

Calibration

01 • 2008

WORLD

Integrating calibration software with CMMS

Customer success stories

Reliance Industries Limited
(Patalganga Manufacturing Division), India

Mazovian Gas Company (MSG),
Plant Łódź (Poland)

The benefits of using documenting calibrators

Achieve more through integration and automation

During the past 4 years, we have interviewed more than 2,000 calibration professionals and asked them what calibration-related trends do they see taking place in their companies in the coming years? Regardless of the type of the company, a higher level of integration and automation is in the top three of all responses.

At this very moment many companies are dealing with challenges such as the need to simplify and streamline work processes, cut production down-time and eliminate double work. These challenges exist in every function and they all can be tackled by improving the level of system integration and automation. Calibration systems are no different. They can no longer be considered as isolated, stand-alone systems or work processes within a company or a production plant. Just like any other business function, calibration procedures need to be more streamlined, automated and integrated in order to achieve improvements in quality and efficiency.

An integrated calibration solution is integrated to several directions. Calibration software, which is used for planning, documenting and managing calibration assets and procedures, is at the heart of the calibration system. The most significant form of integration is between calibration software and documenting calibrators. This combination alone automates many calibration and documentation procedures. The second type of integration is between the calibration system and maintenance management systems (CMMS) provided by Emerson®, SAP®, Maximo® and others. This integration ensures that the calibration system is an integral part of the company's management system.

I have no doubt that the future of calibration includes higher level of integration and automation. That is also the area where we aim to be the industry benchmark.



A handwritten signature in black ink, appearing to read 'Raimo Ahola'.

Raimo Ahola

Managing Director, Beamex Group

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Beamex equips high profile power station with the MCS100 Workstation

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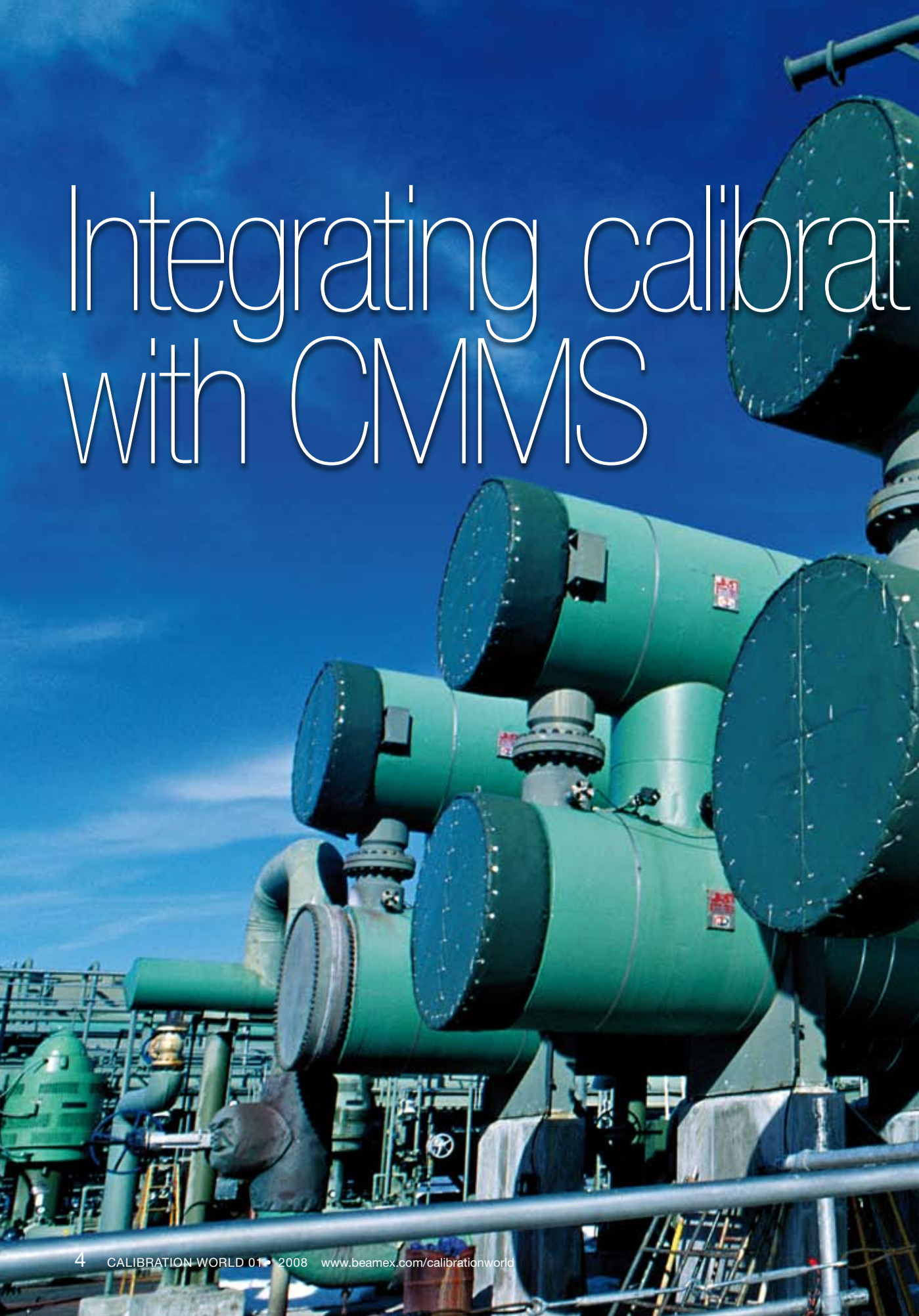
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Phone +358 10 550 5000, Fax +358 10 550 5404, info@beamex.com, www.beamex.com

Address details and subscriptions calibrationworld@beamex.com

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Integrating calibration with CMMS



ion software

A photograph of large green industrial pipes at a power plant, with the text 'ion software' overlaid in white. The pipes are supported by concrete structures and have various valves and sensors attached. The background is a clear blue sky.

Integrating calibration software

The benefits of integrating calibration software with a computerized maintenance management system (CMMS)

For process manufacturers today, having a reliable, seamlessly integrated set of IT systems across the plant, or across multiple sites, is critical to business efficiency, profitability and growth.

In the process industries, a small but critical part of a company's asset management strategy should be the calibration of process instrumentation.

Maintaining plant assets – whether that includes production line equipment, boilers, furnaces, special purpose machines, conveyor systems or hydraulic pumps – is equally critical for these companies. This is particularly true if the company is part of an asset-intensive industry, where equipment and plant infrastructure is large, complex and expensive. Also, if stoppages to production lines due to equipment breakdowns are costly, implementing the latest computerised maintenance management (CMM) systems can help save precious time and money.

In the process industries, a small but critical part of a company's asset management strategy should be the calibration of process instrumentation. For this, Beamex's calibration management software, Beamex® CMX, has proved itself time and time again across many industry sectors, including pharmaceuticals, chemicals, nuclear, metal processing, paper, oil and gas. Manufacturing plants need to be sure that their instrumentation products – temperature sensors, pressure transducers, flow meters and the like – are performing and measuring to specified tolerances. If sensors drift out of their specification range, the consequences can be disastrous, perhaps resulting in costly production downtime, safety issues or batches of inferior quality goods being produced, which then have to be scrapped.

Beamex® CMX helps companies document, schedule, plan, analyze and optimize their calibration work. Seamless communication between CMX and 'smart' calibrators means that companies have the ability to automate pre-defined calibration procedures. As well as retrieving and storing calibration data, CMX can also download detailed instructions for operation before and after calibrating. The most common types of download include procedures, reminders and safety-related information.

Seamless communication with calibrators also provides many practical benefits such as a reduction in paperwork, elimination of human error associated with manual recording, and the ability to speed up the calibration task. CMX also stores the complete calibration history of process instruments and produces fully traceable calibration records.

Today, most process manufacturers use some sort of CMM system that sits alongside their calibration management system. Common CMM systems available include SAP, Maximo and Datastream, otherwise the company may have developed its

own, in-house software for maintenance management.

Whilst Beamex® CMX Calibration Software functions very well as a stand-alone calibration management system, customers using the software in this way are not reaping all the rewards they could if they were to integrate CMX with their CMM system. The CMM system is also likely to have been implemented before the calibration management software and so will normally be the first port of call for maintenance staff and for generating all work orders.

Today, most process manufacturers use some sort of CMM system that sits alongside their calibration management system.

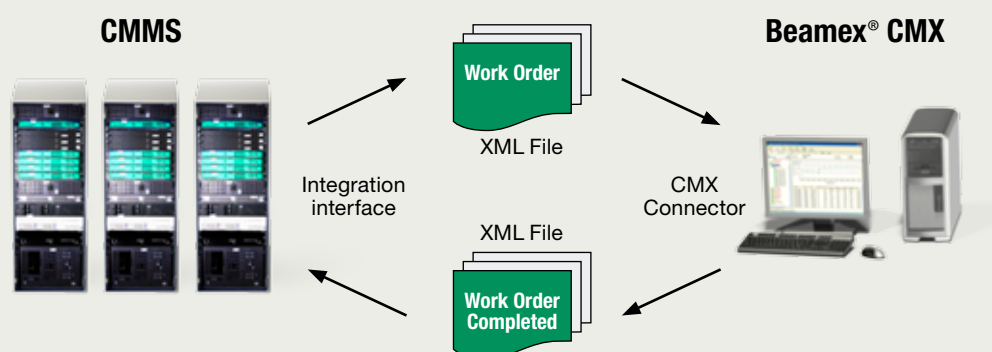
But the good news for customers of Beamex® CMX Professional or Beamex® CMX Enterprise software is that CMX can now easily be integrated to CMM systems, whether it is a Maximo, SAP or Datastream CMM system. Beamex offers a 'standard' integration package, although most customers will require a customized version that suits their existing software and maintenance strategy.

Integrating CMX with a CMM system means that plant hierarchy and all work orders for process instruments can be generated and maintained in the customer's CMM system. Calibration work orders can easily be transferred to CMX Calibration Software. Then, once the calibration work order has been executed, CMX sends an



e with CMMS

Integrating Beamex® CMX Calibration Software with a maintenance management system (CMMS).



The integration between Beamex® CMX and computerized maintenance management system (CMMS) enables exchange of the following data:

From CMMS to CMX:

- Position ID
- Device ID
- Location
- Serial Number
- Work Order Numbers

From CMX to CMMS:

- Work Order Numbers
- Position ID
- Max Error
- Passed/Failed information
- Calibration Date/Time
- Calibrated by



Computerized maintenance management system

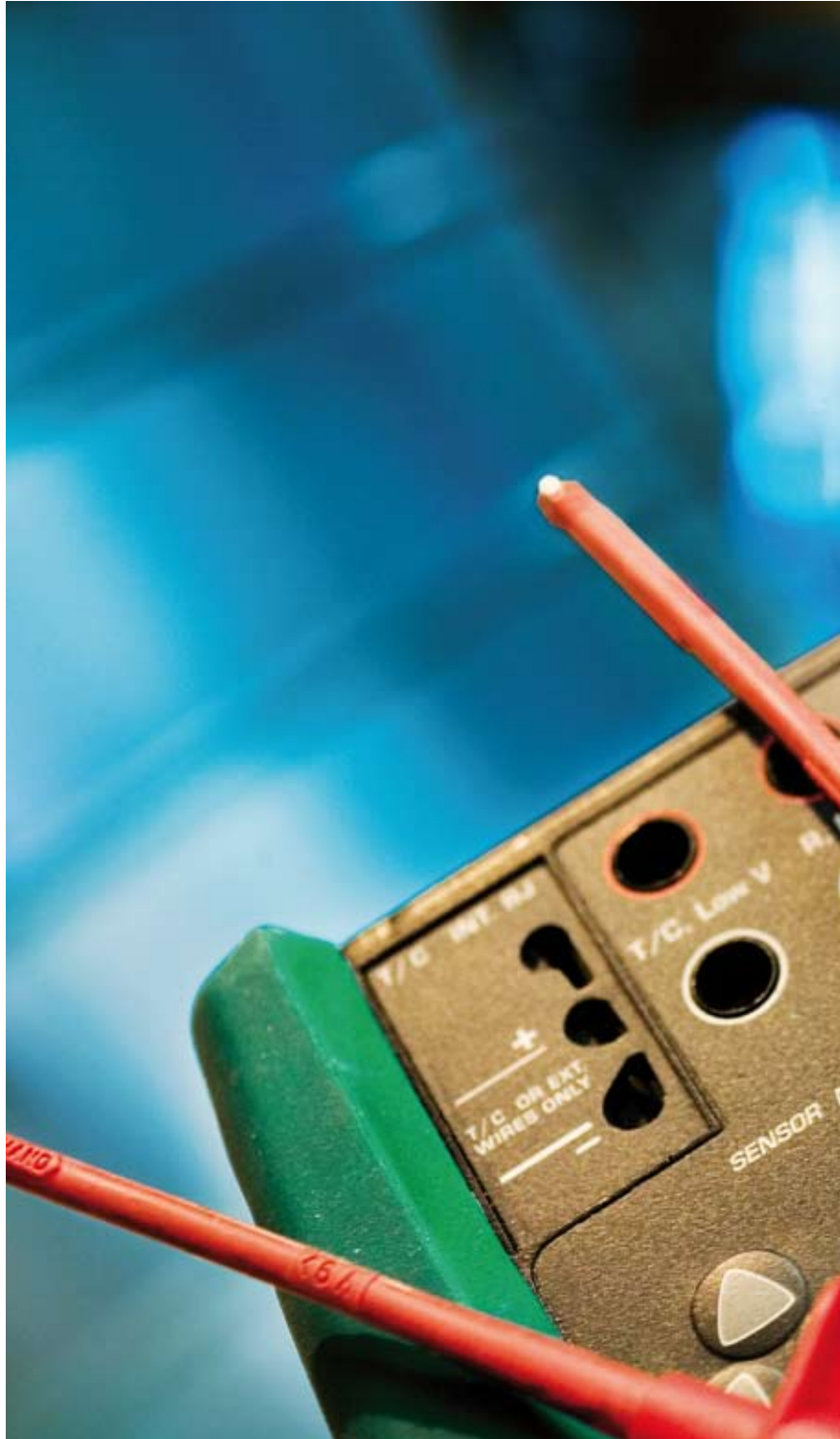


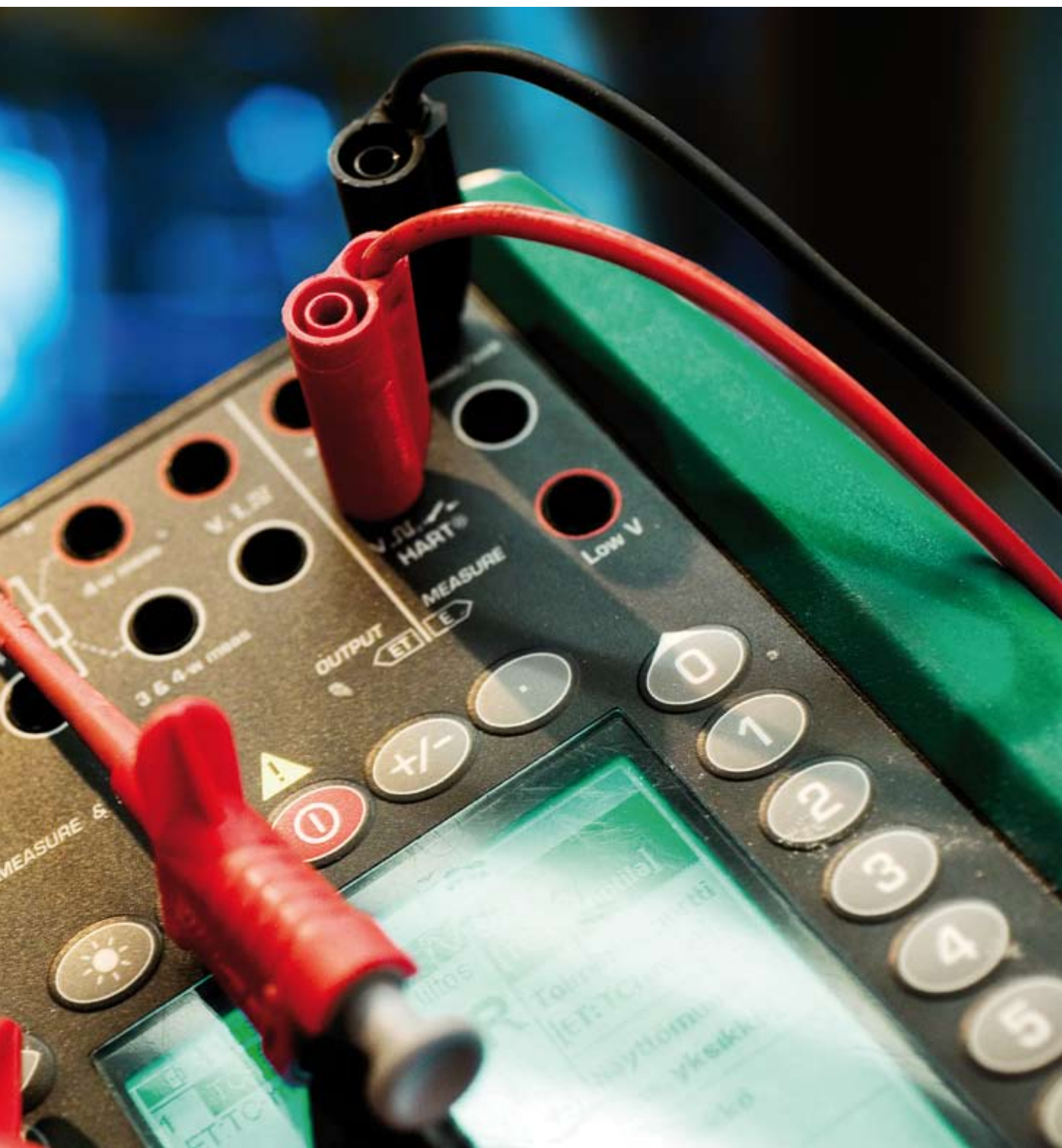
acknowledgement order of this work back to the customer's CMM system. All detailed calibration results are stored and available on the CMX database.

Jarmo Hyvärinen, Sales Manager at Beamex comments: "Beamex's customers have been asking us for some time whether we can integrate our CMX software with their maintenance management systems. Our integration services were introduced recently, and it has generated high interest among the customers. Many customers are currently going through the integration process."

The integration project normally involves three parties: the customer, the CMM system software partner and Beamex.

These customers are in the food and beverage, oil and gas, energy, steel processing and pharmaceuticals industries and, according to Hyvärinen, use a SAP or Maximo CMM system. "The integration project normally involves three parties: the customer, the CMM system software partner and Beamex. With our customers, Beamex's part of the integration has been successful. However, the customer may have a large CMM system and a considerable amount of data keying to perform before the integration is complete. However, once finished, the integration should save these companies time, reduce costs and increase productivity by preventing unnecessary double effort and re-keying of work orders in separate systems. When there is no need to manually re-key the data, typing errors are eliminated.





Computerized maintenance management system



This improves the quality of the entire system. Integration will also enable these companies to automate their calibration management with smart calibrators.”

Beamex’s standard integration interface uses the XML (Extensible Markup Language) data file format, which enables the sharing of structured data across different information systems. Data fields such as position ID, device ID, location, serial number and work order number can be transferred from the customer’s CMM system to CMX. Similarly, data can be transferred the other way, including work order numbers; position ID; maximum error; pass/fail notifications; calibration date and time; and who carried out the calibration task.

“Of course, in reality, the customer will require more data fields to be transferred, but our standard package

Once finished, the integration should save these companies time, reduce costs and increase productivity by preventing unnecessary double effort and re-keying of work orders in separate systems.

is the first building block on the bridge between the two systems,” explains Hyvärinen. “Often, a data exchange module or interface is required that sits between the two systems and so the customer’s CMM system specialist will need to be involved here.”

Although there’s certainly a growing number of manufacturing companies today, at boardroom level, that are beginning to realise that maintenance management is now an issue which deserves enterprise-wide, perhaps multi-site, attention, in general, most plant or maintenance managers still don’t get a voice in the higher echelons of the boardroom. Maintenance is simply viewed as a necessary cost to the business and no more.

But the fact is, any initiatives (including software integration) that can support an asset management strategy



are likely to help save costs from a company's balance sheet. Hence, the software community's latest buzzword, 'EAM', or enterprise asset management. EAM is more than just maintenance management software. It's all about companies taking a business-wide view of all their plant equipment and co-ordinating maintenance activities and resources with other departments and sites, particularly with production teams. Integrating a CMM system with calibration management software is an important step in the right direction here, particularly if the company has a high volume of process instruments that need calibrating regularly.

Savings from EAM are reasonably well-documented and come in various guises, the most common benefits being: less equipment breakdowns (leading to a reduction in overall plant downtime); a

corresponding increase in asset utilisation or plant uptime; better management of spare parts and equipment stocks; more efficient use of maintenance staff; and optimised scheduling of maintenance tasks and resources.

"The key to success is really the quality of information you input to the software. Part of this relates to the success of the up-front review process, as well as the ongoing discipline of your maintenance team that uses the system. The data has to be as close to 100% accurate as possible to get maximum benefit from the system," concludes Hyvärinen.



DID YOU KNOW?

that the Beamex® CMX Calibration Software has standard integration packages available to maintenance management systems (CMMS), such as SAP® and Maximo®.

For more information or a quotation, complete the request form at www.beamex.com/request

SUMMARY

The benefits of integration

- Plant hierarchy and all work orders for process instruments can be generated and maintained in the customer's CMM system.
- Calibration work orders can easily be transferred to CMX calibration management software.
- Companies save time, reduce costs and increase productivity by preventing unnecessary double effort and re-keying of work orders in separate systems
- Integration also enables companies to automate their calibration management process with 'smart' calibrators.

The limitations of using a standalone maintenance management system

- Plant hierarchy and work orders can be stored in CMM system, but the calibration cannot be automated because the system cannot communicate with 'smart' calibrators.
- Duplicated effort and re-keying the same data into multiple databases.

Factors driving companies towards integration

- Seamless integration of IT systems across plants and remote sites.
- Sharing of critical plant and process information.
- Productivity improvement, cost reduction and improving quality by eliminating manual errors in re-keying data.

The Benefits of Using a Doc

Why calibrate?

For process manufacturers, annual calibration of all instruments across a manufacturing plant is common practice. In plant areas where instrument accuracy is critical to product quality or safety, calibration every six months – or even more frequently – is not unusual.

However, the key final step in any calibration process – documentation – is often neglected or overlooked because of a lack of resources, time constraints or the pressure of everyday activities. Indeed, many manufacturers are now outsourcing all or some of their maintenance activities and so the contractor too is now under the same pressure to calibrate plant instruments quickly but accurately and to ensure that the results are then documented for quality assurance purposes and to provide full traceability.

The key final step in any calibration process – documentation – is often neglected or overlooked because of a lack of resources, time constraints or the pressure of everyday activities.

The purpose of calibration itself is to determine how accurate an instrument or sensor is. Although most instruments are very accurate these days, regulatory bodies often need to know just how inaccurate a particular instrument is and whether it drifts in and out of specified tolerance over time.

What is a documenting calibrator?

A documenting calibrator is a handheld electronic communication device that is capable of calibrating many different process signals such as pressure, temperature and electrical signals, including frequency and pulses, and then automatically documenting the calibration results by transferring them to a fully integrated calibration management system. Some calibrators can read HART, Foundation Fieldbus or Profibus output of the transmitters and can even be used for configuring 'smart' sensors.

Heikki Laurila, Product Manager at Beamex in Finland comments: "I would define a documenting calibrator as a device that has the dual functionality of being able to save and store calibration results in its memory, but which also integrates and automatically transfers this information to some sort of calibration management software."

A non-documenting calibrator is a device that does not store data, or stores calibration data from instruments but is not integrated to a calibration management system. Calibration results have to be keyed manually into a separate database, spreadsheet or paper filing system.

Why use a documenting calibrator?

By using a documenting calibrator, the calibration results are stored automatically in the calibrator's memory during the calibration process. The engineer does not have to write any results down on paper and so the whole process is much faster and costs are therefore reduced. Quality and accuracy of calibration results will also improve, as there will be fewer mistakes due to human error.

The calibration results are transferred automatically from the calibrator's memory to the computer/database. This means the engineer does not spend time transferring the results from his notepad



Documenting Calibrator



to final storage on a computer, again, saving time and money.

With instrument calibration, the calibration procedure itself is critical. Performing the calibration procedure in the same way each time is important for consistency of results. With a documenting calibrator, the calibration procedure can be automatically transferred from the computer to the handheld calibrator before going out into the field.

*The engineer does not
have to write any results
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As Heikki Laurila states: "Engineers who are out in the field performing instrument calibrations, get instant pass or fail messages with a documenting calibrator. The tolerances and limits for a sensor, as well as detailed instructions on how to calibrate the transmitter, are input once in the calibration management software and then downloaded to the calibrator. This means calibrations are carried out in the same way every time as the engineer is being told by the calibrator which test point he needs to measure next. Also, having an easy-to-use documenting calibrator is definitely the way forward, especially if calibration is one of many tasks that the user has to carry out in his or her daily maintenance routine."

With a multi-functioning documenting calibrator, such as the





Beamex® MC5, the user doesn't need to carry as much equipment while out in the field. The MC5 can be used also to calibrate, configure and trim Foundation Fieldbus H1 or Profibus PA transmitters.

Heikki Laurila continues: "With a documenting calibrator such as the MC5, the user can download calibration instructions for hundreds of different instruments into the device's memory before going out into the field. The corresponding calibration results for these instruments can be saved in the device without the user having to return to his PC in the office to download/upload data. This means the user can work for several days in the field."

Having a fully integrated calibration management system – using documenting calibrators and calibration management software – is important. Beamex® CMX Calibration Software ensures that calibration procedures are carried out at the correct time and that calibration tasks do not get forgotten, overlooked or become overdue.

Benefits in Practice – Northern Energy Services Ltd.

Northern Energy Services (NES) Limited, Doncaster based in UK is using Beamex® CMX Calibration Software and the Beamex® MC5 Multifunction Calibrator to carry out instrument calibrations for its customers.

NES is a service provider for the power generation and petrochemicals industries. NES carries out a range of services for its clients, including routine maintenance, calibrations, installations, electrical services, fault diagnosis and repair, ATEX inspections and recertifications.

David Tuczemskyi, Control & Instrumentation Engineer at NES has worked in his role for more than 10 years. He comments: "Most of our work is for gas-fired power stations in the UK and Ireland, which involves a significant amount of instrument

calibrations. Typically, once a year for a major inspection, the plant will shut down for a month and we are called in to carry out all instrument calibrations across the site."

With a documenting calibrator such as the MC5, the user can download calibration instructions for hundreds of different instruments into the device's memory before going out into the field.

In Tuczemskyi's experience, the industry is often guilty of relying on manual paper-based systems for documenting instrument calibrations. As he explains: "Calibration is done manually, which takes longer and is prone to manual error. Often, the field engineer calibrates the instrument, handwrites the results onto a paper form of some kind, and then has to re-enter this information into a database on his or her return to the office. Unintentional errors often creep in here and the whole process is time consuming."

So, in the last few years, NES has issued its team of engineers with the MC5 documenting calibrator and the company has also bought the CMX calibration software. "We are actively pushing our customers, the power generation plants, to use Beamex's hardware and software," he explains. Why? Because, says Tuczemskyi, you get higher accuracy, the calibration process

is much faster and the customer gets full traceability. "What surprised me most when I started using the MC5 was that the calibration tasks were being done much faster but also more accurately. In our industry, a faster job usually means the engineer has cut corners. When you've got to calibrate 1,000 instruments across a site, typically with five-point checks on each instrument, speed and accuracy are critical."

After completing instrument calibrations, NES typically provides its clients with a full quality assurance report of all instruments that have been calibrated at the site, along with a calibration certificate if required. "This not only ensures full traceability but looks professional and reflects well on us as a service provider," states Tuczemskyi.

Over the years, the biggest change that Tuczemskyi has seen in the UK power industry is in regulations and the auditing process. "You simply cannot get away with it now. Everything you do has to be traceable. The problem here is that the end customer has little or no time to spend with the contractor, so the contractor has to be fully competent in everything it does. The customer wants to outsource as much of the maintenance and calibration work as possible these days. MC5 enables us to perform all the required instrument calibrations on a site, but then automatically downloads this information to the CMX software. We perform all the necessary back-ups for the customer and the whole process is fully integrated and efficient."

Instruments that require calibration are normally given a priority rating by the customer. Safety-critical instruments are often the highest and will be checked every three to six months with lower priority instruments only being checked once a year or less. "CMX removes all these issues and enables users to prioritise their instruments and then to receive automatic alerts when safety-critical sensors require calibrating. When it comes to plant safety, you cannot always



rely on manual paper systems and poor databases.”

Tuczemskyi also likes the fact that the combination of using the MC5 and CMX means that instructions on how to calibrate an instrument and the order in which to calibrate can all be downloaded to the handset while the engineer is out in the field. “We did some calibration work for a customer on three gas turbines, two of which were running, the other on standby. Certain instruments

we had to calibrate were on a common block trip and we knew from our own experience that we had to calibrate these in a specific order and method, otherwise we could inadvertently cause the one of the turbines to fail. A two-hour shut down on a gas turbine, for example, would have cost this customer around £100,000 in lost downtime. By using the MC5 and CMX software in situations like these, the contractor doesn’t have to rely on experience like we did, but can download specific instructions to the calibrator before calibrating the instruments, which ensures costly mistakes out in the field are never made.”

According to Tuczemskyi, it took NES engineers only two weeks to get to grips with the CMX software. “Technical support at Beamex is absolutely superb. Three years ago, we were under immense pressure to get a job completed, when we had a software glitch that prevented us from uploading or downloading calibration results. We contacted Beamex and the guys repaired our fault within two days.”



DID YOU KNOW?

that the Beamex® MC5, MC5-IS and MC4 calibrators are all-in-one, documenting calibrators that replace several individual measurement devices. They all provide seamless communication with calibration software. For more information or a quotation, complete the request form at www.beamex.com/request

SUMMARY

The Benefits of using a documenting calibrator

- Calibration results are automatically stored in the calibrator’s on-board memory during the calibration procedure.
- Calibration results are automatically transferred from the calibrator’s memory to a computer or fully integrated calibration management system.
- Less paperwork and fewer manual errors.
- Reduced costs from a faster and more efficient calibration process.
- Improved accuracy, consistency and quality of calibration results.
- A fully traceable calibration system for the whole plant.
- The calibration procedure itself is guided by the calibrator, which uploads detailed instructions from the computer or calibration management software.
- No manual printing or reading of calibration instructions

is required, again saving time and money and simplifying the process.

When should a user consider choosing a documenting calibrator?

If your company performs regular, periodic calibrations on a high volume of instruments across a plant, then documenting calibrators can help reduce costs, time and effort, while also ensuring calibration results are accurate and consistent.

If your industry is highly regulated, documenting calibrators ensure your calibration process is fully traceable.

The safest way to calibrate

An introduction to intrinsically safe calibrators.

There are industrial environments where calibrations should not only be made accurately and efficiently, but also safely. When safety becomes a top priority issue in calibration, intrinsically safe calibrators enter into the picture.

What is intrinsically safe calibration?

By definition, intrinsic safety (IS) is a protection technique for safely operating electronic equipment in explosive environments. The concept has been developed for safely operating process control instrumentation in hazardous areas. The idea behind intrinsic safety is to make sure that the available electrical and thermal energy in a system is always low enough that ignition of the hazardous atmosphere cannot occur. A hazardous atmosphere is an area that contains elements that may cause an explosion: source of ignition, a flammable substance and oxygen.

Hazardous area classifications in IEC/European countries are:

Zone 0: an explosive gas & air mixture is continuously present or present for a long time.

Zone 1: an explosive gas & air mixture is likely to occur in normal operation.

Zone 2: an explosive gas & air mixture is not likely to occur in normal operation, and if it occurs it will exist only for a short time.

An intrinsically safe calibrator is therefore designed to be incapable of causing ignition in the surrounding environment with flammable materials, such as gases, mists, vapors

or combustible dust. Intrinsically safe calibrators are also often referred to being “Ex calibrators”, “calibrators for Ex Areas”, or “IS calibrators”. An Ex Area also refers to an explosive environment and an Ex calibrator is a device designed for use in the type of environment in question.

A hazardous atmosphere is an area that contains elements that may cause an explosion: source of ignition, a flammable substance and oxygen.

Where is intrinsically safe calibration required?

Many industries require intrinsically safe calibration equipment. Intrinsically safe calibrators are designed for potentially explosive environments, such as oil refineries, rigs and processing plants, gas pipelines and distribution centres, petrochemical and chemical plants, as well as pharmaceutical plants. Basically, any potentially explosive industrial environment can benefit from using intrinsically safe calibrators.

What are the benefits of using intrinsically safe calibrators?

There are clear benefits in using intrinsically safe calibration equipment. First of all, it is the safest possible technique. Secondly, the calibrators provide performance and functionality.

Safest possible technique.

Intrinsically safe calibrators are safe for employees, as they can be safely used in environments where the risk of an explosion exists. In addition, intrinsically safe calibrators are the only technique permitted for Zone 0 environments (explosive gas and air mixture is continuously present or present for a long time).

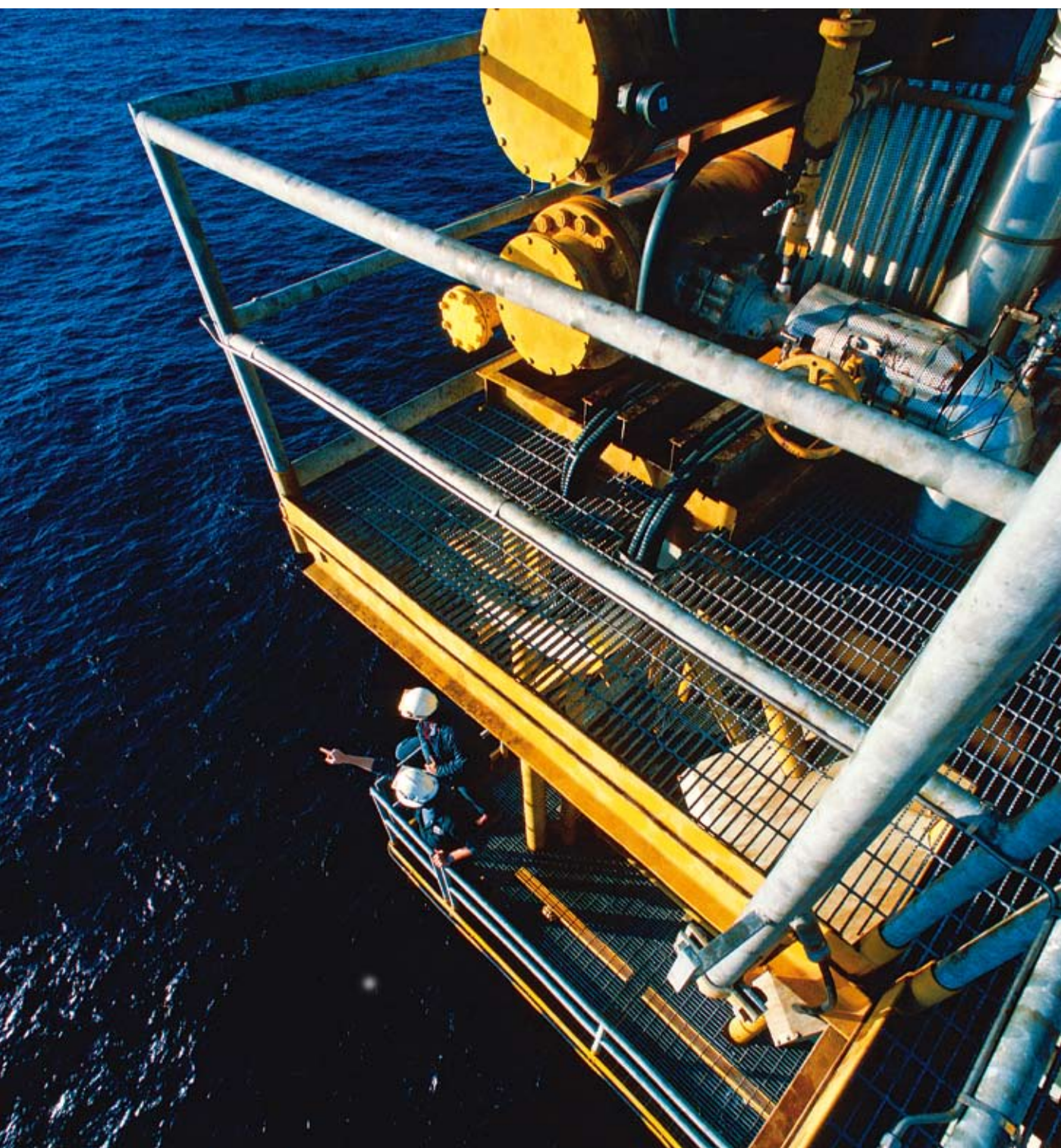
Performance and functionality.

Multifunctional intrinsically safe calibrators provide the functionality and performance of regular industrial calibration devices, but in a safe way. They can be used for calibration of pressure, temperature and electrical signals. A documenting intrinsically safe calibrator, such as the Beamex® MC5-IS, provides additional efficiency improvements with its seamless communication with calibration software. This eliminates the need of manual recording of calibration data and improves the quality and productivity of the entire calibration process.

Are intrinsically safe calibrators technically different from regular industrial calibrators?

Intrinsically safe calibrators are different from other industrial calibrators in both design and technical features. In view of safety, there are also some guidelines and constraints for how to use them in hazardous areas. Every intrinsically safe calibrator is delivered with a product safety note, which should be read carefully before using the device. The product safety note lists all the “do’s and don’ts” for safe calibration.

The differences in design and technical features were made with one purpose in mind—to ensure that the device is safe to use and is unable to cause an ignition. The surface of the device is made of conductive material. The battery of an intrinsically safe calibrator is usually slower to charge and it discharges quicker. Many times



Intrinsically safe calibrators



intrinsically safe equipment operate only with dry batteries, but the Beamex® intrinsically safe calibrators operate with chargeable batteries. When charging the battery, it must be done in a non-Ex area. External pressure modules can be used with IS-calibrators, but they must also be intrinsically safe. There are also usually small differences with electrical ranges compared to regular industrial calibrators (e.g. maximum is lower).

Making a calibrator safe and unable to cause ignition – typical technical differences:

- Surface made of conductive material
- Constraints in using the device (listed in Product Safety Note)
- Small differences with electrical ranges (e.g. maximum is lower)
- Battery slower to charge, quicker to discharge
- Battery must be charged in a non-Ex area
- When using external pressure modules, they must be IS-versions

What are ATEX and IECEx?

ATEX (“ATmosphères EXplosibles”, explosive atmospheres in French) is a standard set in the European Union for explosion protection in the industry. ATEX 95 equipment directive 94/9/EC concerns equipment intended for use in potentially explosive areas. Companies in the EU where the risk of explosion is evident must also use the ATEX guidelines for protecting the employees. In addition, the ATEX rules are obligatory for electronic and electrical equipment that will be used in potentially explosive atmospheres sold in the EU as of July 1, 2003.

IEC (International Electrotechnical Commission) is a non-profit



international standards organization that prepares and publishes International Standards for electrical technologies. The IEC TC/31 technical committee deals with the standards related to equipment for explosive atmospheres. IECEx is an international scheme for certifying procedures for equipment designed for use in explosive atmospheres. The objective of the IECEx Scheme is to facilitate international trade in equipment and services for use in explosive atmospheres, while maintaining the required level of safety.

The most important thing to remember is that an intrinsically safe calibrator must maintain its intrinsic safety after the service or repair.

As Beamex® MC5-IS and the new Beamex® MC2-IS Intrinsically Safe Multifunction Calibrators are certified according to ATEX and the IECEx Scheme, it ensures the calibrators are fit for their intended purpose and that sufficient information is supplied with them to ensure that they can be used safely.

Is service different for intrinsically safe calibrators?

There are certain aspects that need special attention when doing service or repair on an intrinsically safe calibrator. The most important thing to remember is that an intrinsically safe calibrator must maintain its intrinsic safety after

the service or repair. The best way to do this is to send it to the manufacturer or to an authorized service company for repair.

Recalibration can be done by calibration laboratories (still preferably with ISO/IEC 17025 accreditation).

Make it safe with the Beamex® Intrinsically Safe Multifunction Calibrators

Beamex offers two different calibrators for use in potentially explosive environments.

The new ATEX and IECEx certified Beamex® MC2-IS Multifunction Calibrator is a practical tool designed to be used in explosive environments. It has calibration capabilities for pressure, temperature and electrical signals and it connects to almost 20 available Beamex intrinsically safe external pressure modules. It has a compact size and design and it is very user-friendly.

The Beamex® MC5-IS Intrinsically Safe Multifunction Calibrator is a high accuracy, all-in-one calibrator for extreme environments. Being an all-in-one calibrator, the MC5-IS replaces many individual measurement devices and calibrators. The MC5-IS is also ATEX and IECEx certified. The MC5-IS has calibration capabilities for pressure, temperature, electrical and frequency signals. It is a documenting calibrator, which means that it communicates seamlessly with calibration software. Using documenting calibrators with calibration software can remarkably improve the efficiency and quality of the entire calibration process. The MC5-IS also has HART® communication.

Both the MC5-IS and the MC2-IS are certified in accordance with the IECEx and ATEX directive.



DID YOU KNOW?

that Beamex is an industry pioneer with experience in developing several intrinsically safe calibrators. The company launched their first intrinsically safe calibrator in 1986. From Beamex's current product range, MC5-IS and MC2-IS are intrinsically safe calibrators.

For more information or a quotation, complete the online request form at www.beamex.com/request or send email to info@beamex.com



Beamex® MC2-IS Intrinsically Safe Multifunction Calibrator. The new practical tool for calibration in potentially explosive environments.

Reliance Industries Limited (Pa

Improving efficiency with a top-of-the-line calibration workshop solution

The Reliance Group, founded by Dhirubhai H. Ambani (1932–2002), is India's largest private sector enterprise, with businesses in the textile, petrochemical, refining, oil & gas, energy and materials value chain. The Group's annual revenues are in excess of US\$ 27 billion. The flagship company, Reliance Industries Limited, is a Fortune Global 500 company and is the largest private sector company in India. Backward vertical integration has been the cornerstone of the evolution and growth of Reliance. Starting with textiles in the late seventies, Reliance pursued a strategy of backward vertical integration - in polyester, fibre intermediates, plastics, petrochemicals, petroleum refining and oil and gas exploration and production - to be

Reliance Industries Limited is a Fortune Global 500 company and the largest private sector company in India.

fully integrated along the materials and energy value chain.

The Group's activities span exploration and production of oil and gas, petroleum refining and marketing, petrochemicals (polyester, fibre intermediates, plastics and chemicals), textiles and retail. Major Group Companies are Reliance Industries Limited (including main subsidiaries Reliance Petroleum Limited and Reliance Retail

Limited) and Reliance Industrial Infrastructure Limited. Reliance Industries Limited operates world-class manufacturing facilities across the country at Naroda, Patalganga, Hazira,

Jamnagar, Kurkumbh, Allahabad, Barabanki, Baulpur, Gandhar, Hoshiarpur, Nagothane, Nagpur, Silvassa and Vadodara. The Patalganga plant is a petrochemical production plant and one of the oldest Reliance Industries Limited plants. It was established in 1982. The Patalganga plant (PG) is spread over more than 200 acres on the banks of the River Patalganga, 70 km from Mumbai, the finance capital of India. Patalganga comprises seven production plants: PTA (Purified Terephthalic Acid), PX (Paraxylene Plant), LAB, PSF, PFY, Utility and Energy Center. The plant employs 3,000 people. Mr Ranjan Bhattacharya is the Vice President of Instrumentation and Mr Keyur G. Vora is the General Manager of Instrumentation (PTA & PX) at the Patalganga plant.

The situation

Calibration is very important and one of the success factors in the Patalganga plant's operations. Mr Bhattacharya states, "it ensures that the end-product has high quality, as it is process control that ultimately determines the quality of the products produced". Calibration must also meet the plant's ISO9001, 14001, 18001 requirements. Overall, calibration requirements are considered high, as they need to meet the traceability requirements of quality for final products & governing bodies. In total, the Patalganga plant has around 20,000 instruments. Process parameters mostly calibrated include pressure, flow and temperature.

The Patalganga plant follows a calibration plan that determines the calibration frequency of each instrument. Mr Vora explains, "the calibration frequency of most instruments is between 1 and 3 years. According to criticality, instruments are classified into three categories that determine the calibration frequency: 1)

Vital, 2) Essential, and 3) Desirable. For the instruments classified as Vital, the calibration frequency is 1 year. Some critical instruments, such as analyzers, are calibrated as much as once a week".

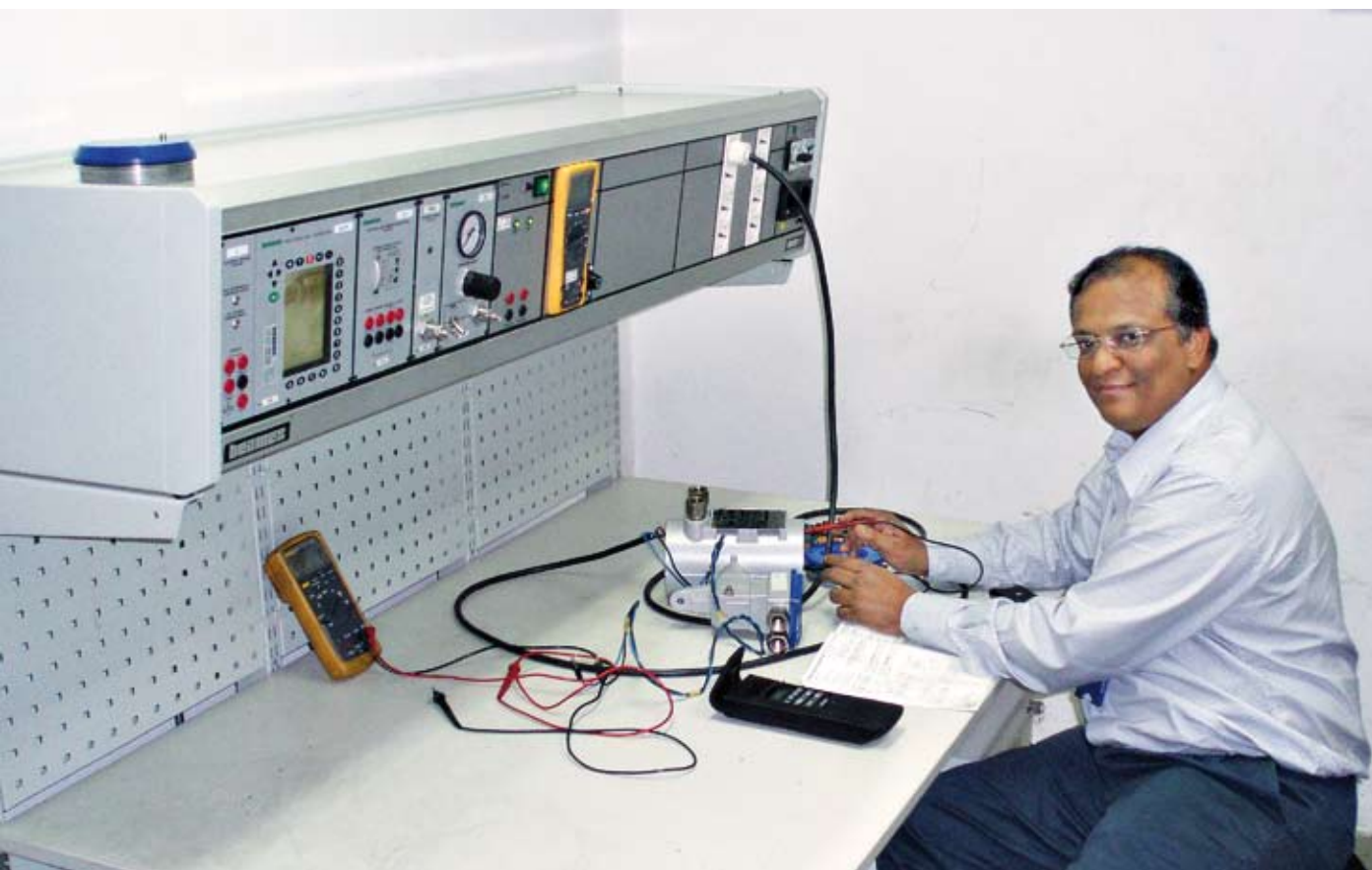
Approximately 30% of the installations are calibrated per year; these include mainly switches and gauges. Because calibration is considered a critical task at the Patalganga plant, its own engineers and technicians perform all calibrations. Calibrations have not, therefore, been outsourced to external service companies. They are performed in workshops and out in the field, and the results are entered and documented into SAP® maintenance management system.

Mr Vora explains, "according to criticality, instruments are classified into three categories that determine the calibration frequency".

The solution and main benefits

Reliance Industries Limited always looks for the best products and solutions in each category. And they were not going to make an exception when they decided to invest in calibration equipment. The number-one criterion for choosing their calibration equipment was accuracy. The stability of accuracy is the second most important issue. Other aspects included the flexibility of calibration by choosing appropriate master instruments to meet Reliance's day-to-day needs, as well as service support for recalibrating the master instruments.

talganga Manufacturing Division), India



“The task was to search, choose and install a top-of-the-line calibration system that would ultimately work as a reference to other plants. Ideally, a similar system could be used in other Reliance Industries plants as well”, Mr Bhattacharya remarks.

“The quality, accuracy, technical features and ease-of use made Beamex a strong alternative when assessing the different suppliers and calibration equipment”, Mr Vora continues.

“Beamex was able to meet our demanding requirements”, Mr Vora adds. The Patalganga plant has been utilizing several Beamex® MCS100 Workstations for the last three years. Once installed and in use, the results have been very convincing and provided

the opportunity to substantially improve the efficiency of calibration operations.

“The average time it takes to do one pressure calibration has dropped from 2 hours to 30 minutes using the Beamex® MCS100 system”, Mr Vora and Mr Bhattacharya affirm.

This means that the calibration time required per pressure calibration has been reduced by 75%. The automated calibration functionality of the Beamex® MCS100 makes this possible. Performing calibrations is fast and efficient. In addition to this, the system is user-friendly and convenient, which means that no intensive training or unnecessary high skills is needed to operate the system. This is another way

of achieving cost-savings.

The overall experience with the Beamex system has been very good at the Patalganga unit in several plants. Still, there is always room for continuous improvement. That is one of the principles that have made Reliance Industries Limited a powerful corporation in the world. The future trends and requirements in terms of calibration at the Patalganga plant involve even higher accuracy instruments and maintaining the traceability, smart digital instruments with advanced features, as well as the need to automate and simplify all calibration procedures and tasks.

Mazovian Gas Company (M

Ensuring proper billing through accurate calibration of gas conversion devices.

Polish Oil and Gas Company (PGNiG) is Poland's largest gas exploration and production company, and the only vertically integrated Polish gas company with a leading market share in all gas sectors in Poland. The company produces oil and gas from domestic sources, and imports gas from Russia, Norway, Germany and the Central Asian countries. In 2006, PGNiG produced 4.3 bn cubic meters of gas, which accounts for 31 % of the total gas consumption in Poland, and 530 thousand metric tons of oil and condensate in on-shore Poland.

Polish Oil and Gas Company (PGNiG), the parent firm of Mazovian Gas Company, is one of the largest companies in Poland.

Polish Oil and Gas Company (PGNiG) is the parent firm of Mazovian Gas Company (MSG). MSG operates in the north eastern part of Poland and covers an area of 87 thousand square kilometres, which corresponds to 27.7 % of the territory of Poland. There are 761 localities in this area, including 120 towns, Warsaw and Łódź among them. The Łódź plant distributes natural gas all over the entire province of Łódź to a total of 386,000 individual clients, including approximately 350 large industrial companies. Jacek Midera is a measurement specialist at the Łódź plant.

The situation

Calibration in a gas company is a matter of accuracy, safety and profitability. Most importantly, accurate measurements ensure proper billing. The impact of even a small measurement error can be tremendous in terms of lost revenue. This is indication of the direct economic importance of making accurate calibrations in these applications. Periodic calibration of instruments is required. The typical process parameters calibrated at Łódź plant are related to delivering natural gas.

Therefore, most calibration needs are related to pressure and temperature instruments that are connected to gas conversion devices. Midera explains, "Customers want to pay for the exact amount of gas they've received. Therefore, gas conversion devices must be extremely accurate in measuring delivered gas. This means that requirements for the calibrators are especially high. The Beamex® MC5-IS meets the requirements perfectly". Calibrating instruments properly in a timely manner is an important aspect of ensuring that the measurement system is functioning accurately. Calibration documentation can be used to verify that calibrations have been performed properly to reduce the number of billing errors. Should there be a problem, this information may prove to be a key in determining when, where and/or how an error occurred and how to appropriately correct the error.

The solution and main benefits

There are 750 instruments that require calibration at the Łódź plant. Most of them are for measuring temperature or pressure parameters. Instruments are calibrated two times a year – the first calibration is an extensive calibration, covering all ranges. The calibrations are made with portable Beamex® MC5-

IS Intrinsically Safe Multifunction Calibrators. The MC5-IS makes automated calibrations and stores all results in its memory. Calibration reports can then be printed out using Beamex® Calibration Software.

"Very often calibration

must be performed

in difficult weather.

The intrinsically safe

Beamex® MC5-IS,

with its IP65-rated case

protection, is an ideal tool

for this", Jacek Midera

comments.

The conditions for calibration can often be quite challenging in demanding weather conditions. "Very often calibration must be performed in difficult weather. The intrinsically safe Beamex® MC5-IS, with its IP65-rated case protection, is an ideal tool for this", Jacek Midera comments. He continues, "Additionally, the MC5-IS is very accurate and reliable. And what's important, it can be used in hazardous areas."

The MC5-IS was a perfect fit to the calibration needs at the Łódź plant. "We were looking for a good calibrator and Beamex® MC5-IS has been recommended by other users in the same line of business," Midera explains. He says, "We invited the local Beamex distributor to give us a presentation in Poland. After the presentation, we had

SG), Plant Łódź (Poland)



no doubts about what to choose.” The company’s first purchase was in 2006 with the MC5-IS calibrator together with Beamex® Calibration Software. Once employees began using the calibrator and calibration software, they realized just how simple the Beamex Calibration System is to use, and not only that, it meets their requirements. After a year, the company decided to purchase another MC5-IS. What’s even better, the Beamex® calibrators have the user-interface in Polish. After the purchase they

also got one-day training session provided by the Beamex distributor in Poland.

Overall experiences have been extremely positive at the Łódź plant, and the company has been very satisfied with Beamex’s calibration equipment due to its reliability, ease of use, accuracy and suitability to demanding and hazardous conditions.

Case story in brief

Customer profile

Mazovian Gas Company (MSG), Plant Łódź
Poland

Business Situation

MSG operates in the north-eastern part of Poland and covers an area of 87 thousand square kilometres, which corresponds to 27.7 % of the territory of Poland. There are 761 localities in this area, including 120 towns, Warsaw and Łódź among them. The Łódź plant distributes natural gas all over the entire province of Łódź to a total of 386,000 individual clients, including approximately 350 large industrial companies. Calibration in a gas company is a matter of accuracy, safety and profitability. Most importantly, accurate measurements ensure proper billing.

Solution description

- Beamex® MC5-IS Intrinsically Safe Multifunction Calibrators
- Beamex® Calibration Software
- Beamex® PG-Series Calibration Pumps

Main benefits

- Accurate calibration ensures proper billing
- Reliability
- Easy-to-use calibrators with Polish user-interface
- Possibility to use in difficult industrial conditions
- Documenting functionality – calibration results are stored in the internal memory
- ATEX certified calibrators – can be used in hazardous area

Safe and practical field calibration with the new Beamex® MC2-IS

■ The new ATEX and IECEx certified Beamex® MC2-IS Intrinsically Safe Multifunction Calibrator is a practical tool designed for field calibration and testing in explosive environments. It has calibration capabilities for pressure, temperature and electrical signals, and it connects to almost 20 available Beamex intrinsically safe external pressure modules. The MC2-IS is a compact-sized, lightweight portable calibrator with a large graphical display, multilingual interface and a complete numerical keyboard. Calibration with the MC2-IS is fast and simple.

Summarizing the benefits of using the MC2-IS, Heikki Laurila, product manager at Beamex, says "Our customers have been asking for a straightforward, practical, intrinsically safe field calibrator



and that's exactly what the MC2-IS is. It provides safety for the person using it, as it is incapable of causing ignition in an explosive environment. Not only is it safe, but it also offers the functionality and performance of an industrial calibrator, as it has wide calibration and configuration possibilities."

The MC2-IS is the second intrinsically safe multifunction calibrator that Beamex has introduced. The existing Beamex® MC5-IS is an all-in-one documenting calibrator offering superior functionality and performance compared to any other intrinsically safe calibrator. Introduction of the MC2-IS improves Beamex's already excellent ability to serve customers operating in potentially explosive environments.

New brochures available for optional features of the Beamex® CMX Calibration Software

■ New brochures are available for Beamex® CMX Calibration Software. One brochure concerns the History Trend function, which is an optional feature in the CMX Professional and a standard feature in the CMX Enterprise. The History Trend function allows a company to plan the optimal calibration interval for instruments.

The other brochure introduces CMX's Weighing Instrument Support function. This particular function is optional for the CMX Professional and a standard for the CMX Enterprise.

Download the brochures at:
www.beamex.com/download/brochures/index.phtml



Beamex equips high profile power station with the MCS100 Workstation

■ Beamex (UK) has recently been contracted by Scottish and Southern Energy to supply their world-class calibration solution for Peterhead Power Station – Scotland's largest power station capable of creating 2407MW from North Sea Gas.

Beamex has supplied their powerful Beamex® MCS100 Calibration Workstation, which incorporates panel-mounted pressure, electrical and temperature calibration instrumentation, automatically controlled pressure and temperature sources, digital multi-meters, soldering equipment, air amplifier and vacuum generator built into a robust, heavy duty workbench.

Peterhead Power Station manages and documents workshop calibrations, in addition to those performed around the site, using their fleet of Beamex® MC5 Multifunction Calibrators with network-licensed Beamex® CMX Calibration Software, installed and

centrally administrated by Scottish and Southern Energy across 10 locations in the UK from their IT headquarters in Reading.

Gordon Shand, C&I team leader at Peterhead knows that he will definitely get his money's worth for his investment in this essential and high quality suite of instrumentation through the increase in efficiency due to the automated calibration process and the seamless and electronic flow of data between measurement devices and the electronically stored calibration results. Gordon comments, "So far the bench has proved to be easy to use. It's more than suitable for our purposes and it has simplified the calibration of our field instruments".

Scottish and Southern Energy is the second largest supplier of electricity and natural gas in the United Kingdom. It incorporates the brands SWALEC, Southern Electric, Scottish Hydro

Electric and Atlantic Electric and Gas. It also owns Southern Electric Power Distribution, Scottish Hydro Electric Power Distribution, Scottish Hydro Electric Transmission and 50 % of Scotia Gas Networks. Scottish and Southern Energy was the largest generator of electricity from renewable sources in the UK during 2004 and 2005.



Beamex® MC5 Fieldbus Calibrator



Fieldbus transmitters must also be calibrated.

The Beamex® MC5 Fieldbus Calibrator is a combination of a Multifunction Calibrator and a Fieldbus Configurator. The MC5 is a compact, easy-to-use and field compatible calibration solution that offers a lot of functionality. The MC5 can be used for various other calibrations as well.



Portable calibrators
Workstations
Calibration software
Professional services
Industry solutions

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www.beamex.com
info@beamex.com

Beamex successful once again in Control Mag's Annual Readers' Choice Awards

■ In its recent Readers' Choice Awards 2008, Control Magazine asked its readers to rate the best vendors in various product categories. This year more than 1,000 automation professionals from various process industries gave their opinion on the subject. This was Control Magazine's 16th annual Readers' Choice study.

Beamex was awarded the 3rd place in the "Portable Calibrators" category. This is the second consecutive year that Beamex has been placed in the top three in the category in question. Additionally, Beamex was awarded the 4th place in the "Software, Calibration Management" category. This is the first time in the 16-year history of the study that Beamex places among the top four companies in the mentioned product category. This award is considered a major achievement at Beamex and it is highly valued.

Raimo Ahola, managing director of the Beamex Group says, "Our



In its recent Readers' Choice Awards 2008, Control Magazine asked its readers to rate the best vendors in various product categories. Beamex was awarded the 3rd place in the "Portable Calibrators" category.

focus is geared towards integrated calibration solutions that provide improved efficiency and quality. Having our company ranked in both product categories, calibrators and calibration software, is a clear indication that our product is one of a kind and valued by the market. I'm very pleased about the results".

With more than 70,000 readers, Control Magazine is the only North American publication for industry that is exclusively dedicated to process automation. It is the most widely read publication in its market niche.

At Beamex, the opinions of calibration professionals in the US are valuable and highly respected. We are very grateful to Control Magazine readers for voting for us and giving us such a high rank for the calibration equipment we develop and manufacture.

Beamex at the Foundation Fieldbus General Assembly 2008

■ The Fieldbus Foundation 2008 General Assembly was held in Antwerp, Belgium, on February 27-29. The annual event was open to Fieldbus Foundation members and non-members and was attended by Foundation technology suppliers, end users and other industry participants from around the world. Beamex was also present at the event with a tabletop introducing the Beamex® MC5 Fieldbus Calibrator and its functionality.



Beamex receives Frost & Sullivan's award for customer service leadership

■ Frost & Sullivan is one of the world's most esteemed growth consulting companies with 31 global offices and more than 1500 industry consultants, analysts and economists. Frost & Sullivan Best Practices Awards identify exemplary achievements within various industries and functional disciplines. The company recently presented their award for Customer Service Leadership to Beamex in the European calibration management software market.

To choose the recipient of this Award, the analyst team tracked

industry participants and monitored their customer service methods on an ongoing basis. The Award recipient was selected based upon extensive research collected from key market participants, secondary and technology sources, and customer interviews. As the Award winning company, Beamex showed tremendous responsiveness to customer needs and has continually focused on customer profitability goals. In addition, Beamex demonstrated flexibility in tailoring its product offerings to suit customer businesses.

This award is considered as a major achievement at Beamex. "We highly appreciate this award and it is a major recognition for our calibration software and services. The fact that makes this award so valuable, is that it is based on experiences and interviews of industry experts and customers", explains Raimo Ahola, the managing director of Beamex Group.



How often should instruments be calibrated?

Download
FREE
White Paper



Beamex® CMX Calibration Software

Plants can improve their efficiency and reduce costs by performing calibration history trend analysis. By doing this, a plant is able to define which instruments can be calibrated less frequently and which should be calibrated more frequently. Beamex® CMX Calibration Software allows you to analyze the optimal calibration interval over a certain time period.

Download FREE White Paper from: www.beamex.com/historytrend

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Beamex in brief

Beamex is a leading worldwide provider of calibration solutions that meet even the most demanding requirements of process instrumentation. Beamex offers a comprehensive range of products and services — from portable calibrators to workstations, calibration accessories, calibration software, industry-specific solutions and professional services. Through Beamex's partner network, their products and services are available in more than 60 countries.

Learn more about Beamex products and services:

www.beamex.com

Brochures, product demonstrations and quotations

info@beamex.com

www.beamex.com/request (online request form)

Software support

support@beamex.com

Re-calibration and service

service@beamex.com

Find your local Beamex sales office at:

www.beamex.com/contacts

Interested in submitting an article to CALIBRATION WORLD?

Contact: villy.lindfelt@beamex.com

If you would like to remove your name from our mailing list:

please visit www.beamex.com or send an e-mail to info@beamex.com

Beamex products and services

Portable calibrators

Beamex's range of portable MC calibrators for field calibration is known for their accuracy, versatility and also for meeting both high and uncompromised quality standards.

- MC5 Multifunction Calibrator
- MC5-IS Intrinsically Safe Multifunction Calibrator
- MC2 Series
- MC4 Documenting Process Calibrator
- MC2-IS Intrinsically Safe Multifunction Calibrator

Workstations

A workstation can be considered ideal when most of maintenance and calibration tasks are performed in the workshop.

- MCS100 Workstation
- MC5P Calibration Host Module

Accessories

Beamex's calibration accessories complete your investment into calibration equipment.

- External pressure modules
- Calibration hand-pumps
- Spare parts

Calibration software

Plan, manage and document all your calibrations efficiently and safely using Beamex's calibration software.

- CMX Light
- CMX Professional
- CMX Enterprise

Professional services

An essential part of a total calibration solution is Professional Services — service and re-calibration, installation and training, software support, validation services and integration services.

- Re-calibration and service
- Installation and training
- Software Service Agreement (SSA)
- Validation services (pharmaceutical industry)
- Integration services



Practical tool for calibration in hazardous environments.

Beamex® MC2-IS Intrinsically Safe Calibrator

- Designed for use in potentially explosive environments
- Pressure, temperature and electrical calibrations
- ATEX and IECEx certified
- Connects to almost 20 available Beamex intrinsically safe external pressure modules
- Compact size and design



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