



## SPECIAL MEASURING SYSTEMS

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At a time when the demand for higher and higher performance requires ever greater precision and imposes increasingly narrow tolerances, measuring instruments play an increasingly decisive role. The verification of the dimensions and the correct arrangement of the parts being processed is also decisive during the process, not only for the final inspection. It is therefore necessary to insert software and control tools inside the machines in order to check the reference parameters in each phase of the process.

In the following pages you will find a wide overview of services and innovative technologies proposed by companies in the sector: it is a very effective tool to keep up with the news in a rapidly updating sector, always in step with the increasingly precise requests by companies, both those that produce pieces and pipes, and those that make machinery.




**FARO**

FARO



## FARO® Introduces New 6DoF Laser Tracker Platform High Performance 3D Metrology, Value-Accessible to All Industries

Rugby, UK, 2nd October 2018 - FARO® (NASDAQ: FARO), the world's most trusted source for 3D measurement and imaging solutions for factory metrology, product design, construction BIM and public safety forensics, announces the release of the next generation of FARO Laser Trackers, the 6DoF Vantage product family with 6Probe.

In 2015, FARO disrupted the large CMM market with the powerful Super 6DoF TrackArm solution that integrated the FARO Vantage tracker and the FaroArm®. This patented, comprehensive solution is capable of measuring or scanning over tens of meters with no loss in accuracy, no line of sight issues and simultaneous measurement by many operators.

Today, FARO is proud to introduce the 6Probe, a fully integrated hand-held probe for easily probing hidden, hard-to-reach features in hard-to-reach locations (<https://www.faro.com/en-gb/products/factory-metrology/faro-laser-tracker/>). Together, the TrackArm super 6DoF and the 6Probe offer the most complete solution portfolio at an unbeatable price for every measurement need, large and small. This new functionality addresses a wide range of large scale metrology applications across a variety of manufacturing focused industries including automotive, aerospace, construction, heavy equipment and shipbuilding.

"We challenge anyone in the industry to dispute this statement of fact: the patented FARO Super 6DoF and 6Probe total solution is the most complete, most adaptable metrology platform that manufacturers will ever need. Whatever you assemble or manufacture, large or small, easy or hard to reach, complex or simple this platform can meet your needs with the best value combination of performance and price," stated Simon Raab PhD, CEO and early innovator in portable, adaptable 3D measurement.

The 6DoF FARO Vantage product family includes two high performance models, the VantageE6 with



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**OMNI-X CZ**  
Tube bending Tools



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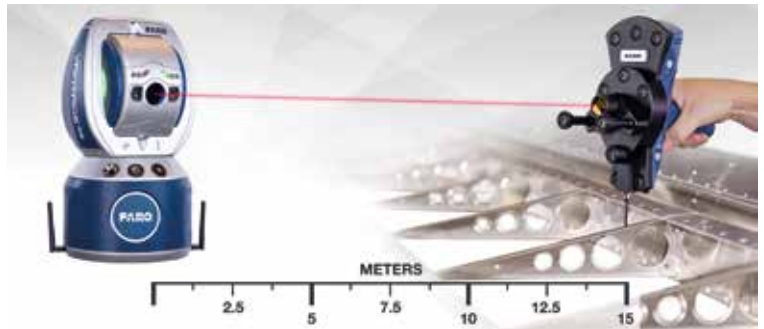


an operating range of 35 meters and the VantageS6 with an operating range of 80 meters. Both are tested to rigorous International Electrotechnical Commission (IEC) standards for shock, vibration and extreme thermal conditions and are IP52 rated for dust and water resistance.

#### Mass Market Accuracy

Based on 30+ years of FARO experience

in delivering high value metrology-grade solutions, exhaustive internal testing and feedback from a cross section of tenured metrology professionals, the accuracy and dynamic measurement capability delivered by the 6Probe reliably addresses the overwhelming majority of large-volume 3D measurement challenges. In combination with the Super 6DoF, which can achieve even higher accuracies, the Vantage platform now meets every need. The high performance value proposition of the new Vantage 6DoF platform with Super 6DOF and 6Probe will facilitate broader adoption of laser trackers, making integrated, total quality available to all industries.



#### Premium Productivity

Both Vantage models include ActiveSeek™ functionality with wide-angle viewing, which allows users to confidently move from one location to the next without concern. This improves general productivity by allowing users to start the actual measurement process faster and makes sophisticated 3D measurement accessible to all.

“We have a long history of being a high-value solutions provider for large scale measurement,” stated Pete Edmonds, Vice President - Factory Metrology. “Given industry frustration with questionable performance or extra premium price points, FARO has made a conscious decision to deliver a mass industrial market, cost effective solution directed at the broader population of users and applications, which have been underserved to date. The powerful combination of 6DoF, Super 6DoF and ActiveSeek™ enables a new ease of use standard across the entire user industry.”



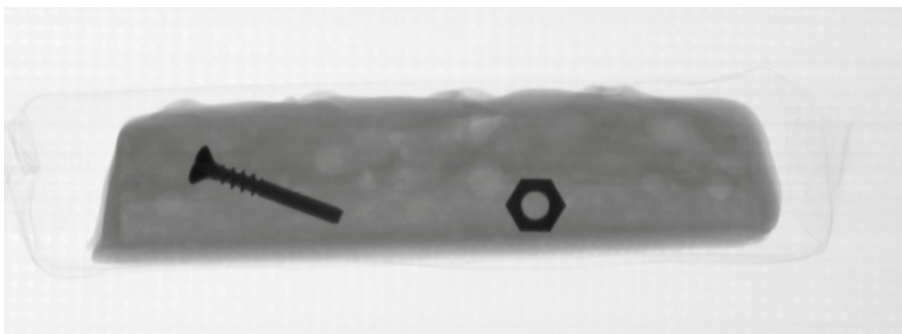
IMS



#### What did your last chocolate bar taste like?

It is not that long ago that a large corporation recalled chocolate bars from its production. The reason for this – the somewhat unappetising idea of foreign particles in the product.

It can sometimes happen in the manufacturing process, for example, that metal or plastic parts come loose and get into the food product.



Many manufacturers, therefore, try to find foreign particles before the product leaves the factory. For this, the products are X-rayed in their packaging. A software program then evaluates the visual images and detects unwanted objects





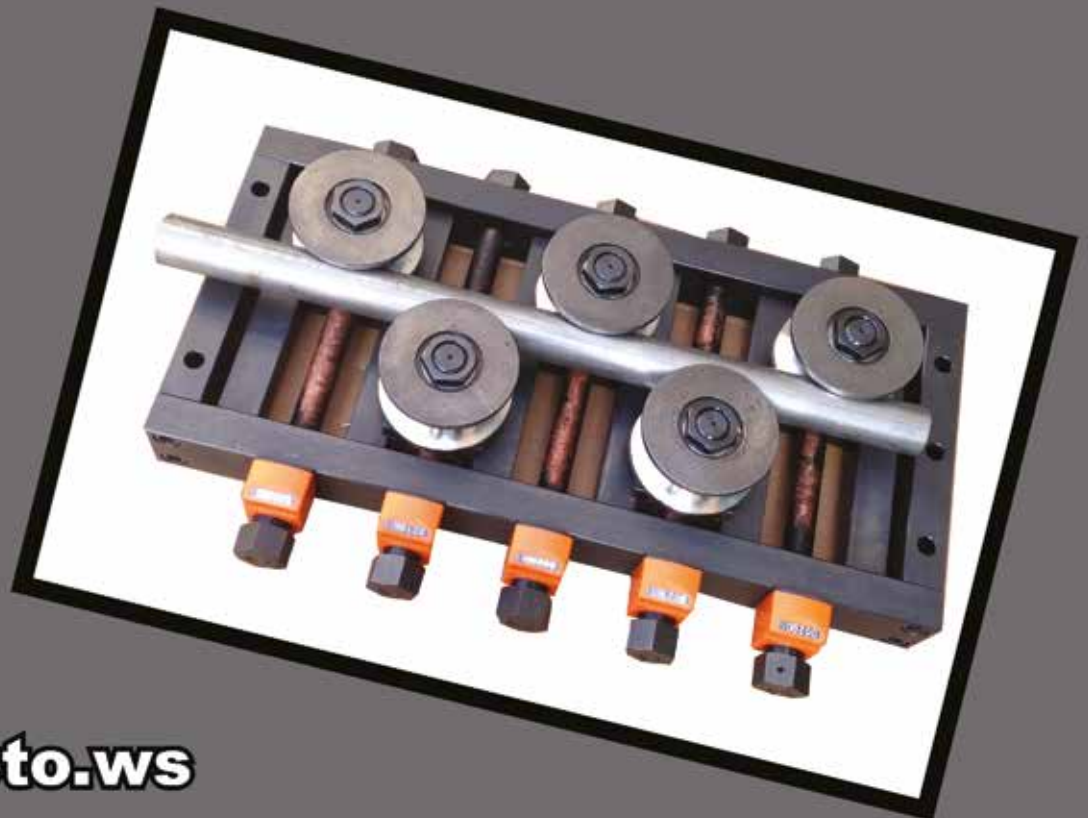
automatically. In this way, food products that are not up to scratch can be filtered out during the production process.

We have been developing and manufacturing X-ray generators, control units and complete systems since 2001. IMS X-ray systems are mainly found in measuring instruments for the steel and non-ferrous metal industries - but the fields of application for X-ray systems are wide and varied: non-destructive inspection for foreign particles is useful not only for food products, but also for, for example, wheel rims and tyres. Our technology is used in microstructure technology to inspect finished circuit boards or small castings. We also offer special solutions for the field of medical technology, to be found, for example, in CAT scan equipment from GE. IMS supplies X-ray systems of the highest order, always according to the wishes of the customer. We ensure our high standards with a certified quality management system and internal test laboratory.

Not all manufacturers are yet equipped with X-ray systems – but numerous well-known customers already place their trust in our innovative know-how. This does not protect consumers against calories, but at least it does against foreign particles in their chocolate bars.



## straighteners for tube



[www.cometo.ws](http://www.cometo.ws)

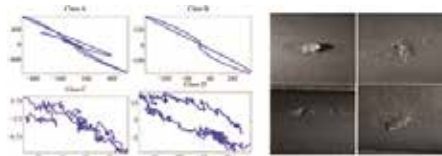


ISEND



### Characterization of surface defects in tubes and pipes

Regardless of the production process, the management of surface defects in tubes and pipes is one of the areas of main interest in the production process. A surface crack or a hole can be the origin of a crack or a corrosion process when the element is in service.



Non-destructive testing is the best method for both detecting and characterizing defects. Once the defect and its typology are known, the challenge is to characterize them and establish the relation to the cause that produces them so that corrective actions can be

implemented in the process to avoid future occurrences. In addition, the characterization of defects is one of the most interesting research subjects and its combination with artificial intelligence tools and algorithms will result in a deep and evolutionary knowledge oriented to the continuous improvement of surface quality.

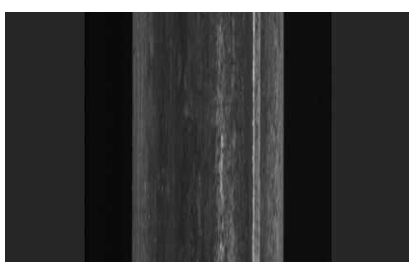
Currently, the most widely used method is based on the eddy current or Foucault phenomenon. A conductive coil will generate an alternate electric current that will produce a magnetic field. When said field is in the presence of a conductive material (the material to test), an induced current (and a magnetic field) as reactive will be produced. Once both, the injection field and the induced field are known, whenever a discontinuity occurs in the inspected material, it will respond with a different signal than expected, which results in a change in impedance. It is represented and screened in a diagram, will produce a curve that is usually called "bow". The study of these curves, their amplitudes and their phases, and the comparison with the real material is a way to characterize the defects. To be effective, the quality staff must create "alarms" or thresholds to differentiate what is a defect and what isn't. However, this is not always easy or even possible, because locating real defects and comparing them with the signal produced quite often requires measures of parameters that sometimes are not simple such as instant speed.



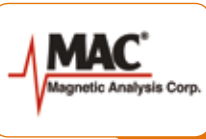
There is a new and sophisticated way to approach this task: it is the use of vision in combination with the eddy current. The principle is clear: whenever a defect occurs and, therefore, the eddy current detects it, a set of cameras takes an image in real time and associates and stores it with the signal for a real time or further analysis. This could seem easy, but some parameters have to be extremely well controlled such as speed, real position or depth of the defect.

Nowadays, there has been a notable progress in the recognition of defect patterns only with images, it's neither productive nor accurate, since it requires a big training and environmental cleaning conditions that are not always given in the manufacturing lines.

The key, however, is not the recognition of the defects, but its real-time characterization. To do that, a combination of efforts is required: the accuracy of the eddy current system, the easy interpretation of the images and the intervention of operators and analysts to close the cycle.



ISEND has developed a new non-destructive testing system called EDDYeyes for the inspection of surface quality that is made up with a combination of an eddy current equipment with direct vision cameras. Using mathematical algorithms for the treatment of big data produced, high productivity is achieved even for the most adverse conditions such as the production of hot wire rod of 4.5mm diameter and more than 120m/s. This new technology is suitable for any production process and customers that want to have the quality as identity sign.



MAC



### Mac Introduces new Echomac® 25mm UT Rotary Tester

Magnetic Analysis Corp. has just received customer pre-acceptance on its latest Ultrasonic Rotary Tester, the Echomac® 25mm. Designed for high speed flaw and dimensional ultrasonic inspection of tube in high precision applications, the Echomac 25mm Rotary provides 100% coverage at high throughput rates on thin wall product ranging from 5 to 25mm diameter.

This 25mm Rotary is especially well suited for challenging applications requiring high performance such as tubular product for nuclear and aerospace installations. Wall thickness as thin as 0.3mm can be successfully tested. Features include a transformer design which ensures improved signal to noise

ratio, enhanced bandwidth, zero channel cross-talk, 8,000 RPM running speed, precision test blocks and transducer holders, convenient adjustment of the transducer angle, and optimum operating safety. The 25mm Rotary joins MAC's line of UT Rotaries which range up to 500mm capacity.

When used with MAC's Echomac FD-6/6A instrumentation, the Rotary system provides outstanding inspection of ID/OD, longitudinal and transverse flaws, wall thickness and dimensional evaluation including conditions of eccentricity and ovality. The Echomac FD-6/6A achieves a high signal to noise ratio, includes a wide range of selectable band pass filter settings, precise thickness resolution (1 µm) and excellent repeatability and reliability. Features include Echohunter® software which provides a versatile, intuitive operation with convenient set up and control of all key test parameters on one screen, the ability to move thresholds by selecting and dragging on screen, and a global key to adjust or copy a group of test parameters from one channel to another. The Model 6A also holds GE Qualification for P3TF31 and P29TF82 Class A and B, typically required to meet high level quality standards for aerospace and other critical applications. The Echomac® series is being used for a variety of applications ranging from full body testing of spinning tube and weld zone inspection during production, to 500mm Ultrasonic/Flux Leakage multi test systems for large diameter OCTG pipe.



QFP



### 100% control of bent tubes with TubelInspect P8

#### The new generation of optical systems for 3D measurement of formed tubes and wires

The company QFP, founded in 2002, distributes and supplies technologically advanced systems and solutions for contactless 3D metrology for the measurement of complex surface structures and is an important reference for the integration of non-contact 3D measuring devices in standard and customized automated solutions.

QFP Srl is the exclusive distributor in Italy for the AICON systems TubelInspect P8 and P16. These systems control complex piping in seconds, without any need of support systems. TubelInspect P8 drastically reduce the control times while maintaining maximum precision and speed. Equipped with 8 high-resolution cameras, TubelInspect P8 is suitable for tubes and wires with diameters from 1 mm to 125 mm and allows for optimum 3D inspection of objects of up to 1 m length. However, even longer objects can be measured with TubelInspect P8. The lateral doors allow for an overlapping repositioning section by section. Thanks to state-of-the-art technology, TubelInspect P8 fulfills highest requirements regarding accuracy and speed. The long-life and low-maintenance LED illumination technology guarantees a particularly smooth illumination of the measuring field. In this way, control and correction process become an automatism that perfectly meets the requirements of the factory 4.0







**SIKORA**  
Technology To Perfection

**SIKORA**

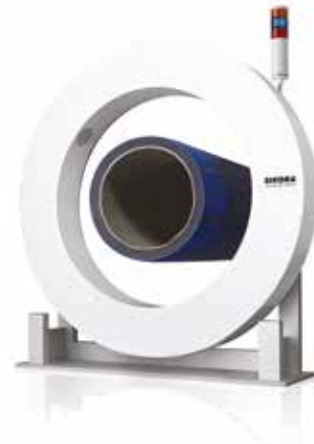


### Technology To Perfection

SIKORA AG is a leading manufacturer and supplier of innovative online measuring, control, inspection, analyzing and sorting technology for the hose, tube, sheet, plastics, wire and cable and optical fiber industries. Worldwide, users of SIKORA measuring devices benefit from an increasing quality, profitability and efficiency of the manufacturing process. Modern Laser, X-ray and millimeter wave technologies measure precisely and reliably product parameters such as diameter, ovality, wall thickness, concentricity and sagging.

In addition, SIKORA's product portfolio comprises systems for online inspection and sorting of plastic material as well as offline systems for inspection and analysis of pellets, flakes and films/tapes.

SIKORA is headquartered in Bremen, Germany. Since 1973 the high-quality devices have been developed and manufactured at this site. With regard to service and sales, SIKORA is globally active with offices in Brazil, China, France, India, Italy, Japan, Korea, Malaysia, Mexico, Russia, Turkey, the Ukraine, USA and the United Arab Emirates. In cooperation with more than 30 local representatives worldwide, SIKORA serves all customer demands for optimum quality control and productivity. In addition, international service locations ensure fast and reliable customer support on site.



**SITEL Control**  
S.r.l.

**SITEL**



### Infrared pyrometric system for temperature control with automatic adjustment of welding power

- Infrared pyrometer
- Electrical cabinet with user controls
- Industrial computer with close-loop control software

The pyrometer mounted perpendicularly to the pipe near the inductor zone, measures the temperature of the welding stripe on the pipe using an array of 14 sensors that sense a transversal temperature profile respect the pipe way.

#### Two laser punters define exactly the width of the profile under measure

An air purge system for lens cleaning and an adjustable mounting fixture compete the mechanic support.

The Industrial PC with a 12" touch screen runs software "Virtual Controller" developed by SITEL Control.

In its multiple windows it is possible to monitor and check:

- The correct aiming of the pyrometer (it displays which of the 14 sensors is actually measuring the welding stripe).
- Working parameters configuration (It is possible to setup all values for power regulation ant alarms).
- Pipe temperature (Instantaneous value of the welding stripe temperature).
- Working mode (if the pyrometer regulates automatically the welding temperature or not).





- Status of the preset alarms.
- Indication of welding power applied by the system referred to the one set manually with the potentiometer.
- Indication of the work program preselected.
- Indication of the file name used to acquire and store the temperature data.
- Graphic display in real time of temperature with indication of alarms thresholds.

The reordered data of temperature of the various production lots can be downloaded by an USB key or removable hard disk from the port on the control cabinet or directly by ethernet connection.

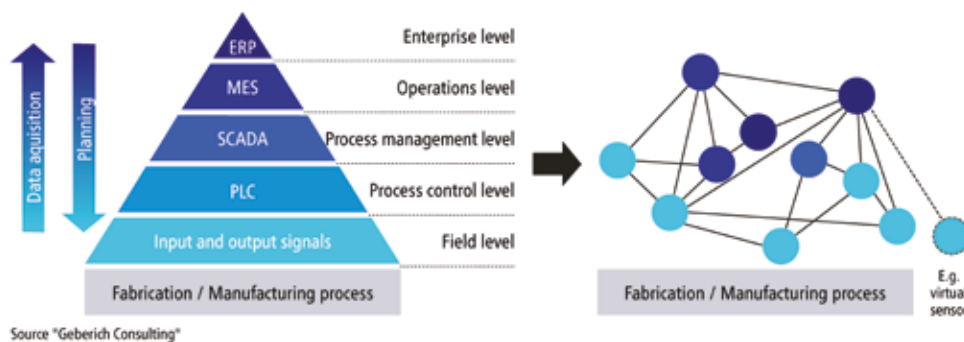


ZUMBACH



### Zumbach Measuring Instruments ready for Industry 4.0 with OPC UA Standard

ZUMBACH equips its powerful instruments with the recognized OPC UA standard. With this key technology, measurement solutions provide easy, scalable and secure information exchange with different systems in the production line – Platform and manufacturer-independent data exchange.



Prepare your dimension, profile and diameter measurement field data for new Industry 4.0 services. Instruments with the new OPC UA standard meet the technical requirements for intelligent data networking.

ZUMBACH has equipped its powerful measuring instruments

with OPC UA which ensure a simple, scalable and secure information exchange between different production line systems – regardless of platform or manufacturer.

### Transparent data management – simple monitoring in real-time

One software enables all M2M (machine to machine) or M2H (machine to human) measurement data obtained to be interconnected on one output platform, collected, displayed and analysed. The OPC UA standard facilitates horizontal AND vertical integration across various levels of the automation pyramid. This means that the requirements for industry automation along with future semantic communication scenarios from Industry 4.0 and the Internet of Things (IoT: Internet of Things) have already been met.

### ZUMBACH has it today, everyone else will have it tomorrow

OPC has the broadest circulation in the field of automation, but is technologically industry-neutral and can be run on all operating systems. Communication between plant equipment takes place reliably, securely and independent of the manufacturer. As one of the first equipment manufacturers for inline measurement and monitoring, ZUMBACH integrated OPC UA into its PC-based stems with host communications protocol (e.g. in the PROFILEMASTER® profile measuring systems series, in measurement systems for hot rolling mills and STEELMASTER cold processes as well as in the USYS IPC series for universal data recording, processing and display systems and many more). The OPC UA server is additionally available as an external gateway software for measuring devices with microprocessor and host communications protocol (ODAC® laser diameter measuring instruments, MSD diameter and ovality measuring systems, spark testers, computer interface boxes, and more).