



**BOWERS METROLOGY**

our **expertise** in **industry**

taking a  
**CloserLook**

## Welcome to Bowers Metrology

This edition of **CloserLook** brings you up-to-date with all the latest developments from precision measuring solutions provider, **Bowers Metrology**. Take a closer look at how just some of the solutions from Bowers have helped revolutionise the working practices of many organisations, across a wide range of industries:

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## Bowers' Bore Gauge Works in Xtreme Conditions

Based in Brighouse West Yorkshire, **Koso Kent Introl Limited (KKI)** was originally formed in 1967 under the name Introl Ltd. The company specialises in the supply of standard service control valves, severe service control valves, high-technology surface choke valves and high-performance rotary valves for the Oil, Gas, Petrochemical and Power Industries.

The company's high quality products are manufactured using a wide range of materials, from carbon steel to nickel alloys and high-strength super-austenitic material. Company valves can be supplied to withstand working pressures of up to 300 bar, with special high-pressure globe and angle valves available for oil applications of up to 800 bar working pressure. Valves are able to be supplied for a wide range of problematic applications relating to cavitation, flashing, erosion, high velocity, noise, vibration or for processes which involve high pressures, high-temperatures, sub-zero temperatures or solid-contaminated fluids.

When recently faced with the need to extend their bore gauging capabilities, company Production Engineer Paul Skitmore contacted the world's leading manufacturer of bore gauges; Bradford based Bowers Metrology. Paul explained "As all of our machine operators have responsibility for the quality of their own output, we needed to find a range of accurate digital bore gauges that would be able to stand-up to in-process use on components situated within machine tools, and yet have

the high accuracy and repeatability required for final inspection checks. We found the answer to our needs in the Bowers XT Xtreme range.

Available to measure internal diameters of up to 300mm, XT Xtreme's advanced new electronics boast a very impressive IP65 rating, rendering them resistant to coolant, water and airborne particles. Claimed by Bowers to be the ideal digital bore gauge for use within hostile measuring environments, such as in close proximity to machine tools, amongst a long list of useful features incorporated into these radical tough instruments are a clear digital display, metric/inch conversion, an RS 232 output and hardwearing extended travel carbide measuring anvils.

Mr Skitmore continued. "As failure in the field of any of our products could prove disastrous, we apply the most stringent quality control regime and regularly invest in the best possible Quality Control equipment. We were aware of the high quality of Bowers previous generation of bore gauges and were delighted to hear about the new XT range's ability to measure bores on components situated within our machine tools, areas that would preclude the use of other digital gauges. Now in daily use, our staff have found the new Bowers' gauges easy to use, accurate and repeatable. Also, as we produce a lot of internal threads and grooves, I was happy to find that Bowers will also manufacture inexpensive 'one-off' XT instruments to cater for other problematic internal measuring applications."



*"As all of our machine operators have responsibility for the quality of their own output, we needed to find a range of accurate digital bore gauges that would be able to stand-up to in-process use on components situated within machine tools, and yet have the high accuracy and repeatability required for final inspection checks. We found the answer to our needs in the Bowers XT Xtreme range."*



# Bowers' Quality Takes The Pressure

With manufacturing and distribution facilities in most of the world's industrialised countries, the renowned **Manuli Rubber Industries Group** is regarded as one of the global leaders involved in the manufacturing and sale of hydraulic hoses and connectors. As failure in the field of any of the company's comprehensive range of products could have disastrous safety consequences, in addition to severe financial implications, Manuli ensures that quality is at the core of all of the company's activities.

Based in Patricroft, Manchester, **Manuli Hydraulics UK** (part of MRI Group) pursues a philosophy of constantly upgrading and improving the company's quality systems and inspection routines. A study of the methods used to measure the effectiveness of the hi-pressure crimping process, used to secure connectors to the company's hoses, resulted in the creation of an imaginative new measuring system.

In search of a fail-safe hose connection inspection routine, Manuli Hydraulics UK contacted Bowers Metrology. In cooperation with Manuli Hydraulics

UK, Bowers was able to develop a range of specialised bore gauging heads. When fitted to Bowers' XT digital pistol-grip gauges, the ingenious bore gauging heads are able to access the critical internal areas of hose connectors and measure the diameter of an assembly prior to it being pressure crimped on to the hose, and then again after the critical crimping process takes place. The post crimping, reduced diameter or 'collapse' of the assembly has a direct bearing on how securely the hose and connector are joined, and by extension the assembly's performance in the field.

By collecting data, via the new Bowers digital bore gauging system, Manuli Hydraulics UK is able to continually monitor its crimping processes across the company's entire range of hoses. The gathered dimensional information allows the company to make minor changes to their presses, enabling them to apply the optimal amount of pressure to ensure the ideal 'collapse' diameter of connectors to be achieved.

Richard Walker of Manuli Hydraulics UK explained, "Mindful of the fact that our hydraulic hoses can be subjected to pressures exceeding 420bar, the reliability of our connector to hose crimping

process is of vital importance to us. As our Bowers bore gauging systems have clear digital displays and are actuated by simple triggers, they have proven to be very popular with our operators."

"I am pleased to report that the Bowers gauging system has enabled us to achieve zero defects within this important company process."



*"We are able to gather data from the gauges without the need for cumbersome cables, due to the gauges' advanced Wi-Fi capability."*

# Bowers' Bore Gauges Flying High with APPH Basingstoke

Part of BBA Aviation PLC, **APPH Basingstoke Ltd** provides its growing international customer base with a highly skilled multi-disciplined engineering capability from its impressive 70,000 sq/ft facility situated in Basingstoke, Hampshire.

Boasting a long list of international approvals, this well-known company undertake manufacturing, repair and overhaul work across an impressive spectrum of Aerospace related areas such as Cargo Systems, Electrical Harness, Rotary Wing and Landing Gear.

As one of Europe's leading landing gear repair and overhaul engineering organisations, APPH Basingstoke has a comprehensive in-house Grinding, Boring, Milling and Turning capability and is able to accommodate the vast majority of landing gear currently in service. When tasked with finding a flexible gauging system with the ability to accurately measure the bores in these safety critical parts, Robin White, company Inspector found that the wide diversity in the sizes of landing gear work undertaken by the company raised an awkward problem. "Because of our broad range of tight tolerance



bores, we needed to find a system with the potential to gauge sizes of up to 300mm, in both our production and inspection areas. The nature of our larger components also dictated that any new company bore gauging system should have the ability to take precise 'blind' measurements 2 metres down inside our components without leaving any kind of blemish on the fine surface finish of our bores."

Robin found the answer in Bowers Metrology's impressive, XT Xtreme Bore Gauging range. Ideal for use within inspection departments or in close proximity to Machine Tools, Bowers' advanced new electronics boast a very impressive IP65 rating, rendering them resistant to coolant, water and airborne particles. Amongst a long list of useful features incorporated into

the tough new instruments are a clear digital display, metric/inch conversion, an RS232 output and hardwearing extended travel carbide measuring anvils.

Robin continues, "Having been extremely impressed by the standard XT Xtreme Bore Gauge range, Bowers was able to grind a radius on our instrument's contact anvils guaranteeing the integrity of our components surface finish, whilst retaining the gauge's micron capability. Modular, long-reach 2 metre extensions were also supplied ensuring that we are able to accurately measure even our deepest bores. We will be adding further Bowers measuring heads to our range as the need arises. Our new Bore Gauges have proven a great success and are now helping us to maintain APPH's excellent reputation for the high-quality of our work."

alcon



# A 'Brake' Through in measurement

**Established in 1984 by engineer and sports car racer John Moore, the well-known brake and clutch product manufacturer, Alcon Components Ltd now employs more than 80 staff at its global headquarters and impressive manufacturing facility based in Tamworth, Staffordshire.**

Complementing the work of technical sales personnel located in the UK, the USA and France, Alcon has a network of distributors situated throughout Europe, Africa and Australasia. Alcon's comprehensive range of brake and clutch products are able to satisfy an extremely wide spectrum of customers, from an F1 designer seeking a bespoke solution, to an enthusiast building a race car on a tight budget. Equally an OEM project engineer with a new performance car programme to support is able to find all of the help he needs.

Within the challenging world of motorsport, as well as enjoying official Technical Partner status with the Honda F1 Racing Team for the past 7 years, Alcon's advanced brake hardware is also used by a number of other prominent F1 teams and Citroën, helping Sebastien Loeb to dominate the demanding World Rally Championship [WRC] in recent years.

Reflecting the global popularity of the company's products, the motorsport departments of Audi, BMW, Ford, Peugeot, Renault and Volkswagen are all valued Alcon customers. Whilst in the USA, every IRL title since 2003 has been won using Alcon brakes. Well-known, front-running NASCAR customers include the famous Penske, Joe Gibbs Racing and Richard Petty Motorsports teams.

In the field of specialist and performance road cars, Alcon serves an impressive list of prestigious road car manufacturers, including Audi, Bentley, Brabus, Jaguar and Land Rover. The company's reputation for technical innovation is illustrated by the advanced brake calipers it supplies for the Bentley Continental Supersports and Audi RS6.

The safety critical nature of Alcon's products dictates that the company runs an extremely stringent quality control regime. In addition to employing a full range of high-tech inspection equipment, the specialised nature of the company's products means that bespoke

solutions to some of Alcon's more unusual measuring applications have to be sought. A perfect illustration of the ingenious solutions Alcon applies to difficult gauging problems is the custom-built bore gauge system supplied by Bowers Metrology UK.

Having sought an easy to use, 'off the shelf' solution to the precise measurement of a pressure seal groove and a wiper seal groove, located in the piston bore of a high performance brake caliper, Carl Evans, Alcon's Quality Engineer was unable to find a standard gauge that would match the company's demanding accuracy specification.

A chance conversation with a Bowers' Sales Engineer resulted in Bowers manufacturing a specialised digital bore gauge. Carl Evans enthused, "Based on Bowers' XT Xtreme Pistol Grip Digital Bore Gauge, our new measuring kit has measuring anvils that match the profiles of our caliper bore grooves. By pulling the gauge's trigger, the instrument's anvils retract allowing entry into the bore, releasing the trigger enables the contacts to locate accurately into our difficult to access grooves. The resulting diameter measurement is then instantly displayed on the gauge's digital output."

"Although we normally employ our new gauges on brake calipers post production, it is useful that, due to their impressive fluid resistance, we are able to measure components that remain located in our machine tools. The higher magnitude of dimensional measuring accuracy the Bowers kit has delivered, enabled us to recently undertake a rigorous process capability study. The result of this exercise has delivered considerable process improvements and a reduction in the purchase of consumable tooling."

Bradford based Bowers describes its state-of-the-art XT Xtreme range as the ideal solution to bore gauging within hostile

measuring environments, such as in close proximity to Machine Tools. The impressive, XT Xtreme Bore Gauging range has advanced new electronics boasting a very impressive IP65 rating, rendering them resistant to coolant and water. Amongst a long list of useful features incorporated into these radical, tough instruments are: a clear digital display, metric/inch conversion, RS 232 output and hardwearing extended travel carbide measuring anvils. Available to measure diameters up to 300mm, as with Alcon, Bowers is able to manufacture affordable 'one-off' XT instruments to cater for many none standard internal measuring applications, such as threads, grooves and splines.

*"The micron capable Bowers gauges are extremely repeatable, they have speeded-up a previously time consuming inspection routine and have proven very popular with our machine operators."*





# Far Reaching Quality

**When tasked with finding a shop-floor proof Digital Bore Gauging system that was able to provide micron accuracy when measuring to a depth of 2.5 meters inside oil-pipes, Mollart-Cox Director, Chris Cox despaired of locating a gauging system to match his extremely demanding specification.**

Following fruitless enquiries made to several local gauging suppliers, Chris contacted Bowers Metrology.

Bowers was able to satisfy Mollart-Cox's particularly challenging requirements with the XT Xtreme. Seen as the long awaited solution for those who need to use Bore Gauges within hostile measuring environments, such as in close proximity to honing machines, the impressive XT Xtreme system boasts a very impressive IP65 rating, rendering the gauge resistant to coolant, water and airborne particles. Available to measure bores up to 300mm, amongst a long list of useful features incorporated into these tough gauges is a clear digital display, metric/inch

conversion, an RS232 output and hardwearing extended travel carbide measuring anvils.

Encouraged by the contribution the new Bowers gauges are making to the company's quality regime, Chris Cox reported. "As we have gained an enviable reputation for the high quality of our output within the areas of gun drilling, deep-hole boring, honing and turning, from our customers who operate in such demanding fields as Automotive, Medical, Aerospace and not least the Oil industry. Our new Bowers Bore Gauging system needed to have the flexibility to undertake a wide range of internal measuring tasks. The modular format of the XT Xtreme system means that we are able to change measuring heads depending on the diameter to be measured and also add length extensions to adjust the reach of the gauge inside the measured bore. We are now able to measure diameters from 100mm – 200mm, to a depth of more than 2.5 meters, we also intend to purchase further measuring heads and length extensions as the need arises. Despite the ease of use of the Bowers system, the accuracy and repeatability of the bore gauges has proven to be excellent. Haven

proven the gauge's capability within our production environment, we now intend to purchase a radio communication system from Bowers that will allow the measured data, gathered by the Bowers gauges, to be sent 'wirelessly' to our computer based traceability system."



*'Despite the ease of use of the Bowers system, the accuracy and repeatability of the bore gauges has proven to be excellent.'*

# An 'AIR TIGHT' Case for Quality

**Bowers Metrology UK has earned a reputation second to none for providing cost-effective, innovative Air-Gauging solutions to the measuring needs of the UK's Automotive Industry.**

The considerable experience gained by Bowers within this demanding field enables it to provide a large range of 'off-the-shelf' Air-Gauging solutions and also to design and deliver cost-effective bespoke fixtures and accessories, enabling the most demanding of Air-Gauging measuring applications to be undertaken.



Typical of Bowers many satisfied customers is David Moore, Quality Manager at the high-tech Musashi Auto Parts UK Ltd manufacturing plant based in Blackwood, South Wales. Boasting an impressive 70-year history of manufacturing a wide range of automotive parts in its manufacturing plants situated in North and South America, Asia and Europe, the multinational Musashi Corporation's customer base reads like a 'who's-who' of the automotive world, demonstrating Musashi's enviable reputation for the high quality of its wide range of Automotive products. Then faced with the need to find an extremely accurate way of measuring critical camshaft features, David Moore contacted Bowers UK and relayed his demanding gauging requirements to their technical

staff. David explains "In addition to investing in state of the art CNC Machine Tools to help uphold the Company's reputation for the quality of our output, Musashi regularly invests in equipment that ensures our valued customers continue to receive Automotive products of the highest possible standard. Having identified the need for an advanced Air-Gauging system that could accurately measure difficult to access camshaft bearing journal diameters within Machine-Tool cycle times, I undertook a web-search in order to compile a list of potential suppliers. Having examined the merits of several alternative Air-Gauging providers, the ease of use, accuracy, repeatability and not least the price of the Bowers system convinced me to choose the Bowers option. Bowers designed and delivered a range of easy to use Air Snap-Gauges linked to Bowers' PC2200 Air Columns. The great success of the first Bowers Air-Gauging measuring station installation convinced me to extend the scheme into several other areas of our busy Camshaft manufacturing facility. The significant contribution our Bowers Air-Gauging has made to the continued quality of our output and the enthusiasm for the system shown by our operators means that our Air-Gauging programme will soon be rolled-out to other areas."

Designed to withstand the rigours of a harsh shop-floor environment, Bowers advanced PC 2200 Air/Electronic Measuring columns can be linked to a PLC or Logic controller and boast a multitude of features including

metric/ imperial conversions, 3 colour LED display, status indicator, 2-4 probe input, probe mixing (A+B), (A-B), static/dynamic mode -Max -Min -TIR, Tolerance limit setting, approach limit setting, calibration Max/ Min, accuracy 0.5% full scale +/- resolution, RS-232 output.



# A 'Hard Test' at Grimsby Institute

Based at the impressive Nuns Corner campus and two additional principal sites, The Grimsby Institute of Further and Higher Education is a general further education college offering full and part-time Further Education, a growing higher education provision, training for business, education in the community and commercial activities.

The Institute employs approximately 1,350 staff and is now the third largest employer in the North East Lincolnshire region.

The institute's excellent Fabrication and Welding Department offers a range of high quality courses from apprenticeship programmes through to Engineering Construction Industry Training Board professional qualifications. Courses are available for school leavers entering the field, through to professional welders who wish to update their skills. The busy department is equipped with all of the equipment found in modern light/heavy fabrication industrial environments, including a wide range of brake presses and guillotines.

A recent search by Fabrication & Welding Tutor, Phil Sutton for a modern digital replacement for the Department's aging analogue hardness tester resulted in the purchase of an advanced CV-700 Universal Hardness Tester from Bowers Metrology.

Phil explained "Rather than base the hardness testing modules of our courses on theory alone, as with all aspects of our activities, we passionately believe that our students should gain real 'hands-on' practical hardness testing experience. Because of the diverse nature of the hardness tests we perform, our proposed replacement hardness tester needed to perform rapid, accurate hardness testing routines in Rockwell, Brinell and Vickers scales and have a clear display with a monitor that could be viewed by an entire group of students.

Having considered several alternative machines, we decided that the CV 700 from Bowers Metrology best met all of our criteria. Now in daily operation, the new unit's easy to operate controls enable all of our students to quickly master simple post heat treatment testing routines and to fully understand their findings. Currently used by Day Release apprentices on EAL level 3 Fabrication and Welding Advanced Diploma courses, the use of the CV 700 will soon be rolled-out for use in other courses such as our 14 – 19 Engineering Diploma Group"

Intended to withstand use within harsh industrial environments, Bowers' easy to use CV 700 dead-weight bench tester continues to grow in popularity within UK academia. Conforming to DIN-E-ISO 6506, 6507, 6508, and ASTM, the advanced unit boasts a rugged design and is able to accommodate large specimens. To aid

accuracy and help eliminate backlash from the system, the tester's elevating spindle boasts precision guide bushes, containing high precision bearings, whilst the flexible universal tester has a table that can be easily moved between indenter and its high-quality measuring microscope with magnification by objective lenses 37.5x and 70x.



*'Because of the diverse nature of the hardness tests we perform, our proposed replacement hardness tester needed to perform rapid, accurate hardness testing routines in Rockwell, Brinell and Vickers scales and have a clear display.'*

## T&R Precision's Quality - Not just on the surface

Providing a first class precision machining service to both the Civil and Military Aerospace sectors, **T&R Precision Engineering Ltd** is a renowned, privately owned company located in Foulridge, Lancashire, at the North East end of what has become widely known as the 'Aerospace Valley'.

Employing over 50 people at its hi-tech manufacturing site this dynamic, skill-based company is a prominent member of the Aerospace supply chain cluster. At the centre of T&R Precision Engineering's business is the company's state-of-the-art CNC Machining division, producing high-quality prismatic components from its impressive array of 5axis and multi-axis mill-turn machines.

With Quality at the core of all of the company's activities, T&R guarantees that component quality matches the standard of the company's International Quality Approvals, which include ISO9000:2008, AS9100:2008, and customer approvals including BAE Systems, Airbus UK, Aircelle Ltd (Safran Group),

Darchem Engineering Ltd (Esterline Technologies) & BHW/Hampson Wigan.

In addition to applying a rigorous final inspection quality regime, T&R Precision Engineering's owners ensure that all company employees engaged within production-based activities are responsible for the quality of their own output and are proficient in the use and application of Co-ordinate Measuring Machines (CMMs) and Statistical Process Control (SPC) techniques.

When faced with the need to find a hand-held surface finish instrument that could be used by all of the company's production personnel, company Quality Manager, David McQuillam explored the many available alternatives. Impressed with the accuracy and ease of use of the MTR 110, he purchased the advanced portable surface finish tester from Bowers Metrology.

David explained, "As we are required to take surface finish measurements in both Ra and Rz parameters, across a wide range of materials, the MTR 110 has proved to be the ideal instrument for our demanding needs. The new unit's portable nature, compact size

and ease of use, make it ideal for operation throughout our machine shop on both large and small components, it has also proved invaluable for our final inspection routines. The unit's clear, backlit LCD display makes all of our surface finish data easy to read and enter into our traceable quality system. The MTR 110s will help ensure that our valued customers will continue to receive components of the highest possible quality from T&R Precision Engineering Ltd."



*"As we are required to take surface finish measurements in both Ra and Rz parameters, across a wide range of materials, the MTR 110 has proved to be the ideal instrument for our demanding needs."*



# Marshall Aerospace's Hard Decision

Having enjoyed an unparalleled reputation for almost 80 years within the field of aircraft engineering, **Marshall Aerospace** is now one of Europe's leading privately owned aerospace companies. Based on the company's extensive 800-acre site since 1937, Marshall Aerospace encompasses all of the capabilities of an aircraft manufacturer; it also owns and operates from its own locally established airport in Cambridge, England.

Marshall Aerospace's long history of successful Aerospace-related projects includes the design of the iconic Concorde droop nose and visor. More recently the company designed an advanced 'space-sled' for medical research, which flew 121 orbits in the space shuttle Challenger. Marshall Aerospace boasts considerable experience in the conversion, modification and maintenance of military, corporate and civil aircraft. The company's many areas of expertise, including design, manufacture, test and certification, and logistic support are supported by a dedicated team of over 1,750 highly trained personnel and an exceptional range of first-class facilities housed within the company's impressive, 1.2 million sq ft of hangar space. When challenged with the need to procure an accurate digital hardness tester for use on crucial components,

Steve Silk MBE, the company's Manufacturing Support Workshop Manager, considered the merits of the available offerings from several leading material testing equipment suppliers. Having explored the alternatives, Steve concluded that the advanced CV-600D digital Rockwell hardness bench-tester from Bowers Metrology, best met his demanding specification.

Now employed within the company's busy Manufacturing Support department, impressed by performance of the new tester, Steve recently enthused



"The accurate yet speedy testing routines that are a feature of the CV-600D, enable it to keep pace with the high volume and the wide variety of work undertaken within our manufacturing department. The robust unit has a large working space and is able to accommodate our large components; whilst the tester's many advanced features are easy to access via its menu operated LCD screen. We use our new hardness tester to ensure the post heat treatment and post machining TEMPER compliance of aluminium and steel alloys. The hardness readings that we achieve also act as a confirmation that the correct materials have been used for a particular part. All of the tester's traceable findings are copied onto a relevant job-card and are also downloaded onto our database."

The CV-600D boasts many advanced features including readings in 15 regular Rockwell scales, GO/NOGO judgement, load cycle indication and date/time display. The flexible tester is able to be operator configured to accommodate most Rockwell testing situations, whilst a simple conversion allows operation in other scales such as Vickers and Brinell. Aiding material traceability, the unit's RS 232 output enables the transmission of gathered data to external devices, whilst the tester's integrated high-speed, thermal printer is able to generate hard copy of all measured results.

## Labconcept Speeds-Up PowerKut's Calibration

The renowned precision manufacturer and Calibration Service provider, **PowerKut Limited** has recently invested in an advanced Trimos Labconcept Premium from Bowers Metrology. The new state-of-the-art 500mm capacity, Trimos Calibration Machine was purchased to help the company's busy Calibration Department keep pace with industry's growing demand for their expert Calibration services.

Complementing the company's excellent manufacturing facilities, Repair Department and Electrical Laboratory, PowerKut's modern Mechanical Calibration Laboratory is UKAS accredited to undertake the calibration of a vast range of small hand tools, gauges and metrology equipment. The demise of some of PowerKut's competitors, allied to the competitive rates offered and the growing reputation of the Coventry based company's calibration services, has resulted in a healthy growth

in business. This increase has placed a burden on PowerKut Calibration Department's standard five working days, gauge turn-around policy. To alleviate this potential capacity problem, having examined the alternative precision calibration machines Peter Everitt, PowerKut's MD chose to invest in the premium Trimos machine.

Impressed by the speed and accuracy of his new acquisition, Peter recently enthused "As our new Trimos Labconcept is capable of performing countless calibration tasks, whilst simultaneously generating calibration certificates, it is able to get through an impressive daily workload. The machine's TFT touch-screen technology and QM Soft, Quality Management Software has proven to be very easy to use, allowing our Laboratory personnel to quickly and precisely complete all calibration tasks to national or international standards.

"At the same time as considerably enhancing our company measurement capability, the Labconcept has reduced calibration set-up times by the use of the machine's impressive array of quick-fit accessories.



The net result of our investment is that the Labconcept's impressive speed of operation has improved our average calibration times across a wide range of instruments. Although our customers will reap the benefits of this considerable company outlay, the Labconcept's accuracy and speed of calibration throughput will also ensure a rapid payback time for PowerKut Ltd."

"As our new Trimos Labconcept is capable of performing countless calibration tasks, whilst simultaneously generating calibration certificates, it is able to get through an impressive daily workload."

# Accurate Height Gauging for E2S, European Safety Systems

Selling its renowned products into every industrialised country, the world's leading independent signalling manufacturer, **E2S, European Safety Systems**, specialises in the design, development and manufacture of a wide range of high performance electronic sounders, intelligent voice annunciators and flash alarms.

Specifically designed for use within the most onerous industrial environments, such as petrochemical plants, E2S's Hazardous Area Ex flameproof products are manufactured to the most demanding of dimensional tolerances at its London based manufacturing facility.

When tasked with procuring an accurate Height Gauge that would help speed-up the company's high-volume of precision inspection routines, E2S Technical and Quality Manager Mike Shaw considered the available alternatives. Following demonstrations from several leading gauge suppliers, Mike found the solution to his challenging technical requirements in an advanced

Sylvac Z-Cal height gauge, predecessor to the Sylvac Hi-Cal, purchased from Bowers Metrology UK.

E2S's new height gauge boasts a patented, motorised measuring system, giving probe travel speed proportional to the user's finger pressure applied to the control buttons. Using rechargeable batteries, the Z-Cal's ergonomic design and logical button layout, enables an extremely wide range of useful features to be accessed, including heights, internal/external diameters and centre-line distances. An RS232 output allows measured data to be downloaded to printers, data collectors, etc.

Mike Shaw enthused "The safety critical nature of many of our products means that we perform 100%, high-tolerance inspection on the crucial features located on machined castings. Used by several company personnel, our easy to operate Sylvac Z-Cal has proven to be extremely useful for accurately measuring countless component features and helps us keep pace with the large volume of work passing through our busy Quality Control Department."



*"The safety critical nature of many of our products means that we perform 100%, high-tolerance inspection on the crucial features located on machined castings."*

# Universal Acclaim for Bowers' Gauge

The well-known **Kenard Engineering Group** is a dynamic organisation dedicated to the provision of complete manufacturing solutions to a range of diverse market sectors and international markets. The principal areas served by the company are the Oil & Gas, Aerospace, Defence, and Communications industries.

Kenard's two high-tech manufacturing divisions based in Dartford and Tewksbury, provide an extensive range of in-house capabilities and offer a complete

manufacturing service, along with integrated support facilities. Boasting a corporate culture dedicated to the pursuit of excellence and continuous improvement, Kenard Engineering is able to service the demands of modern industry based on the skills and knowledge of its dedicated employees and also through the company's ongoing investment in the latest manufacturing and quality control technology. Between both manufacturing sites Kenard has a comprehensive inventory of 32 high-quality CNC machine tools, with a maximum turning capacity of 930mm diameter to a length of 3000mm, in addition to both vertical and horizontal multi pallet machining centres with 5 axis capability. Kenard Engineering's reputation for product value and customer satisfaction is sustained by the high-quality of the products it delivers to its diverse customer base. Operating within the requirements of ISO 9001:2000 and AS 9100, outgoing company quality levels are maintained by assurance and certification techniques based upon experience and customer feedback. An example of Kenard Engineering's quest for excellence and the pursuit of continual improvements in their quality control techniques is the company's recent purchase of an advanced Universal Gauge from Bowers Metrology.

"Recently we were faced with the need to find a shop-floor proof, in-process gauge that would enable the fast, yet accurate, measurement of both internal and external diameters located on critical jet engine parts being manufactured within our grinding cell."

explains Gerry Palmer, Kenard's Quality Manager. Having considered the available gauging options from a range of suppliers, Kenard purchased a Universal Gauge from Bowers Metrology. The ingenious modular format of Bowers' flexible gauge enables it to be quickly configured to suit almost any measuring challenge. Whether measuring internally or externally, the Universal's clever constant pressure device ensures high accuracy and consistency of reading, whilst the gauge's findings are displayed on its built-in hi-resolution digital readout. Palmer continued. "As the easy to use Bowers' Universal Gauge is able to accommodate every internal and external diameter within our manufacturing capacity, it has proven to be extremely popular with our operators. After traversing the part, the gauge's digital readout has a unique ability to 'freeze' and display the required diameter. As in-process measurements are taken, whilst parts are located in the machine tool, the gauge's diameter 'freeze' facility helps to make, what could be an extremely awkward measurement, relatively simple."

*"The modular nature of our new Bowers gauge enables us to quickly assemble it to accommodate a large variety of measuring tasks. By mastering the Universal Gauge and periodically checking the gauge's readings against slips held captive in a slip-cage, we are able to check the gauge's readings throughout its time in use."*





BOWERS METROLOGY

# BOWERS' Gauge X:CELS in Accuracy

With a Head Office and modern manufacturing plant based in Sheffield, South Yorkshire, **X:CEL Superturn (GB) Ltd** specialises in the production of high-quality precision machined components and specialised joints and gaskets. Although serving customers in the challenging power generation, aerospace and construction sectors, the company's output is predominantly destined for the demanding global petrochemical industry. X:CEL Superturn has earned a reputation for producing high-quality components for down hole drilling and both surface and subsea applications, and now supplies several of the world's leading Oil and Gas OEMs. After purchasing X:CEL (GB) Ltd in 2007, Sheffield Superturn (est. 1983 by present MD Andrew Taylor) continued to establish its strong global supply chain and in July 2009 X:CEL Superturn opened a sales office together with a large stocking warehouse facility in Houston, Texas.

Wayne Adcock, X:CEL Superturn's Quality Manager recently reported "As failure in the field of any of our joints and gaskets could have catastrophic financial and environmental implications, we undertake the most rigorous quality control checks, both throughout the manufacturing cycle of our components and at the final inspection stage. To help enable X:CEL Superturn to uphold our



hard-earned reputation for the high-quality of our output, we frequently invest in the best possible quality control equipment. Having recently identified a need for a flexible, yet accurate, diameter measuring gauge that could be used on components located on our machine tools, we searched the web for such a gauge. Having dismissed the offering from several other leading measuring instrument suppliers, we requested a demonstration of the Gagemaker Groove Diameter and Groove Width gauges from Bowers Metrology."

As the UK agent for the world's most popular range of Oil and Gas industry-related measuring instruments, Bowers Metrology stocks a wide range of Gagemaker equipment. Gagemaker's Groove Diameter/Width gauges are able to accommodate diameters from 2.6" - 13" and groove widths from .34" - 1.5". Optional rails extend the range of diameters able to be measured from 13" - 36". The face groove gauges accurately measure the ring

groove diameter and width at the critical sealing point of the face groove, whilst the gauge indicators display actual deviation from a preset master dimension. The Gagemaker BX-1000 can be used for a range of applications, including the measurement of straight or tapered groove diameters, shallow bores, and hole locations.

Now in regular use, X:CEL Superturn's large diameter gauges are helping to maintain the high quality standards of the company's rings, gaskets and seals. Wayne Adcock continued. "As our new Gagemaker instrument is proving extremely accurate and easy to use, it has taken away a potential bottleneck from our large capacity CMM, and is being used both in-process, with the measured component still located in the machine tool, and for final component inspection. So delighted have we been with the Gagemaker instrument we will soon be purchasing further units."

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For more information on any of these measuring solutions  
from Bowers, visit [www.bowers.co.uk](http://www.bowers.co.uk)  
or Telephone: **08708 50 90 50** Email: [sales@bowers.co.uk](mailto:sales@bowers.co.uk)