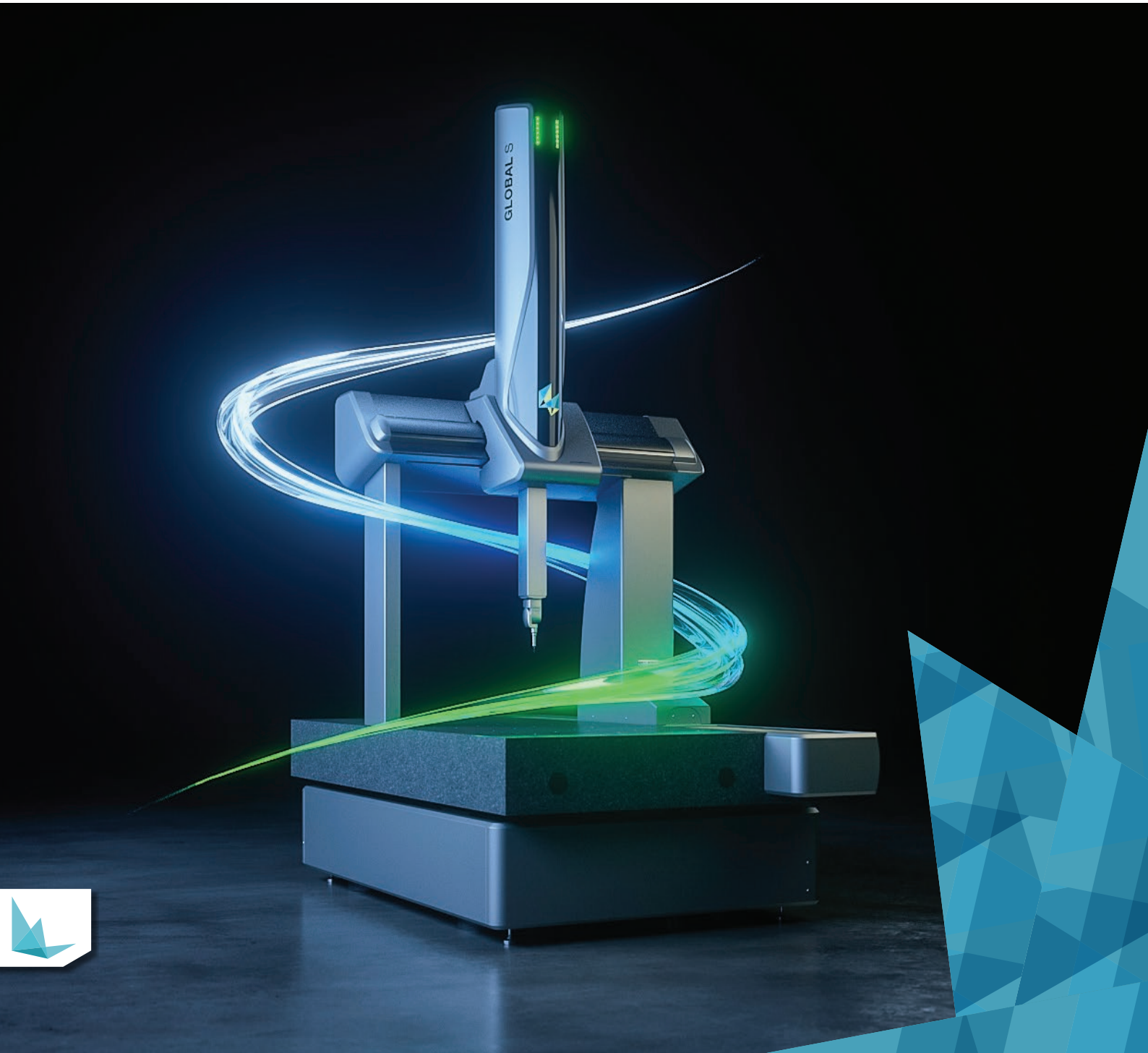
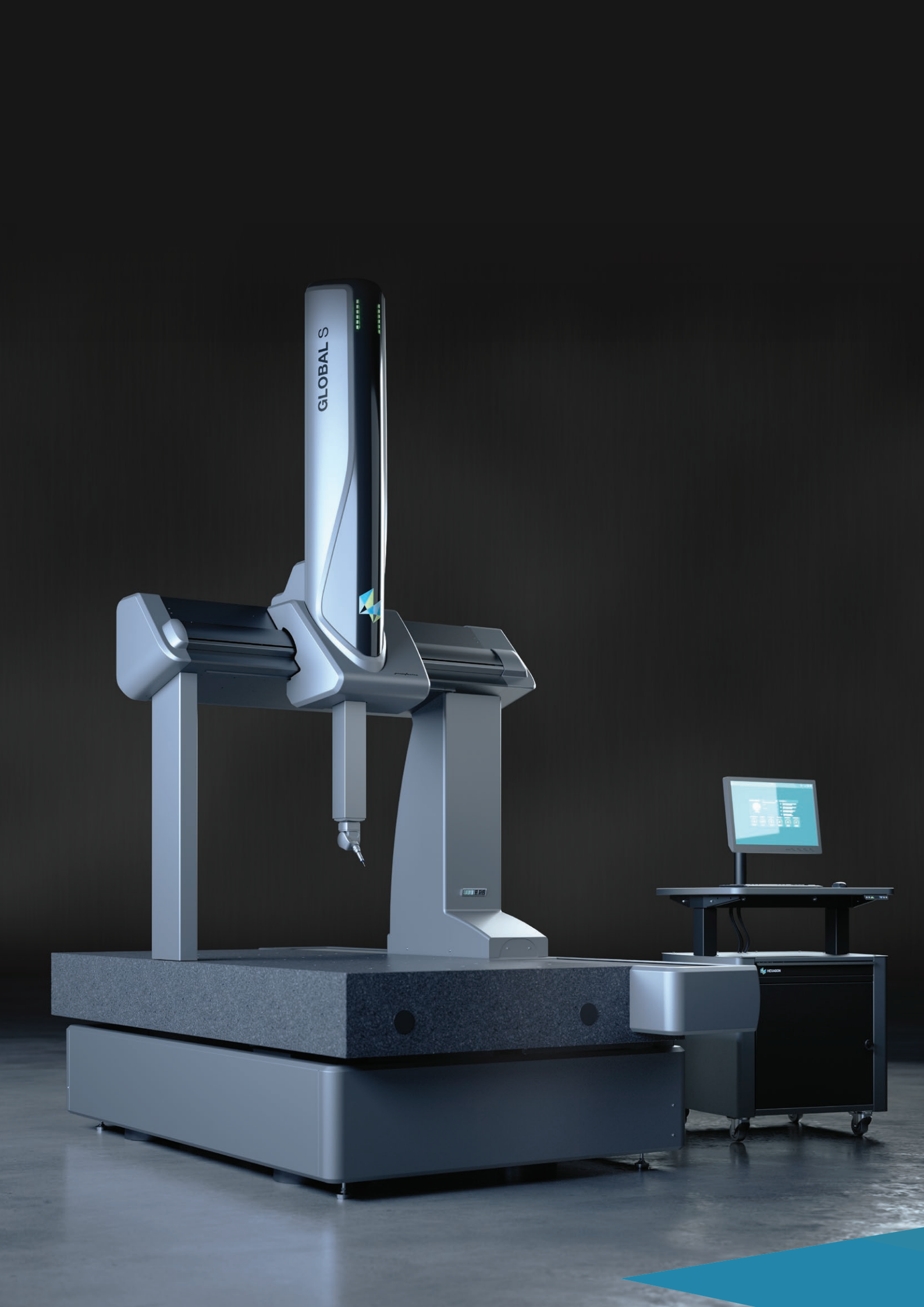
HEXAGON
MANUFACTURING INTELLIGENCE

PRODUCT BROCHURE

GLOBAL S

THE COORDINATE MEASURING MACHINE PUSHING PRODUCTIVITY FURTHER




GLOBAL S
HEXAGON

PUSHING PRODUCTIVITY FURTHER

With consumers demanding increasingly customised products on shorter lead times than ever before, productivity has become the key competitive driver in manufacturing. Productivity measures the efficiency of production in terms of precision, throughput and cost. To remain ahead of the competition, manufacturers need to find the right balance of these factors to meet their production targets. They need to embrace new technologies that improve efficiency in the critical areas of their workflows and ensure that every stage of the process contributes to a successful overall outcome.

Metrology equipment is no exception. Today, the measurement process must fit the overall production cycle time rather than increase it. The GLOBAL S coordinate measuring machine (CMM) series from Hexagon Manufacturing Intelligence combines smart technologies delivering superior measurement performance and enhanced productivity for the unique needs of any production environment.

Designed by Pininfarina and powered by Hexagon's Enhanced Productivity Series (EPS) concept, GLOBAL S brings together enhanced technologies to form an optimal measurement solution with three performance levels: Green, Blue and Chrome, to suit the requirements of any application. EPS machines offer customers the option to select their main productivity driver and configure the CMM for throughput, precision, flexibility or shop-floor capability. The CMM range also supports fully-customised setups to ensure that GLOBAL S is universally applicable and drives continuous productivity improvements.

ENHANCED PRODUCTIVITY SERIES (EPS)

For manufacturing equipment, productivity is not just defined by the machine itself, but the technologies and capabilities built into it and their contribution to the outcomes of the entire solution. Similarly, measurement productivity is not only defined by the machine hardware; finding the right configuration of the available technology for the task at hand will positively impact production efficiency metrics.

Hexagon Manufacturing Intelligence's Enhanced Productivity Series (EPS) solutions leverage a broad portfolio of smart technologies including user experience enhancements, advanced software and eco-friendly options. EPS machines harness the benefits of these technologies to simplify and expediate measurement tasks and enhance overall productivity.

Providing the option to select configurations from predefined capability packages or to configure the system for individual requirements, EPS machines ensure that quality engineers creating measurement routines, operators executing the inspection, and quality managers analysing the data all have the solution they need to ensure continuous improvement in the production workflow.


GLOBAL S
HEXAGON
Dimensions


GLOBAL S
EPS

WHAT DRIVES GLOBAL S

At the heart of the GLOBAL S platform are a series of cutting-edge technologies designed to help manufacturers shorten and optimise cycle times to better utilise machine resources for maximum productivity.

compass

Optimise Performance at Higher Speeds with Compass

One of the challenges to accurate high-speed scanning is the vibration effect of the CMM's own movement during operation, which can impact results. With the patented Compass technology, a combination of hardware and firmware solutions, GLOBAL S guarantees the ability to operate at the highest scanning speeds without compromising on accuracy. Available on the Chrome performance level machines, Compass enables faster scanning to drive productivity by reducing measurement cycle times.

scan PILOT

Scan the Unknown Faster with Scan Pilot

Scanning without a predefined measurement path can be challenging and time-consuming. To ensure high productivity in non-predefined scanning measurements, Scan Pilot offers greater motion control capabilities that allow robust scanning performance even when the path is unknown. With Scan Pilot, GLOBAL S can minimise cycle times – however complex the geometry or abruptly the surface changes.

fly2 MODE

Reduce Measurement Execution Time with Fly2 Mode

As well as the time taken to measure a part, cycle times are impacted by the time taken to position the sensor for that measurement. The Fly2 Mode trajectory optimisation feature generates the most efficient route between measurement points and creates the probe path accordingly. As a result, program execution times can be decreased, and internal machine stress reduced for lower maintenance and downtime.

eco MODE+

Decrease Operating Costs with Eco Mode

Providing both economic and ecological benefits, Eco Mode and Eco Mode+ reduce the operating cost of GLOBAL S while addressing sustainability concerns. Eco Mode automatically powers down the CMM when idle while keeping the machine ready to go. Eco Mode+ reduces air consumption by up to 90% when the machine is idle and can save up to 25% on compressed air costs under standard operating conditions.

WHAT ENHANCES GLOBAL S

GLOBAL S machines are highly-configurable and a large range of sensors, software options and accessories enable users to perfectly match the setup of the machine to the specific needs of the production workflow.

Configure with Sensors for the Task at Hand

The choice of an appropriate probe configuration is extremely important to guarantee maximum efficiency during measurements. Hexagon offers an extensive portfolio of solutions, including high-precision touch trigger probes, contact and non-contact scanning sensors, and tool changer options, that enable GLOBAL S to address any application requirements. Extensions of up to 800 mm are available on selected probes for maximum accessibility.

Use Software to Embed Quality Across the Organisation

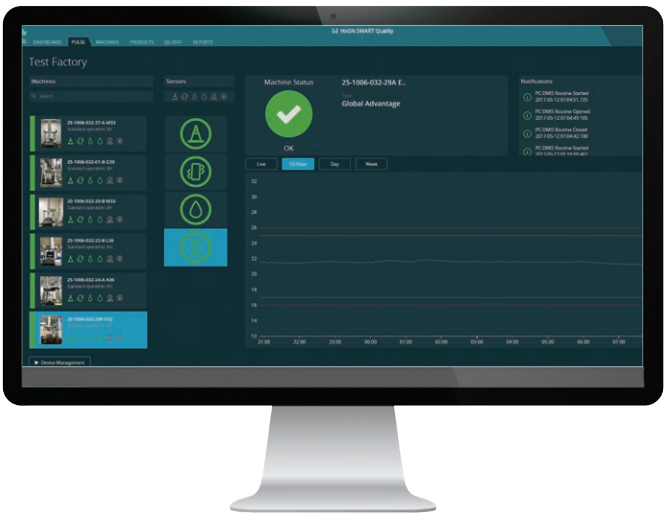
The right metrology software gives manufacturers the tools necessary to easily create and execute measurement routines and communicate the results quickly and effectively. PC-DMIS has over 20 years of built-in expertise enabling manufacturers to capture and share quality information seamlessly across the organisation and through all phases of production. For more demanding applications such as the inspection of special or complex geometries or challenging data evaluation, the powerful QUINDOS software with its range of specialised modules offers the sophistication required by the most advanced metrology user.

Take Measurement Data Analysis Further

CMMs produce a lot of data that is not always simple to understand and manage. The Q-DAS software portfolio offers many powerful packages for the statistical analysis of data gathered from almost any measurement equipment. The range offers better insight and control of the manufacturing process, alerting users to issues sooner and reducing the amount of rejected parts produced.

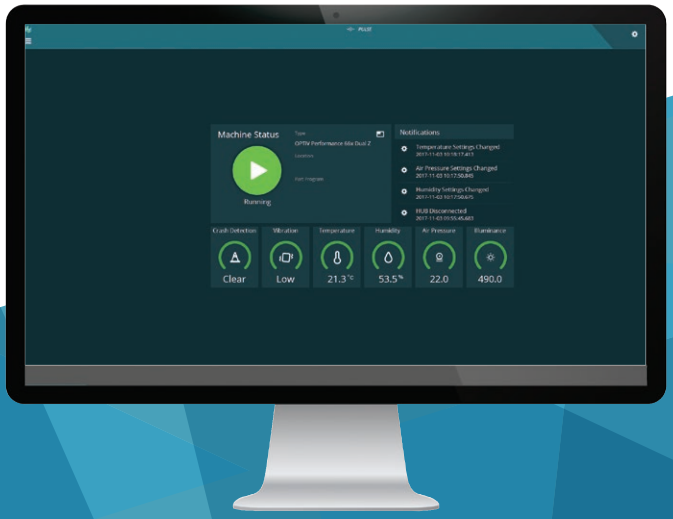
Progress Towards Industry 4.0

Getting more actionable information from measurement data makes quality a worthwhile investment. The GLOBAL S is fully compatible with HxGN SMART Quality, the enterprise-level quality data management platform utilising comprehensive statistical analysis, visualisation and workflow management to provide insight into the manufacturing process.



Monitor the Working Environment with PULSE

Used as a standalone product or combined with HxGN SMART Quality, PULSE provides users with a real-time view of the environmental conditions surrounding their CMM. Offering instant equipment status alerts and crash notifications, PULSE gives users confidence in their results by monitoring environmental conditions that could influence the quality of measured data.



THROUGHPUT **DRIVES PRODUCTIVITY**

For mass-market items where productivity is measured in output volume and time-to-market, throughput is the main concern for the production manager. Manufacturing engineers expect large numbers of parts to be produced to exact specifications, and as the production pace increases, mistakes become costlier. The quality department may be running CMMs round the clock and need results fast and in an easy-to-use format that enables timely decisions to be made.

The GLOBAL S platform is designed for high-throughput environments. The CMM's advanced technology enables quality departments to reach the highest levels of throughput required in today's demanding market. The Throughput capability package gives manufacturers speed without compromising on precision.

- Maximise scanning throughput while maintaining accuracy using Compass technology on the Chrome performance level
- Ensure high throughput when measuring complex part geometries with sharp edges or small profiles even when the scanning path is unknown with Scan Pilot
- Shorten cycle times with best-in-class machine speed and acceleration
- Achieve further measurement cycle time reductions with Fly2 Mode trajectory optimisation reducing program length by up to 10%
- Reach more geometric features and minimise tool changes using an indexing probe head such as the HH-AS8-T2.5, which can achieve 12 240 unique positions
- Acquire data faster than via single-point probing using an analogue scanning probe like the HP-S-X1

GLOBAL S with the Throughput capability package is ideally suited to today's fast-paced lean manufacturing conditions.

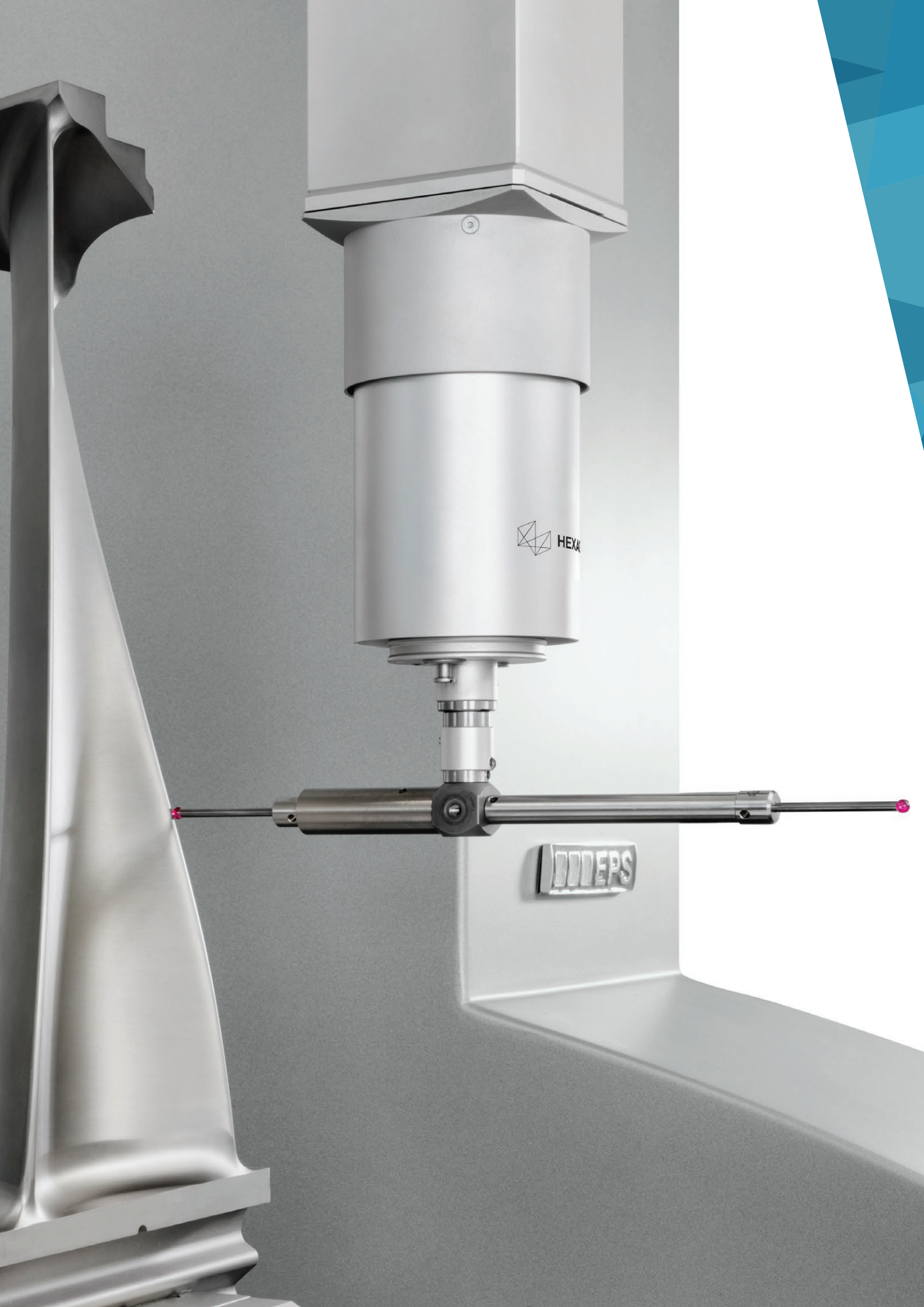
PUSH THROUGHPUT FURTHER...

Machine Status Alerts
As well as recording changes in temperature, vibration, humidity and other factors that may affect results, the PULSE environmental monitoring system offers equipment status alerts, making the solution ideal for automated inspection setups or ensuring high-volume measurements are performed in optimal conditions.

Analyse Data Effectively
High throughput inspection generates high volumes of data, and statistical analysis can help ensure best use of big data. Q-DAS software enables quality engineers to monitor data trends and process results, supporting root cause analysis.

Automate Part Loading
Workflow automation is a highly reliable way to increase throughput. GLOBAL S is compatible with automatic and semi-automatic workpiece feeding systems that can reduce floor-to-floor inspection times or even allow measuring operations to continue unattended.


GLOBAL S
HEXAGON


HEXA
EPS

PRECISION **DRIVES PRODUCTIVITY**

If the workshop is producing parts with complex geometries and tolerances are tight, quality technicians and engineers need to know that they have complete confidence in control over the measurement data.

The structure of GLOBAL S is designed for accurate measurement. Its aluminium frame offers high stiffness with minimal weight, enabling the CMM to perform with speed and accuracy. The TRICISION bridge offers optimal stiffness-to-mass ratio for high accuracy and long-term stability, while precision-machined dovetail guideways provide precise movement along the entire travel path of the machine. GLOBAL S also uses advanced geometric compensation techniques to ensure maximum precision, while the Precision capability package adds ultra-precise sensors and scanning technology to give the machine the highest level of accuracy.

- Scan with confidence as Compass technology compensates for the intrinsic vibration of the machine, enabling highly accurate data capture
- Reduce measurement uncertainty using a fixed head probe such as the HP-S-X5, which ensures the correct compensation for stylus deflection even when long extensions are fitted

GLOBAL S with the Precision capability package allows complete confidence in the measurement of parts with tight tolerances such as powertrain components.

PUSH PRECISION FURTHER...

Tailor the Software to the Application
Developed to support submicron measurement tasks, QUINDOS is ideal for the most complex measurement tasks and special analyses. Offering specialised packages for specific part geometries, QUINDOS is the software of choice for advanced users in the metrology department.

Verify Environmental Conditions
Precision measurement requires control of all conditions that affect measurement. Even in quality rooms, fluctuations in environmental conditions can impact measurement results. The PULSE system monitors changes of temperature, vibration, humidity and other factors, and alerts users so that remedial actions can be taken immediately.

FLEXIBILITY **DRIVES PRODUCTIVITY**

For manufacturers producing many different types of workpieces, or focusing on parts with a variety of features, multiple material types or varying surface characteristics, flexibility of measurement strategy is essential to maintaining productivity. Quality technicians need to be able to deploy the right sensor at the right time to ensure that the part characteristics are verified and effectively controlled.

The Multi-Purpose capability package transforms GLOBAL S into a multisensor CMM with the ability to use both contact and non-contact sensors in a single part program. It allows efficient measurement of a variety of parts and enables the CMM to switch seamlessly between applications with completely different requirements. Combining an indexing probe head with the selected sensors and a tool changer, this configuration provides the ultimate application flexibility, ensuring each part is measured with the most suitable sensor.

- Capture high-density point-cloud data on large areas and freeform surfaces using non-contact options such as the HP-L laser scanner
- Use non-contact sensors to inspect delicate surfaces or soft-materials without risking damage to the part
- Combine non-contact measurement with tactile probing for maximum accuracy on critical features
- Maximise efficiency and minimise measurement inspection time by automatically switching probes within the part-program

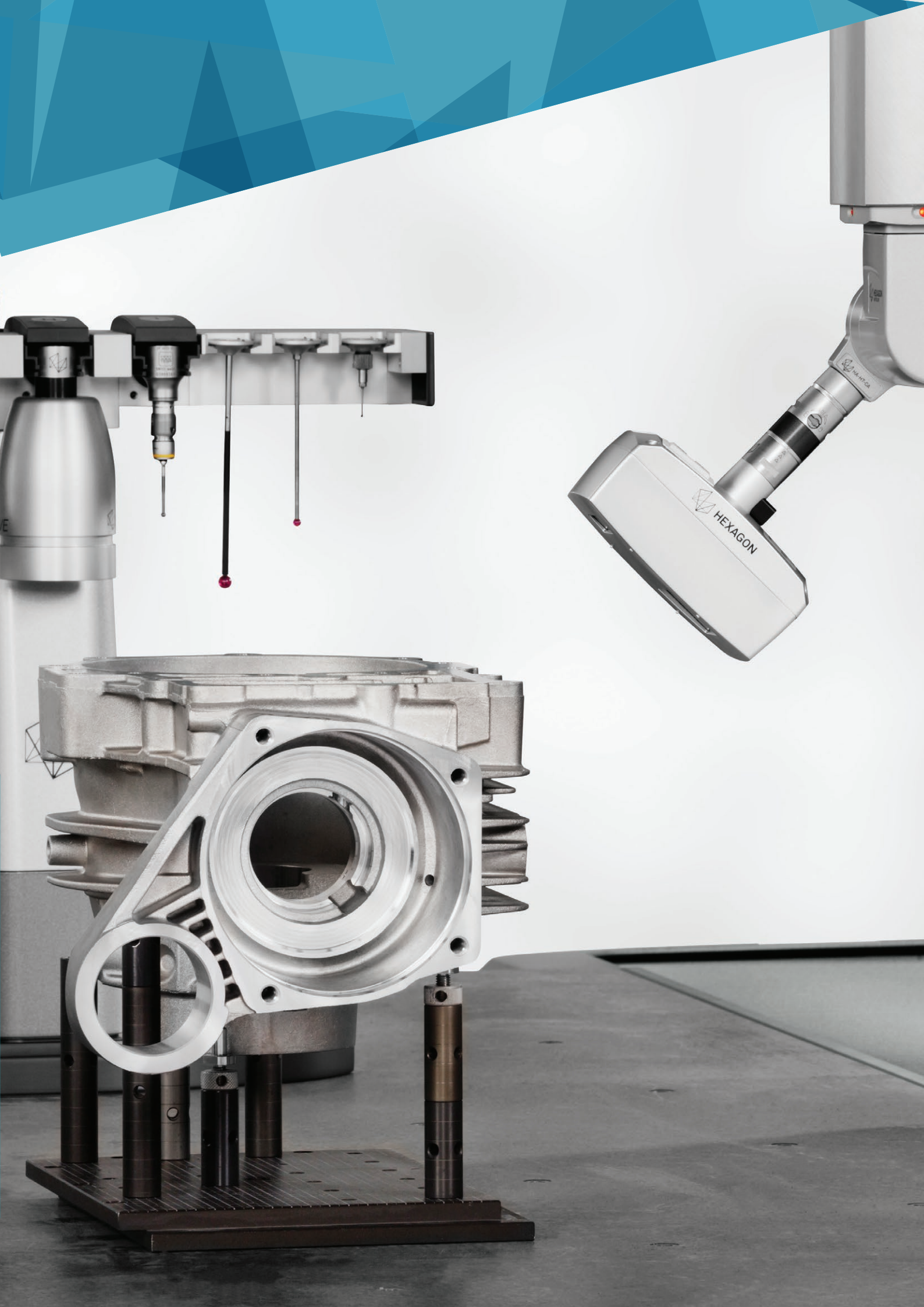
GLOBAL S with the Multi-Purpose capability package ensures that the operators have the flexibility to use the right tools for the job – even when the job changes day to day.

PUSH FLEXIBILITY FURTHER...

Add Optical Measurement
For capturing features that are too small for a tactile probe or recording accurate 2D measurement data, GLOBAL S supports the HP-C-VE optical sensor.

Operate Multiple Sensors from One Software
PC-DMIS metrology software supports all the sensor options available for GLOBAL S and allows seamless shifts between them in a single software, enabling users to configure programs from one-off specialised inspection tasks and reverse engineering to high-production volume process control.

Manage Complex Data and Customise Reporting
Maximise the benefits of a multisensor setup with metrology software that handles dense point-cloud data. PC-DMIS integrates data from single points to complex meshes and enables export to Microsoft Excel, industry-standard IGES and STL, and statistical process control (SPC) software.


HEXAGON


EPS

INTEGRATION **DRIVES PRODUCTIVITY**

Time spent taking parts from production to the quality room for inspection can be a major barrier to productivity. Moving measurement closer to the point of production considerably reduces idle times in the workflow and improves efficiency. Measurement systems closely integrated with production operations detect quality defects quickly, enabling workflows to be optimised and shorten time-to-market. However, measuring in the workshop offers its own challenges as shop-floor conditions vary significantly.

The Shop-Floor capability package enables GLOBAL S to compensate for fluctuating temperatures and provides a higher level of protection from the effects of dust and dirt, as well as adding a range of operator features ideal for shop-floor users.

- Ensure reliable results even in the changing temperature conditions of shop-floor environments through advanced temperature compensation
- Prevent contaminants from reaching the critical mechanics of the CMM with bellows and covers, improving machine uptime even in the most critical environmental conditions
- Be alerted to changes in temperature, humidity and other factors that might affect results using the PULSE environmental monitoring system
- Enable operators to run predefined part programs quickly and with minimal training using the INSPECT user interface from PC-DMIS
- Improve resource management using the messaging light option to see the CMM's status from across the shop floor

GLOBAL S with the Shop-Floor capability package helps keep process quality under control while optimising the overall workflow for dimensional inspection.

PUSH INTEGRATION FURTHER...

Automate Inspection
The Shop-Floor capability package enables GLOBAL S to operate inline or near the line, offering the potential for use within a fully-automated work cell for maximum productivity.

Enhance Machine Protection for Extreme Conditions
When the environment might limit the performance of GLOBAL S or requires that the CMM has extra protection from dust and contaminants, Hexagon offers protective enclosures or climate-controlled room options. Active dampeners can also mitigate against excessive vibrations.

Ensure Operator Safety
GLOBAL S is inherently safe and does not require any special protection in its standard configuration. However, to meet any customer-specific request, GLOBAL S is available with active safety devices. This minimises user dependency and provides maximum flexibility to GLOBAL S CMMs operated on the shop floor.

EXPERT LOCAL SUPPORT AROUND THE WORLD

With a global network of solution centres and consultation engineers, Hexagon Manufacturing Intelligence's metrology experts are on hand to help manufacturers around the world achieve their quality goals. Local facilities are equipped to provide product demonstrations, live part programming and extensive training. From installation and start-up to ongoing support throughout the life of the GLOBAL S CMM, Hexagon is there every step of the way.

PRODUCTION FACILITY

DEMONSTRATION CENTRE

START-UP SUPPORT

Ensure trouble-free operations at installation and beyond with expert application engineers ready to provide staff training, support for initial part measurement programs and advice going forward.

TRAINING

Good knowledge of CMM operation and maintenance can have a major impact on productivity. Ranging from introductory level to advanced, Hexagon's training courses give users the skills to optimise their CMM use and maximise uptime. Hexagon offers a wide range of training for beginners and experienced operators, either in a dedicated training centre or at a customer facility.

MAINTENANCE PLANS

Preventative maintenance and scheduled services keep hardware in optimal condition. Different maintenance plans are available. They can cover service parts, labour and transportation when repairs are needed. The service can also include a dedicated customer representative, access to Hexagon's technical support, and remote assistance where applicable.

CALIBRATION SERVICES

Maximise return on investment by keeping the system precise throughout its life. Hexagon support engineers have the experience, the specialist tools, and the accreditation to current global standards to properly calibrate and recertify CMM systems.

APPLICATIONS SUPPORT

Hexagon's expert metrology application engineers can write part inspection programs for customers during installation and beyond. This service is ideal for first-time CMM users, new program launch support or for experienced operators who are dealing with new or complex geometries.

SITE ANALYSIS

Workshop and laboratory conditions are not always ideal for capturing accurate measurement data. If this is the case, Hexagon engineers are available for site consultations, determining what actions can be taken to improve results and helping to select the most appropriate solution for the environment.

HEXAGON
MANUFACTURING INTELLIGENCE

Hexagon Manufacturing Intelligence helps industrial manufacturers develop the disruptive technologies of today and the life-changing products of tomorrow. As a leading metrology and manufacturing solution specialist, our expertise in sensing, thinking and acting – the collection, analysis and active use of measurement data – gives our customers the confidence to increase production speed and accelerate productivity while enhancing product quality.

Through a network of local service centres, production facilities and commercial operations across five continents, we are shaping smart change in manufacturing to build a world where quality drives productivity. For more information, visit **HexagonMI.com**.

Hexagon Manufacturing Intelligence is part of Hexagon (Nasdaq Stockholm: HEXA B; **hexagon.com**), a leading global provider of information technologies that drive quality and productivity across geospatial and industrial enterprise applications.

- COORDINATE MEASURING MACHINES
- 3D LASER SCANNING
- SENSORS
- PORTABLE MEASURING ARMS
- SERVICES
- LASER TRACKERS & STATIONS
- MULTISENSOR & OPTICAL SYSTEMS
- WHITE LIGHT SCANNERS
- METROLOGY SOFTWARE SOLUTIONS
- CAD / CAM
- STATISTICAL PROCESS CONTROL
- AUTOMATED APPLICATIONS
- MICROMETERS, CALIPERS AND GAUGES
- DESIGN AND COSTING SOFTWARE