railways or tunnels accurately the Laser Scanner is mounted on wheels – i.e. a car. While being on the move the laser scans its surroundings helically and creates a three-dimensional picture from the captured data. In order to obtain a colour picture of the road, digital cameras are mounted on the car. To calculate the exact route of the car an additional sensor – a so-called odometer – is attached to the vehicle. By using a GPS receiver and a rotary sensor, each exact location of the car is synchronised with the measurement points. All data is sent to a computer in the car and then processed using the Laser Scanner software.

HOW THE SCANNER WORKS

The Laser Scanner sends out a laser beam. This beam is reflected from the objects in the scanned surroundings and captured by the Laser Scanner. The device then calculates the exact 3D position using this data.

FIELD OF VIEW

The moving mirror guides the laser beam and enables the scanner to capture an angular range of 320°. Solely 40° in the area of the scanners’ base are not scanned.

> SITECO S.R.L. Besides offering consultancy services, Siteco srl of Bologna, Italy, has long been involved in planning and realising IT systems.

„With the Road-Scanner it is now possible to achieve a quick and complete survey of all the components of road infrastructures.“

AUGUSTO BURCHI, MANAGING DIRECTOR AT SITECO INFORMATICA

Road-Scanner is the evolutionary pinnacle of their mobile mapping systems. It builds on Siteco’s expertise in GIS (Geographical Information System) applications, management systems for RDBMS (Relational DataBase Management System), and CAD (Computer Aided Design).

AN INNOVATIVE PROJECT

Mobile systems for road mapping known as MMS (Mobile Mapping Systems) have been in use since the 90s.

Today, they are the cutting-edge technology feeding the demand for digital maps.

Vehicles equipped with GPS devices, cameras and laser scanners for analysing road conditions are able to cruise along a road while gathering vast quantities of useful data.

Road-Scanner represents the next step in the technological evolution of the MMS. Besides the usual devices for positioning and image acquisition it also has an innovative measurement device for helical scanning produced by FARO: the Laser Scanner.

“Helical” scanning is particularly suitable for surveys along roads, railroad tracks, tunnels and opens up the possibility of automatic recognition.

The technology underlying the system was developed with research funding made available by the Italian region of Emilia Romagna, in cooperation with the Universities of Bologna and Parma.
The demand in information technology for geographic data is growing continuously.

The scanned road as point cloud on screen.

The goal was to meet the growing demand for geographical 3D data for information technology systems applied to the management of road infrastructures and navigation systems.

Thanks to the Road-Scanner instrumentation, it is possible to obtain a detailed overview of all road facilities and to automatically acquire a wealth of data, including geographical reference images, the vehicle’s route and the road longitudinal profile.

It even measures the roughness of the road surface using the IRI – International Roughness Index.

**AN EXCELLENT CHOICE**

To build Road-Scanner, Siteco was looking for a scanner that offered speed, accuracy, detail and ease of use. Stability and powering options were also important criteria. The use of the FARO Laser Scanner thus was the ideal choice.

FARO’s Laser Scanner is 100 times faster than time-of-flight scanners and can capture 120,000 points per second allowing a high-res scan in as little as 30 seconds.

Measurements are guaranteed within +/-2mm at 25m. The detail level is also impressive. It delivers 3 to 700 million 3D pixels per scan. The extreme sensitivity permits a better survey of distant, oblique or dark objects. The result is very clear images covering distances from 0.6 to 76.6 meters. With an internal 80GB hard drive and options for wired and wireless operation the Scanner can also be equipped with a compact battery option providing 6 hours of scanning freedom.

**PROCESSING THE WEALTH OF DATA**

Once the data is collected with the Laser Scanner, the Road-Scanner assigns a geographical location using the powerful positioning system, Applanix POS-LV, which comprises two GPS satellite receivers.

Besides the Laser Scanner and the satellite positioning system, Road-Scanner also uses other devices, including six high resolution colour cameras and a profile measuring system, to determine the longitudinal roughness profile to IRI standards.

The quality of the data collected is extremely accurate: the absolute coordinates and the photogrammetric measurements are determined with absolute precision and, once the data has been collected, it is possible to analyse and modify it through a post-processing application.

The Road-Scanner is a highly innovative system for the mapping of the road network made possible especially through the use of the advanced technology in the FARO Laser Scanner. The characteristics described above, plus its small size and light weight (14.5kg, 35lb) make it easy to see why Siteco chose it for their flagship system.

**THE TRAFFIC FLOW**

In road-mapping applications like the Road-Scanner system, one rarely needs to scan a road to this resolution.

Instead the power is deployed to measure the surfaces and sides of roads at lower resolutions while travelling at 35 to 60km/h. This is possible thanks to the rotation frequency of 48Hz of the mirror that guides the laser beam of the Scanner. At a speed of 50km/h the Scanner collects scan points every 29cm while at 30km/h the intervals are shorter and measure every 17cm.

**ABOUT SITECO**

Siteco Informatica s.r.l. of Bologna is a leader in the Italian transport systems IT sector. It boasts a range of clients including important public administrations (Ministry of Infrastructures and Transport, State Railroads, regions, provinces, and townships) and private sector companies (ANAS, highway operators, and planning companies).

@www.sitechoinf.it
@www.faro.com/photon

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Light years ahead

THE IAC/ENO (Astrophysics Institute of the Canary Islands / European Northern Observatory) is an international research centre in Spain operating two observatories on the Canary Islands. Each year, 200 visiting scientists are drawn to the ENO by the clarity of the skies and the excellent equipment, much of which is built by the IAC itself. To check specifications and positioning of the parts in their new telescopes they have opted for a FARO Laser Tracker, because with astronomical measurements the slightest inaccuracy can make light years of difference.

MEANWHILE CELLS ALBA is building a new generation Synchrotron near Barcelona. The team of 60 scientists, engineers and support staff will expand to 100 when it is completed. A FARO Laser Tracker is playing a central role in the critical alignments necessary to build the beamlines using a 3D free stationing method. The synchronous light in the beamlines is used to study diverse phenomena from x-ray microscopy and spectroscopy to diffraction and crystallography. For the lay person, that spells less science fiction and more exciting breakthroughs impacting our lifestyles.

Will laser scanners save the Dutch from drowning?

DELFt UNIVERSITY OF TECHNOLOGY. A large part of The Netherlands would be underwater if it were not for the protective barrier formed by sand dunes. But North Sea storms often eat away at this protection. It is easy to see why the Dutch are interested in monitoring and understanding the dune dynamics better.

Currently, research is focused on the direct impact of large storms. Traditionally, profiles of the Dutch beaches are measured every year at 250m intervals. These measurements are used to judge if maintenance of the beaches is necessary. Maintenance means depositing new sand on the beach in the water.

Terrestrial Laser Scanning (TLS) offers an innovative solution for monitoring storm damage, easily, accurately and less expensive than has been possible in the past. With TLS you can go to the beach directly after the storm to get direct detailed numerical insight into the damage.

READY FOR THE NEXT STORM

Roderik Lindenbergh of the Department of Earth Observation of Delft University of Technology began laser scanning research on Egmond Beach in Holland in April 2005. Encouraged by the results, he has pursued the research together with coastal engineering experts.

They are now waiting for another big storm so they can continue scanning with FARO’s Laser Scanner.

FARO in the forest

FORESTRY as a new potential market for use of the FARO Laser Scanner in Poland, United Kingdom and Ireland.

FARO Technologies Polska has sold the first Laser Scanner to the Agricultural University in Poznan for use in forestry research. Polish scientists are now leading the field in the application of innovative technology to the questions of carbon biomass and forest management. Equipped with the Laser Scanner, the first step is to assess the quantity of wood biomass for each of the main tree species in the Polish national forests. Then they’ll investigate carbon accumulations and use the findings to promote a better environmental policy. Why? Think Kyoto.
“At a rough estimate, a measurement is taken every five minutes in our factory quality control department – right round the clock. The only exception is on Sundays when we have a short time slot where production stands still,” explains Quality Engineer Armin Schneider of SKF quality control.

“In our factory”, means in SKM’s German works where cylindrical roller bearings are manufactured. These are produced, for example, for the gears of wind turbine plants.

It’s All Running Smoothly

About four years ago the German measurement engineering section began, in cooperation with their colleagues in the SKF group head office in Göteborg, Sweden, the process of selecting a measurement system that would be best suited to the serial production of roller bearings.

After the extensive testing of diverse measuring arms during a pilot project in Germany, a decision was made in favour of the PowerGAGE which carries out the tests directly on the machine using the Delcam software PowerINSPECT.

With regards to reproducibility rates and measuring accuracy, FARO’s system stood out quite clearly from all other instruments tested.

Everything Ready to Hand

As SKF production operated around the clock, the quality experts at SKF were at first rather sceptical as to whether the PowerGAGE could keep going for such a long period of time. The results dispelled any remaining doubts: The PowerGAGE monitored their production quality with absolute reliability and without any technical problems, and achieved a measuring exactitude of 1/100.

Nowadays, the quality experts are no longer obliged to document these measuring procedures by hand, this is because the PowerGAGE produces all these reports. In addition, the measurement data from the turned parts is always on hand as each measurement is saved. The engineers are therefore able to check the quality of the parts at any time online.

In addition to safe work processes, the company has also won time: With the new measuring process, the costs for measuring equipment and calibration pieces have been drastically reduced.

“[We are] twice as fast as we used to be - really impressive!”

Armin Schneider
Quality Engineer at SKF

The software easily guides the user through the measurement process

About SKF

SKF GmbH in Germany produces, amongst other things, tapered and cylindrical roller bearings, floating bearings and wheel bearings for commercial vehicles, large bearings and automotive special products and components. SKF is also represented in the UK (Luton) and in more than 130 countries with its own marketing companies and authorised dealers. In addition to this, there are approximately 100 production sites worldwide. The SKF business group employs more than 41,000 workers worldwide.

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Your Partner
At FARO

IT’S ALL RUNNING SMOOTHLY

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A machine life-time

“Right on the spot!”

BASTIAAN BECKERS, MAN TURBO

It used to be a hassle to transport parts like these to the measuring machine

MAN TURBO increases quality assurance in production. Quality requirements in the process industry and in energy production continue to increase at a drastic pace. MAN TURBO demands very high standards in the production of compressors and turbines for its customers. A piece of cake for the quality experts at the Zurich factory of MAN TURBO: In the runner production and ensuing inspections, the factory employees have recently started using the FARO Laser Tracker along with FARO’s portable Platinum measuring arms. It is specifically designed for testing the dimensional stability of the runners. With the CAM2 software they are able to link and evaluate the measurement data from the FARO measurement systems without delay. “Our components are very large; some even measure 20m x 4m x 3m. Transporting these parts to the measuring machine took a long time, and they did not always fit into our measuring cabins”, summarised Bastiaan Beckers, Manager Quality Inspection. “Now, we measure the runners on the spot without having to place them in the right position.”

Large or small, the quality has to excel

KELLFORMS. How do you improve quality and reduce costs? How do you increase flexibility and reduce inspection time? And how do you get closer to the manufacturing process and eliminate waste?

Just some of the challenges faced by Kellforms, manufacturer of jigs and fixtures and special purpose equipment. The demand for constant improvement is driven by their customers, major automotive manufacturers and first tier suppliers.

THE RACE IS ON

In the race for quality, innovation is the key – a fact recognized by Kevin Goater, Director of Kellforms. Meeting that challenge meant purchasing a FaroArm Platinum, which offers versatility, portability and accuracy – all vital for Kellforms’ measurement tasks. These include final inspection and verification of items and projects manufactured at the company – from small parts components to fully assembled checking fixtures. Kellforms also offers its inspection services to third parties, in particular manufactures in the plastics and glass industries. Making the FaroArm an essential part of their inspection process has resulted in time and cost savings over alternative methods. Kevin Goater explains, “If we hadn’t purchased the FaroArm, it would have been necessary to upgrade our existing traditional 3D coordinate measuring equipment at great expense.”

Having used FARO for more than 10 years now, Kellforms was one of FARO’s first customers in the UK.
The magic of making it simple

PING FU Founder, President and CEO of Geomagic, Inc. is one of America’s most acclaimed business leaders.

Having worked on Mosaic, the project that preceded the birth of the Internet browser, she went on to preside over the phenomenal growth of Geomagic. Her story is all the more remarkable given that she went to America as a political exile from her native China with little formal schooling and only a few phrases of English. Some 20 years later she stands at the top of a new flowering industry.

FARO: Tell us about your work day
Ping Fu: I’m a half-time entrepreneur: 12 hours a day, seven days a week (laughs). I work many hours but my days are very dynamic.

I enjoy the gamut of strategy and implementation. I’m very much a thinker and a doer. My day is a combination of thinking and doing.

F: What do you think was the most important breakthrough in quality control in the last decade?
P: Transition from mechanical to digital, from touch to non-touch, and from single point to millions of points.

The quantum leap in measurement data and the multiple uses of the measurement data led to many exciting new advances enabled by breaking down the barrier between as-designed and as-built.

F: How do you imagine the future of measurement and quality control?
P: In the future, quality control will not be about catching defects at the end of a manufacturing process line.

F: You’ve received numerous awards. Which one are you the most proud of?
P: Inc. Magazine Entrepreneur of the Year because Inc. is a magazine that values entrepreneurial spirit.

They do not measure a company only by revenue. They report and support unique companies that have great value and culture; those with the greatest potential to make meaningful contributions to our lives. It has been a great privilege to be named among the most admired entrepreneurs.

F: Geomagic’s slogan is: the magic of making it simple. What would your personal slogan be?
P: I work with a Zen concept of empty space. We build houses and use material but it is in empty space that we live.

I always want to look beyond the surface and try to get the true essence. I apply that personally and to business. I call it ‘the magic of zero’. Everyone can have their own interpretation of why zero is the most profound number.

ABOUT GEOMAGIC INC.

Geomagic, Inc. is headquartered in Research Triangle Park, North Carolina, with subsidiaries in Europe and Asia and distributors worldwide. More than 5,000 professionals in industries such as automotive, aerospace, medical devices and consumer products use Geomagic software and services.

Geomagic is a FARO software partner. FARO supports the open architecture philosophy allowing 3rd party developers the ability to use FARO hardware with their software.

From mechanical to digital

Digital models from real world objects

WWW.GEOMAGIC.COM

THE INTERVIEW

In our PORTRAIT FARO Europe interviews a personality that inspires with innovation in economy, technology or science.
Measure complex objects as easy as a cube!

**PRIZE DRAW**

**Give us your feedback**

... and you could win a remote-controlled helicopter! It is very simple: to secure your prize, hurry now and answer the questions on our website. Your answers will help us to continually increase our quality standards and keep our customers satisfied!

Thanks in advance for taking a few minutes to complete the questionnaire.

**LINK TO THE PRIZE DRAW:**

www.faro.com/feedback

**SKIM THROUGH**

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Book a non-binding product demonstration online or by phone and we will show you all the possibilities of our portable 3D measuring system at your facilities. Our measuring systems are installed in the blink of an eye in your company production or testing centre. At the end of the demo you can keep the test report of the measurements we carry out together.

**REQUEST A DEMO AT YOUR FACILITIES**

www.faro.com/uk/demo
It’s still full throttle for FARO in motor sports

**MOTORSPORTS.** FARO is to continue last year’s successful involvement in motor sports in 2008. Its activities centre on its collaboration with the Raeder Motor sports team as well as its sponsorship of 2006 and 2007 Porsche Supercup champion, Richard Westbrook, who will be active this year as a Porsche driver in international Grand Touring (GT) racing.

Kai Gärtling, responsible for FARO Europe’s involvement in motor sports, on the objectives for 2008: “Our collaboration with the Raeder Motor sports team is based on the idea of perfecting a mobile measuring system, using the knowledge accumulated in the previous year, which can be flexibly employed on the racetrack. Another important aspect of this partnership is our collaboration with Hegemann Autosport, which we will continue in the future, as they support us with their expertise in implementation and production. At the end of the season we intend to present a complete solution for vehicle setup, aerodynamics and for mechanical measurements.”

Moreover, all the package tests for the suspension, radiator, steering, engine and gearbox packages were produced on the basis of the CAD data. What impressed Raeder Motor sports was that they were able to measure spatially separated components individually, and then to design and manufacture different adaptations, such as brackets and mounts, using the figures acquired. Thanks to the very high level of accuracy, the German company had no assembly problems of any sort when completing the various assemblies.

“**At the end of the season we intend to present a complete solution for vehicle setup, aerodynamics and for mechanical measurements.”**

**KAI GÄRTLING, FARO EUROPE**

Raeder Motor sports will be participating in the Audi A3 in the VLN series and in the 24-hour race on the Nürburgring. In addition to the Lamborghini Gallardo, already familiar from last year, the team is building another car of this type for a customer which will also compete in the VLN. The powerful team from Büren can bring its skills in the construction, development and deployment of racing cars in various motor sports series to these projects.

**DESIGN WITH FAROARM**

There has been successful cooperation between FARO and Raeder Motor sports since 2007. As the Lamborghini Gallardo, which was used last year, was not based on basic developments in motor sports, it was clear from the outset that the professional CAD-based design of a racing car is not possible without 100% reliable measured data. The solution was finally found in the FaroArm, in which the necessary measurements were recorded and processed in the CAD program. In the end the overall design of the vehicle and of the external body is now based on the data recorded with the mobile measuring arm.

**EVERY SECOND COUNTS!**

This advantage not only saved the team a considerable amount of time, but also contributed enormously to the enhanced reliability. Another point was that the FaroArm enabled Raeder Motor sports to conduct equally flexible and simple quality assurance of outsourced components, which had the effect of further enhancing the overall process reliability. The measuring system thereby made an important contribution to the successful completion of the Lamborghini Gallardo project in a very short time.

“In addition to our collaboration with Raeder Motor sports, we are also looking forward to our continuing partnership with Richard Westbrook, and we congratulate him on his ‘career leap’ in becoming a Porsche driver. In 2008 he will be driving a Porsche RSR, particularly in the FIA GT Championship and in the Le Mans Series”, says Kai Gärtling of the 32-year-old Englishman. We wish him all the best in continuing his already successful motor sports career with Porsche.
### Event Calendar

#### France
- **November 4th - 7th**
  - MIDEST, Paris
- More events: [www.faro.com/fr/events](http://www.faro.com/fr/events)

#### Italy
- **October 3rd – 7th**
  - BIMU, Milan
- More events: [www.faro.com/it/events](http://www.faro.com/it/events)

#### Switzerland
- **November 18th - 22nd**
  - Prodex, Basle
- More events: [www.faro.com/de/events](http://www.faro.com/de/events)

#### Germany
- **April 22nd - 25th**
  - CONTROL, Stuttgart
- **September 30th - October 2nd**
  - Intergeo, Bremen
- **November 11th - 13th**
  - MotorSport World Expo, Cologne
- **December 3rd - 6th**
  - Euromold, Frankfurt
- More events: [www.faro.com/de/events](http://www.faro.com/de/events)

#### United Kingdom
- **April 21st – 25th**
  - MACH, Birmingham
- **June 4th - 5th**
  - North West Manufacturing, Bolton
- **July 14th - 20th**
  - Farnborough Airshow
- **October 7th - 8th**
  - Northern Manufacturing, Sheffield
- **October 21st - 22nd**
  - TCT, Coventry
- **November 5th - 6th**
  - Ireland Manufacturing, Dublin
- More events: [www.faro.com/uk/events](http://www.faro.com/uk/events)

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#### Best Dressed Award
FARO’s new Photon Laser Scanner was very well received when it made its debut at the GEO-8 Exhibition & Conference in Coventry in April. The exhibition organizers were so impressed with FARO’s appearance that the company was awarded with the prize for the “Best Dressed Stand”.

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