HEIDER WORLD

Why Use Software for Calibration Management?

Customer success stories

Heineken España, S.A. (Fábrica Sevilla), Spain

CEPSA Química, Spain Shell Nederland Raffinaderij B.V. (Pernis refinery), The Netherlands

DCIMCX Beamex corporate ma

CEO's letter

Partnership - an essential part of "the Beamex way"

eamex business is and has been very focused; we provide integrated and automated solutions. However, as regards geographical area, our business territory comprises the entire industrialized world. How can a company, working in such a narrow niche, provide all customers with the high level of service and support they expect to get from a leading global company like Beamex?

Beamex's solution to this challenge involves a network of independent companies having similar business ideas, which enable them to work close together. In this issue, we explain to you how we are taking this long-term cooperation model to an even higher level via the Premium Partner Program. The first team members in our program – AMS Instrumentation & Calibration Pty Ltd in Australia, GERMEX GmbH in Germany, Gometrics S.L. in Spain and JMEX AB in Sweden – are excellent examples of what seamless, long-term cooperation between partners can offer to customers and to the partners in business.

We are expanding our "partnership philosophy" to other areas of business. In this issue, we are very pleased to announce a strategic alliance made between Beamex and Emerson Process Management. The alliance combines the process automation expertise and asset optimization technology of Emerson with Beamex's knowledge and technology for calibration of a broad range of instruments and precision measurement devices.

Other important topics in this issue include, of course, are new Customer Success Stories and the introduction of our brand new product MC4, which is already in production. Enjoy your reading and remember that we appreciate very much your feedback – not only concerning this magazine!

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Raimo Ahola CEO, Beamex Group



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Calibration management software c

Every plant has some sort of system in place for managing calibration operations and data, but the different methods for doing it varies greatly in terms of cost, quality, efficiency and accuracy of data.

Introduction

Every manufacturing plant has some sort of system in place for managing instrument calibration operations and data. Plant instrumentation devices such as temperature sensors, pressure transducers and weighing instruments – require regular calibration to ensure they are performing and measuring to specified tolerances.

However, different companies from a diverse range of industry sectors use very different methods of managing these calibrations. These methods differ greatly in terms of cost, quality, efficiency, and accuracy of data and their level of automation.

Calibration software is one such tool that can be used to support and guide calibration management activities, with documentation being a critical part of this.

But in order to understand how software can help process plants better manage their instrument calibrations, it is important to consider the typical calibration management tasks that companies have to undertake. There are five main areas here, comprising of planning and decision-making, organisation, execution, documentation, and analysis.

Careful **planning and decisionmaking** is important. All plant instruments and measurement devices need to be listed, then classified into 'critical' and 'non-critical' devices. Once this has been agreed, the calibration range and required tolerances need to be identified. Decisions then need to be made regarding the calibration interval for each instrument. The creation and approval of standard operating procedures (SOPs) for each device is then required, followed by the selection of suitable calibration methods and tools for execution of these methods. Finally, the company must identify current calibration status for every instrument across the plant.

All plant instruments and measurement devices need to be listed, then classified into 'critical' and 'non-critical' devices.

The next stage, **organisation**, involves training the company's calibration staff – typically maintenance technicians, service engineers, process and quality engineers and managers – in using the chosen tools and how to follow the approved SOPs. Resources then have to be organised and assigned to actually carry out the scheduled calibration tasks.

The **execution** stage involves supervising the assigned calibration tasks. Staff carrying out these activities must follow the appropriate instructions before calibrating the device, including any associated safety procedures. The calibration is then executed according to the plan, although further instructions may need to be followed after calibration.

The **documentation** and storage of calibration results typically involves signing and approving all calibration

records that are generated. The next calibration tasks then have to be scheduled, calibration labels need to be created and pasted, then created documents copied and archived.

Based on the calibration results, companies then have to **analyse** the data to see if any corrective action needs to be taken. The effectiveness of calibration needs to be reviewed and calibration intervals checked. These intervals may need to be adjusted based on archived calibration history. If, for example, a sensor drifts out of its specification range, the consequences could be disastrous for the plant, resulting in costly production downtime, a safety problem or leading to batches of inferior quality goods being produced, which may then have to be scrapped.

Documentation

Documentation is a very important part of a calibration management process. ISO 9001:2000 and the FDA both state that calibration records must be maintained and that calibration must be carried out according to written, approved procedures.

This means an instrument engineer can spend as much as 50 per cent of his or her time on documentation and paperwork – time that could be better spent on other value-added activities. This paperwork typically involves preparing calibration instructions to help field engineers; making notes of calibration results in the field; and documenting and archiving calibration data.

Imagine how long and difficult a task this is if the plant has thousands of instruments that require calibrating on at least a six-monthly basis? The amount of manual documentation increases almost exponentially!

When it comes to the volume of documentation required, different industry sectors have different



an benefit all sizes of process plant



Why Use Software for Calibration Management?

requirements and regulations. In the Power & Energy sector, for example, just under a third of companies (with 500+ employees) typically have more than 5,000 instruments that require calibrating. 42 per cent of companies perform more than 2,000 calibrations each year.

In the highly regulated pharmaceuticals sector, a massive 75 per cent of companies carry out more than 2,000 calibrations per year. Oil, Gas & Petrochemicals sector is similarly high, with 55 per cent of companies performing more than 2,000 calibrations each year. The percentage is still quite high in the food & beverage sector, where 21 per cent of firms said they calibrated their instruments more than 2,000 times every year. This equates to a huge amount of paperwork for any process plant.

The figures outlined appear to suggest that companies really do require some sort of software tool to help them manage their instrument calibration processes and all associated documentation. However, the picture in reality can be very different.

Only a quarter of companies use calibration software

In Beamex's own Calibration Study carried out in 2007, a mere 25 per cent of companies with 500+ employees (across the industry sectors mentioned above) said that they did use specialist calibration management software. Many other companies said that they relied on generic spreadsheets and/ or databases for this, whilst others used a calibration module within an existing Computerised Maintenance Management System (CMMS). A significant proportion (almost 20 per cent) of those surveyed said they used a manual, paper-based system.

Any type of paper-based calibration system will be prone to human error. Noting down calibration results by hand in the field and then transferring these results into a spreadsheet back at the office may seem archaic, but many firms still do this. Furthermore, analysis of paper-based systems and spreadsheets can be almost impossible, let alone time consuming.

In a recent survey conducted by *Control Magazine*, 40 per cent of companies surveyed said that they calculated calibration intervals by using historical trend analysis – which is encouraging. However, many of these firms said they were doing it without any sort of calibration software to assist them. The other 60 per cent of

Using software for calibration management enables faster, easier and more accurate analysis of calibration records and identifying historical trends.

companies determined instrument calibration intervals based on either the manufacturer's own recommendation, or they used a uniform interval across the plant for all instruments. Neither method is ideal in practice. Companies could save so much time and reduce costs by using calibration management software to analyse historical trends and calibration results.

Using software for calibration management enables faster, easier and more accurate analysis of calibration records and identifying historical trends. Plants can therefore reduce costs and optimise calibration intervals by reducing calibration frequency when this is possible, or by increasing the frequency where necessary.

For example, for improved safety,

a process plant may find it necessary to increase the frequency of some sensors that are located in a hazardous, potentially explosive area of the manufacturing plant.

Just as important, by analysing the calibration history of a flow meter that is located in a 'non-critical' area of the plant, the company may be able to decrease the frequency of calibration, saving time and resources. Rather than rely on the manufacturer's recommendation for calibration intervals, the plant may be able to extend these intervals by looking closely at historical trends provided by calibration management software. Instrument 'drift' can be monitored closely over a period of time and then decisions taken confidently with respect to amending the calibration interval.

Regardless of industry sector, there seems to be some general challenges that companies face when it comes to calibration management.

The number of instruments and the total number of periodic calibrations that these devices require can be several thousand per year. How to plan and keep track of each instrument's calibration procedures means that planning and scheduling is important. Furthermore, every instrument calibration has to be documented and these documents need to be easily accessible for audit purposes.

Paper-based systems

These systems typically involve handwritten documents. Typically, this might include engineers using pen and paper to record calibration results while out in the field. On returning to the office, these notes are then tidied up or transferred to another paper document, after which they are archived as paper documents.

While using a manual, paper-based system requires little or no investment, it is very labour-intensive and means that



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Why Use Software for Calibration Management?

CHECKLIST

Choosing the right calibration software

- · Is it easy to use?
- What are the specific requirements in terms of functionality?
- Are there any IT requirements or restrictions for choosing the software?
- Does the calibration software need to be integrated with the plant's existing systems?
- Is communication with smart calibrators a requirement?
- Does the supplier offer training, implementation, support and upgrades?
- Does the calibration software need to be scalable?
- Can data be imported to the software from the plant's current systems?
- Does the software offer regulatory compliance?
- Supplier's references and experience as a software developer?

historical trend analysis becomes very difficult to carry out. In addition, the calibration data is not easily accessible. The system is time consuming, soaks up a lot of resources and typing errors are commonplace. Dual effort and re-keying of calibration data are also significant costs here.

In-house legacy systems (spreadsheets, databases, etc.)

Although certainly a step in the right direction, using an in-house legacy system to manage calibrations has its drawbacks. In these systems, calibration data is typically entered manually into a spreadsheet or database. The data is stored in electronic format, but the recording of calibration information is still time-consuming and typing errors are common. Also, the calibration process itself cannot be automated. For example, automatic alarms cannot be set up on instruments that are due for calibration.

Calibration module of a CMMS

Many plants have already invested in a Computerised Maintenance Management (CMM) system and so continue to use this for calibration management. Plant hierarchy and works orders can be stored in the CMM system, but the calibration cannot be automated because the system is not able to communicate with 'smart' calibrators.

Furthermore, CMM systems are not designed to manage calibrations and so often only provide the minimum calibration functionality, such as the scheduling of tasks and entry of calibration results. Although instrument data can be stored and managed efficiently in the plant's database, the level of automation is still low. In addition, the CMM system may not meet the regulatory requirements (e.g. FDA) for managing calibration records.

Calibration Software

With specialist calibration management software, users are provided with an easyto-use Windows Explorer-like interface. The software manages and stores all instrument and calibration data. This includes the planning and scheduling of calibration work; analysis and optimisation of calibration frequency; production of reports, certificates and labels; communication with smart calibrators; and easy integration with CMM systems such as SAP and Maximo. The result is a streamlined, automated calibration process, which improves quality, plant productivity and efficiency.

Benefits of Using Calibration Software

With software-based calibration management, planning and decisionmaking are improved. Procedures and calibration strategies can be planned and all calibration assets managed by the software. Position, device and calibrator databases are maintained, while automatic alerts for scheduled calibrations can be set up.

Analysis becomes easier too, enabling engineers to optimise calibration intervals using the software's History Trend function.

Organisation also improves. The system no longer requires pens and paper. Calibration instructions are created using the software to guide engineers through the calibration process. These instructions can also be downloaded to a technician's handheld documenting calibrator while he is in the field.

Execution is more efficient and errors are eliminated. Using software-based calibration management systems in conjunction with documenting calibrators means that calibration results can be stored in the calibrator's memory, then automatically uploaded back to the calibration software. There is no re-keying of calibration results from a notebook to a database or spreadsheet. Human error is minimised and engineers are freed up to perform more strategic analysis or other important activities. Documentation is also improved. The software generates reports automatically and all calibration data is stored in one database rather than multiple disparate systems. Calibration certificates, reports and labels can all be printed out on paper or sent in electronic format.

Analysis becomes easier too, enabling engineers to optimise calibration intervals using the software's History Trend function.

Also, when a plant is being audited, calibration software can facilitate both the preparation and the audit itself. Locating records and verifying that the system works is effortless when compared to traditional calibration record keeping.

Regulatory organisations and standards such as FDA and ISO place demanding requirements on the recording of calibration data. Calibration software has many functions that help in meeting these requirements, such as Change Management, Audit Trail and Electronic Signature functions. The Change Management feature in Beamex's CMX software, for example, complies with FDA requirements.

Business Benefits

For the business, implementing software-based calibration management means overall costs will be reduced. These savings come from the nowpaperless calibration process, with no manual documentation procedures. Engineers can analyse calibration results to see whether the calibration intervals on plant instruments can be altered. For example, those instruments that perform better than expected may well justify a reduction in their calibration frequency.

Plant efficiencies should also improve, as the entire calibration process is now streamlined and automated. Manual procedures are replaced with automated, validated processes, which is particularly beneficial if the company is replacing a lot of labour-intensive calibration activities. Costly production downtime will also be reduced.

Even if a plant has already implemented a CMM system, calibration management software can be easily integrated to this system. If the plant instruments are already defined on a database, the calibration management software can utilise the records available in the CMM system database.

The integration will save time, reduce costs and increase productivity by preventing unnecessary double effort and re-keying of works orders in multiple systems. Integration also enables the plant to automate its calibration management with smart calibrators, which simply is not possible with a standalone CMM system.

Benefits for all process plants

Beamex's suite of calibration management software can benefit all sizes of process plant. For relatively small plants, where calibration data is needed for only one location, only a few instruments require calibrating and where regulatory compliance is minimal, Beamex **CMX Light** is the most appropriate software.

For medium-to-large sized companies that have multiple users who have to deal with a large amount of instruments and calibration work, as well as strict regulatory compliance, Beamex **CMX Professional** is ideal.

Beamex's high-end solution, **CMX Enterprise**, is suitable for process manufacturers with multiple global sites, multilingual users and a very large amount of instruments that require calibration. Here, a central calibration management database is often implemented, which is used by multiple plants across the world.

Beamex Users

In 2008, Beamex conducted a survey of its customers, across all industry sectors. The results showed that 82% of

SUMMARY

Calibration Software improves calibration management tasks in all these areas

- Planning & Decision-Making
- Organisation
- Execution
- Documentation
- Analysis

The Business Benefits of using software for Calibration Management

- Cost reduction
- · Quality improvements
- Increase in efficiency

CMX Calibration software customers said that using Beamex products had resulted in cost savings in some part of their operations.

94% of CMX users stated that using Beamex products had improved the efficiency of their calibration processes, whilst 92% said that using CMX had improved the quality of their calibration system.

Summary

Every type of process plant, regardless of industry sector, can benefit from implementing specialist calibration management software. Compared to traditional, paper-based systems, inhouse built legacy calibration systems or calibration modules with CMM systems, using dedicated calibration management software results in improved quality, increased productivity and reduced costs of the entire calibration process.

Despite these benefits, only one quarter of companies who need to manage instrument calibrations actually use software designed for that purpose.

Customer success story

Heineken España, S.A. (Fábr

Installing an integrated, automated calibration system in the Heineken's new leading

From an environmental perspective, the new Heineken Brewery has been designed to make an optimum use of natural resources.

In Sevilla, 2 years after its start and with an investment of over 300 million Euros, the new brewery of Heineken España S.A., is nearly completed. It is called "Jumbo" because of the magnitude of the project, whicht has been built at record speed in such a short time.

In keeping with their beer tradition and traditional fabrication recipes, the installations have been designed with the highest levels of safety and automation. The new Heineken brewery will be the most modern and productive plant in Europe, allowing the company to remain the beer market leader in Spain.

From an environmental perspective, the new Heineken brewery has been designed to make an optimum use of natural resources. For instance, the use of heating systems based on overheated water or the cleaning systems, which reuse water, will ensure that the use of water and energy is reduced by 20%. From the point of view of automation, it should be underlined that everything communicates via fieldbuses: Ethernet, Profibus DP, Profibus PA (for process instrumentation) and AS-I for valves and actuators.

Armando Rivero Rubalcaba has been Head of Instrumentation for the Sevilla factory since 1996, in its former location, in calle Greco, and now in the new factory.

The situation

For Heineken, the quality of the beer is a number one priority. All their plants in Spain have received ISO 9001 and ISO 14001 certifications, in addition to the BRC certificate of food safety. They must therefore ensure that all processes correspond to the planned characteristics, and the role of calibration is very important to ensure the quality and safety of the processes. The Instrumentation Department includes the Head of Instrumentation and 5 instrumentation technicians, who are responsible for all the calibrations/ adjustments of the instruments. In the new factory, the Instrumentation Department calibrates, checks, adjusts the following equipment: Temperature, flow, CO₂ in beer, dissolved O₂, level, pH, conductivity, pressure, weight, yeast consistency, density, turbidity and color.

"I think it was an excellent decision to choose for the most modern brewery in the world the best calibration management system,the Beamex[®] CMX with the Pocket PC and the MC5", Armando Rivero Rubalcaba summarizes.

In the old Heineken factory, the management and documentation of calibrations were carried out via a database in Access. It was designed for printing the calibration certificates of the control loops collected among the critical equipment, in keeping with the ISO 9001 and 14001 norms and to establish the annual calibration plans of these loops. This database contained the specifications of the equipment, but did not store the calibration data, and thus they had to be kept on paper in view of the audits.

For the calibrations, Heineken used printed reports from the database to note the calibration results. These results were then entered into the database to obtain the corresponding calibration reports. Consequently, the instrumentation technician did not know if the calibration was accepted before introducing the data and establishing the report.

The solution and main benefits

For the new plant, there was a need for a tool, which for instance would make the calibration work easier, stores all calibration results, show the calibration history trend and provide a quick access to calibration data.

These factors led Heineken to choose the Beamex[®] CMX Calibration Software with the Beamex® MC5 Multifunction Calibrator in the new factory (JUMBO). The whole instrumentation of the factory (instruments with analog variables) are entered into the CMX, following a codification and plant structure (TAG) according to the ISA 88 standard. Each instrument that is calibrated regularly has its calibration procedure including the initial calibration date, due date and all calibration related information. Then the various preventive maintenance plans (calibrations), which automatically generate work orders for each calibration plan, are entered into the SAP® PM (Plant Maintenance) management system. Once the work order is created in SAP® PM, the instrumentation technician sends the equipment to calibrate from the CMX to the MC5, or the PDA if they are manual calibrations.

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edge brewery.



"I think it was an excellent decision to choose for the most modern brewery in the world the best calibration management system, the Beamex[®] CMX with the Pocket PC and the MC5", Armando Rivero Rubalcaba summarizes.

Once the calibrations are completed, the data are stored in the CMX and electronically approved by the Head of Instrumentation. All the calibration labels are then printed and positioned on the calibrated equipment. The combined solution of the CMX, MC5 and PDA allows for a seamless electronic flow between the calibration software and the calibrators, with the following benefits: it reduces possible errors of manual data entry, gives an automatic documentation of all data, electronic approval of calibrations, paperless management of calibration, quick access to the equipment which requires calibration, trend analysis capacity and history of calibrations as well as very precise and robust calibrator. The main benefits obtained with this combined solution CMX, MC5 and PDA are centered around a more efficient, practical and accurate working method, with a better optimization and quality of calibrations, saving costs which results in a rapid ROI. "I think it was an excellent decision to choose for the most modern brewery in the world the best calibration management system, the Beamex[®] CMX with the Pocket PC and the MC5", Armando Rivero Rubalcaba summarizes.

Case story in brief

Customer profile

Heineken España, S.A. (Fábrica Sevilla) Spain

The situation

The new brewery (JUMBO) of Heineken España S.A. in Sevilla, is nearly completed. The new Heineken factory will be the most modern and productive plant in Europe, allowing the company to remain the beer market leader in Spain. For the new plant, there was a need for a tool, which for instance would make the calibration work easier, store all calibration results, show the calibration history trend and provide a quick access to calibration data.

Solution description

- Beamex[®] CMX Calibration Software (with Pocket PC Option)
- Beamex[®] MC5 Multifunction Calibrator

Main benefits

- Streamlined and automated calibration procedures (e.g. documentation, calibration work procedures)
- Efficient, practical and accurate working methods, which minimizes the possibilities for human<u>errors</u>
- Calibration system provides safety by adhering to regulations (ISO 9001, ISO 14001)
- Improved quality, cost savings and fast ROI for the new calibration system efficiency, and reduces risk of problems

Customer success story

CEPSA Química Spain

Improving efficiency by integrating the calibration system with maintenance manag

CEPSA Química is the second largest European manufacturer of phenol and the fourth largest in the world.

EPSA Química, is the only Spanish company that manufactures phenol, acetone, methylamines and derivatives. It is today the second largest European manufacturer of phenol and the fourth largest in the world. Phenol is an intermediary product for the production of epoxy and polycarbonate resins, used in plastics, automation, building, electronics, telecommunications, electricity, medicine, pharmaceuticals and decoration.

For the calibration software, the first requirement was its integration capability with SAP®.

CEPSA Química's production center is located in the Huelva province, in the industrial polygon Nuevo Puerto de Palos de la Frontera and close to the port terminal "Reina Sofia", used for the reception of raw materials and shipping of finished products. The industrial installations use state-of-the-art technologies because of the complexity of the productive processes and the strict quality controls required for its products. The employed workforce is required to possess high technical qualifications.

ERTISA's quality system has been certified since 1992, and covers the reception of raw materials, and the production, storage and sales of the various products. This activity was certified by AENOR, under the international standard UNE/EN/ ISO 9002. In 1999, it obtained the environmental certification under the international standard UNE/ EN/ ISO 14001, certified by AENOR. In 2001, it obtained the Occupational Risk Prevention System certification, according to the OHSAS 18001 norm, certified by Audelco.

The situation

Since the certification of the Quality Assurance System in CEPSA Química in 1992, the calibration system was managed by using tailor-made computer tools with spreadsheets and databases applying traditional statistical formulas. This system required dedicating many hours to creating and filling in table sheets and generated an excessive amount of written documents. Calibrations and management control were carried out manually, with a high probability of making errors. With the launch of maintenance management systems, some generic tools appeared, which were more or less adaptable to each specific application, but they did not bring anything new, as they had to be tailor-made.

At CEPSA Química, calibration is a tool to warrant the accuracy of the critical measures for the plant processes, the environment and safety. Calibration management in CEPSA Química is the responsibility of the Instrumentation Maintenance Department, headed by Juan José Mora Mora. Their responsibility goes from the management of documentation, the management of computer application, the calculation and definition of uncertainties, the setting of calibration intervals, the management of standard equipment, the planning, programming and execution of calibrations, to the validation of results and the control

of non-conformities. Any internal of external audit is defended by the Head of Instrumentation Maintenance who is responsible for the management, followup and control of the system.

In 2006 CEPSA Química studied the purchase and installation of a calibration management system. The company ultimately chose the Beamex[®] CMX Calibration Software.

The solution and main benefits

Juan José Mora Mora explains, "we were looking for a management system, which combined three fundamental requirements. First requirement was simplification of the calibration management system and audits. Second requirement was reduction of the number of working hours for execution and management, making calculations not only of deviations but also of uncertainties. Third requirement was possible integration with the SAP[®] Maintenance Management System."

Nowadays when doing calibrations, the main objective is to guarantee that the critical equipment measurement value stays within an acceptable range of uncertainty for the processes, the environment and safety. Typical calibrated process variables include flow, pressure, level, temperature and ph. In addition to instruments, all calibration and measuring equipment are re-calibrated on a regular basis.

The Instrumentation Maintenance Department, within the Maintenance Department, determines the calibration process for each instrument and the maximum uncertainty which the process admits. In view of these characteristics, the maximum calibration intervals are set and all the information stored in the CMX. In collaboration with the Maintenance Planning Department, annual calibration plans are established and integrated as a CMX report. All the equipment data are entered into the

ement system.



"We chose Beamex because their products are designed to facilitate the work of the technician who calibrates", Juan José Mora Mora describes.

CMX database, which is connected with the SAP[®] system implemented within the whole Cepsa group. On the first day of each month, CMX launches the work instructions in SAP[®] for all the calibrations to be carried out during the month. The Instrumentation workshop employees plan and execute the field calibrations, and later enter the data into CMX so that the supervisors can approve the calibrations. The calibration certificates are then printed on paper and archived.

Calibrations are made in the field most of the time. For most of the calibrations, CEPSA Química uses the Beamex[®] MC5 Multifunction Calibrator. For the calibration software, the first requirement was its integration capability with SAP[®]. It was also important that the calibration software auditable according to international standards. Another requirement is that it calculates not only errors but also expanded uncertainties.

The Beamex[®] MC5 Multifunction Calibrator serves CEPSA Química's purposes well, as it integrates electrical, temperature and pressure measurement into one device. In addition, the communication between the calibrators and CMX Calibration Software reduces the duration of calibration and data entry. Third benefit is that Beamex provides also calibration equipment that is suitable for potentially explosive environments.

"We chose Beamex because their products are designed to facilitate the work of the technician who calibrates", Juan José Mora Mora describes.

"The main benefit with the Beamex integrated calibration system has been reduction of the number of hours dedicated to calibration and information management, which means a reduction of costs", Juan José Mora Mora reveals. Also, the computerized management of calibration data is more reliable as the possibility of making errors is reduced. "The interconnection with SAP[®] allows us to integrate the system of work instructions, planning and programming of tasks with calibrations", Juan José Mora Mora explains. "We can now assert that we have a calibration management system which is simple, efficient and adapted to our particular needs and requirements", Juan José Mora Mora summarizes.

Case story in brief

Customer profile

CEPSA Química, Spain

The situation

CEPSA Química is the only Spanish company that manufactures phenol, acetone, methylamines and derivatives. It is today the second largest European manufacturer of phenol and the fourth largest in the world. At CEPSA Química, calibration is a tool to warrant the accuracy of the critical measures for the plant processes, the environment and safety. CEPSA Química looked for a calibration system, which combined three fundamental requirements. First requirement was simplification of the calibration management system and audits. Second requirement was reduction of the number of working hours for execution and management, making calculations not only of deviations but also of uncertainties. Third requirement was possible integration with the SAP[®] Maintenance Management System.

Solution description

- Beamex[®] CMX Calibration Software (with SAP[®] Connector)
- Beamex[®] MC5 Multifunction Calibrator

Main benefits

- Calibration software provides integration capability with SAP[®] Maintenance Management System
- Simple and efficient calibration system adapted to specific needs
- Cost savings from reduction of the number of hours dedicated to calibration and information management
- Multifunctional calibrators replace several individual measurement devices

Customer success story

Shell Nederland Raffinaderij B

An integrated calibration solution that meets refinery's demanding safety and regula



With its many process plants and installations Shell Pernis Refinery is one of the largest and most extensive petrochemical complexes in the world.

ith its many process plants and installations Shell Pernis refinery is one of the largest and most extensive petrochemical complexes in the world. Here the refining and petrochemical activities operate side-by-side giving both economic and technical advantages.

Shell Nederland Raffinaderij processes raw materials, predominantly crude oil; Shell Nederland Chemie converts part of the refined products into chemical products. The refinery processes about twenty million tons of crude oil each year via the Shell Europoort oil terminal.

Pernis refinery is fairly unique in that it is able to process diverse raw materials from many parts of the world. Shell exports about 2/3 of the production of Pernis refinery; almost 1,000 different products are manufactured. Pernis is connected via a network of pipes to Shell Chemie Moerdijk, to Amsterdam Schiphol airport and to customers in Germany.

Ed de Jong is instrument maintenance engineer for the various process units for the Pernis refinery, focusing on maintenance strategy, field instrumentation, benchmarking, and legal compliance to such matters as CO2 emissions (based on fuel measurements). He has intimate knowledge of the refinery and has been closely involved in providing solutions to several issues, including calibration.

The situation

"Calibration is a very important part of the refinery's control and automation. Until recently calibration was mainly driven by economic motives: even the smallest of errors in delivery quantities are unacceptable in Shell's operation due to the vast sums of money involved for both customers and governments (fiscal metering)", Ed de Jong starts.

Nowadays calibration has an important role especially for the license to operate. For the efficient combustion in furnaces and the associated emissions, the calibration of instruments is crucial. Government regulations demand that specific instruments must be calibrated, for example instruments related to CO_2 and NO_x emissions. Government regulations require that instruments associated with safety systems are regularly calibrated and the results documented in accordance with the IEC 61511 standard.

"One of the most important aspects of implementing the Beamex integrated calibration system was the need to meet regulatory requirements and audits ("Nederlandse Emissie Autoriteit", the Dutch Emission Authority) related to CO_2/NO_x emissions", Ed de Jong explains.

Periodic calibrations must be performed, the records must be stored and the data needs to be available and easily accessible during the audits. The Beamex integrated calibration solution made of Beamex[®] CMX Calibration Software and Beamex[®] MC5 Multifunction Calibrators meets these requirements.

"The CMX Calibration Software used by Shell is GID scripted (Shell proprietary worldwide IT system) and can easily be extended by acquiring additional user licences. This means that the Beamex calibration system is utilized as an international calibration solution for Shell", Ed de Jong describes.

The system is in use in other sites as well, even outside The Netherlands. In Germany, CMX Calibration Software and MC5 Multifunction Calibrators are operating as a standalone application; the intention is to migrate the system to the GID scripted version of the CMX. Several other Shell plants are also investigating the use of this calibration system.

The solution and main benefits

"Shell's current calibration system is serving several purposes", Ed de Jong states. "First of all, the system exists to provide a secure, automated and auditable instrument validation and calibration infrastructure with interface to SAP to

V. (Pernis refinery) The Netherlands

tory requirements.

prevent non-compliance with Dutch emission authority (RTS department), NMi (Dutch National Measurements Institute), and IPF requirement by Production Unit/ Plant (Global Asset Management Excellence process) and other calibration requirements for critical instruments. Secondly, the calibration system needs to provide automatic exchange of scheduling data between CMX and SAP. It is the intent that the work-management system (SAP) will be connected to the CMX Calibration Software, so that management can see business statistics such as overdues and instruments outside specification", Ed de Jong explains.

In the refinery, a group of instruments is defined as "critical". Emission-related instruments are also considered to be critical, as they are associated with the "license to operate". At the moment, the calibrated flow, pressure and temperature instruments associated with CO_2 and NO_x emissions are entered into the CMX. Due to the great potential of the calibration software, the intention is to add the other critical instruments, such as custody transfer and instruments related to IEC 61511, into the CMX.

Workflow is controlled by the work-management system, whereby instruments are planned/ scheduled for calibration on a yearly basis. The calibration procedures and calibration results are stored in the CMX. The calibrators provide the "as found/as left" condition of the instrument, with associated calibration information (time stamp, etc.). The CMX software stores the calibration results so that a calibration history can be built up and presented to regulatory/government authorities. A requirement is that complete electronic records can be maintained and that this information is stored in a robust environment.

At this point the Beamex calibration system is predominantly used to support compliance with IEC 61511 guidelines. Based on this knowledge, it was easy for Shell Pernis to decide which route to follow; no other options were even evaluated.

Presently the Shell Pernis and Shell Moerdijk locations use CMX Calibration Software in a network environment and MC5 Multifunction Calibrators. The functionality of the CMX includes calibration history trend, report design, audit trail and SAP connector. The MC5 calibrators are fully equipped and have various pressure ranges and HART communication. Beamex and their local sales partner in The Netherlands (HPR Techniek B.V.) have trained all personnel involved in calibration activities. Training is an important aspect of an efficient implementation of a calibration system; it ensures that Shell can make the most from their calibration investment.

The Shell Global Solutions testing facility has also been evaluating the MC5 Fieldbus Calibrator for the calibration of Foundation Fieldbus transmitters and it is a solution that can be used at the Shell Pernis refinery or other Shell locations.

"Implementation of the Beamex integrated calibration made of CMX and MC5 was justified on reputation, license to operate and quality. Cost savings are also anticipated", Ed de Jong summarizes.

Case story in brief

Customer profile

Shell Nederland Raffi naderij B.V. (Pernis refinery) The Netherlands

The situation

Calibration is a very important part of the refinery's control and automation. Until recently calibration was mainly driven by economic motives: even the smallest of errors in delivery quantities are unacceptable in Shell's operation due to the vast sums of money involved for both customers and governments (fiscal metering). Nowadays calibration has an important role especially for the license to operate. Government regulations demand that specific instruments must be calibrated, for example instruments related to CO_2 and NO_x emissions. Government regulations require that instruments associated with safety systems are regularly calibrated and the results documented in accordance with the IEC 61511 standard.

Solution description

- Beamex[®] MC5 Multifunction Calibrator
- Beamex[®] CMX Calibration Software
- Professional Services: MC5 Training Courses

- Professional Services: CMX Installation
- Professional Services: CMX Training Courses

Main benefits

- The Beamex calibration system provides safety by supporting compliance with IEC 61511 and other regulatory guidelines
- Possibility to use calibration software in a network environment
- Integration capability to SAP[®] Maintenance Management System
- Robust, high quality calibration equipment and software
- Availability of training services

Beamex partner interview: Tomás de Miguel, co-found GOMETRICS [Spain]

1. Give us an introduction of you and your company GOMETRICS.

Officially established in 1994, Gometrics S.L., is an independent Spanish company, and the result of a division of our first company called GOING.

Gometrics is well-known for promoting and representing top-level foreign companies in Spain. Our first activities involved the trade of analog manometers and high-pressure indication systems.

Nowadays, Gometrics has consolidated its pressure expertise and has diversified its activities into other areas of interest (pressure calibration, temperature, flow, in-situ calibration services, thermal mapping, etc).

The other independent company, called CAT, is an official calibration laboratory, which offers a complete calibration service accredited by the National Accreditation Entity (ENAC). ENAC accreditation ensures EA (European cooperation for Accreditation) traceability of the calibration results.

Gometrics S.L. is located in an industrial area, 22 km from Barcelona. It covers an area of 4,500 m², one-third of which comprises the GM building where we have our offices. Here we have our offices, workshops, warehouse, maintenance, etc.

The other part of this area is also covered by CAT. We have another small office in Madrid.

We have 27 employees working full time, and our operations cover the entire Iberian Peninsula, Baleares and the Canary Islands.

Our primary activities concentrate on the field of calibration, i.e. we promote and sell the most appropriate systems to demanding customers. We also provide them with calibration services on site or in our laboratory. Without a doubt, Beamex is the main company



Today, Gometrics S.L. also provides on-site calibration services to their customers.

er, Gometrics S.L.

Gometrics represents in Spain and Portugal, although we also represent other companies.

2. How and when did you start as a Beamex Partner?

Our company, in those days called GOING, was always motivated and very interested in all calibration matters.

In 1978, we were approached by a customer who needed portable calibration equipment, so we contacted Beamex.

What luck we had sending our first purchase order to Beamex. It was for 12 BTS 101 devices!

I should point out that this customer, Almaraz Nuclear Power Station (Central Nuclear de Almaraz) is still our customer today, and they are pleased with having used many Beamex instruments.

3. How would you describe the calibration market in your country?

In the seventies, the calibration market in our country was very limited and only a few companies were in charge of this activity. These companies were usually large with an abundance of resources and interests in recalibrations.

By the end of the eighties, our company was recognized as one of the few companies that offered instrumentation and calibration solutions and equipments. I mean, among other instruments, Beamex BTS 100, BTS 200, VA, BIC 100, PRESSCAL, etc.

The implementation of the family of standards for quality management systems, ISO 9000, to which many Spanish companies had been recoursed, gave a boost to the sale of calibration instruments and to recalibration activities in Spain. That also meant an increase in calibration activities in our official laboratory , in our case ENAC and FINAS (in Finland).

Nowadays, these activities are still advancing due to the necessity for maintenance and optimization of quality systems in other companies, where calibration is very important.

4. What types of companies do you have as customers?

We are a medium-sized enterprise, and as everyone knows, it has both advantages and disadvantages.

I can assure you that we are a progressive company, i.e. a company that moves quickly in all parts of the country after detecting sales, promotional and service opportunities. I should point out that Spain is not a small country. The area measures approximately 500,000 km².

We have a foothold in most areas of industry: electricity, nuclear, gas & oil, chemistry and petrochemical, health food and beverages, glass, pharmaceutical, etc.

We admit that the plastics industry is one that we have yet to conquer and that our foothold in the pharmaceutical industry is not very strong, but this is one of our major areas of concentration for the upcoming years.

Determining the sector in which Beamex is best represented is not easy. However, the most prominent ones include electricity and power plants.

We cannot forget that IBERDROLA, the leading energy company worldwide established in Spain, has purchased one of Beamex's calibration management systems, the CMX.

This installation made it possible for them to automate all of the calibration processes in all of their plants and to integrate the tool into SAP.

It is also important to mention that they work together with Beamex's MC5 Multifunction Calibrators, instruments that make the work easier in plants. Subsequently, other large companies such as Union Fenosa, CLH, Heineken, CEPSA Química, Enagas, etc. have implemented similar types of calibration processes.

5. How do Beamex products meet the needs of Spanish companies?

Beamex's instruments have generated and guaranteed an excellent image of quality and safety.

Beamex's prestige increases day by day, thanks to their latest instruments and systems, which have demonstrated wonderful quality, reliability, and simplicity. All this guarantees that companies will achieve excellent profitability on their investments in Beamex's instruments.

The responses of Beamex and Gometrics to their customers' problems and needs are the fundamental key to our excellent after-sales services, one of the greatest successes of our company in Spain.

We believe that part of this success is due to our Gometrics employees, who have thorough knowledge of Beamex's products.

This advantage allows us to provide our customers with the assistance they may need after purchasing calibration systems and/or instruments.

News

Beamex introduces a new documenting process calibrator

■ The Beamex[®] MC4 is a new compactsized documenting process calibrator. Being a multifunction calibrator, the MC4 is suitable for calibrating various process parameters, such as pressure, temperature and electrical signals. As the MC4 is a documenting calibrator, calibration results are automatically stored in the MC4's memory. In addition, instrument data can be sent from computer to MC4 and calibration results can be uploaded from the MC4 to a computer using Beamex® CMX Calibration Software. With the MC4, making automated and documented calibrations of process instruments is fast and easy. Using the MC4 together with calibration software provides a complete documenting calibration system that produces calibration certificates automatically. There's no need to use pen and paper for producing calibration documentation and instructions at any point of the calibration process. Due to its documenting capability, the MC4 can help reduce costs, time and effort,



while also ensuring calibration results are accurate and consistent.

High accuracy is one of the important features of the MC4. An accredited calibration certificate is included as standard with MC4, as a proof of the accuracy. The correction coefficients of a PRT probe can be programmed to MC4 to further improve the temperature accuracy. A large graphical display, menu-based multilingual user interface and full numerical keyboard make it easy to learn and use the MC4.

A rechargeable internal battery pack and charger are standard accessories supporting the effective use of the MC4. Membrane keyboard and integrated impact protectors make the MC4 a weatherproof and robust calibrator. MC4 can have both internal and external pressure modules, making it really versatile.

"The MC4 is an easy-to-use, attractively priced high-quality documenting calibrator. It's a great entry-level documenting calibrator for engineers and technicians, who have been mainly using single-function or multiple-function non-documenting calibrators", Heikki Laurila, Beamex's Product Manager, explains the benefits of the new product.

Beamex provides a calibration solution for S.N.T.G.N. TRANSGAZ in Romania

■ Beamex recently signed a major contract to provide a calibration solution for S.N.T.G.N. TRANSGAZ (Romania). The contract includes several Beamex[®] MC5-IS Intrinsically Safe Multifunction Calibrators, Beamex calibration software as well as Beamex® PG-Series calibration pumps. Beamex calibration equipment will be used mainly for calibrating pressure and temperature instruments. S.N.T.G.N. TRANSGAZ performs more than 1,000 calibrations annually. "Wechose Beamex for various reasons. First of all, the quality of Beamex's products is impressive. Secondly, we are very pleased with the level of technical support we can get from Beamex's Romanian partner MDS ELECTRIC. The third reason was the accuracy of Beamex calibrators", explains Mr. Mihai Patirniche, Maintenance Division Manager of S.N.T.G.N. TRANSGAZ in a discussion with Mr. Sorin Bogdan, general manager of MDS ELECTRIC at the training organised at S.N.T.G.N. TRANSGAZ headquarter's for operating supplied equipment. With more than 5,000 employees, the Romanian stateowned S.N.T.G.N. TRANSGAZ operates Romania's natural gas transmission system, which consists of 12,200 kilometres of pipeline and related equipment. Presently, S.N.T.G.N. TRANSGAZ carries out natural gas transit services for Turkey, Bulgaria, Greece and Macedonia.

Customers say that using Beamex improves efficiency and quality

■ In May 2008. Beamex executed a worldwide customer satisfaction study. Close to 10,000 customers were again invited to participate in the study and give feedback to Beamex. A large share of the customers again responded to the invitation and participated in the study. "We are very lucky to have such professional, dedicated and cooperative customers. They provide us with very valuable feedback, which we can use in developing our products, services and operations. In addition, we simply want to get regular feedback of what we are doing well and what needs to be improved," Raimo Ahola, CEO of Beamex Group, explains.

Beamex considered a high-quality measurement equipment brand

Customers are satisfied with Beamex products in the areas that matter most when choosing calibration equipment and software: measurement accuracy, reliability and quality, functionality and ease-of-use.

Beamex partners valued for their know-how and professional way of conducting business

Overall, Beamex customers are very satisfied with the company's operations, customer service and sales partners, which the company has in over 50 countries. The sales partners received positive feedback especially for their technical know-how, overall reliability and quality and also for conducting business in a professional manner. "Our model is slightly different for this industry. We have very high requirements in terms of technical and application knowledge for our sales partners, so that they are able to deliver high-quality customer



service and support. This model seems to be valued," Raimo Ahola states.

Using Beamex products results in tangible business benefits

Using Beamex calibration equipment and software proves to be very valuable for the customers. Almost all customers state that using Beamex has resulted in cost-savings in some part of their operations as well as in improved efficiency and quality.

Highlights of the study

- **98%** of the customers will probably recommend Beamex to a colleague.
- 9 out of 10 say that using Beamex products has improved efficiency.
- 4 out of 5 say that using Beamex products has resulted in cost-savings.
- 9 out of 10 say that using Beamex products has improved the quality of their calibration system.

News

New Beamex brochures: General brochure and workshop solutions brochure

■ New Beamex brochures are available. The general brochure introduces the complete Beamex product range from portable calibrators to workstations, calibration software and related accessories. In addition, it gives a brief introduction to Beamex's Professional Services. The Beamex Integrated Calibration Solution has a special focus in the brochure.

The Beamex Instrument & Electrical Workshop Solutions brochure introduces the instrument and electrical workshops that Beamex can deliver as a turn-key solution. Calibration solutions for improving efficiency and quality.

beamex

Beamex Instrument & Electrical Workshop Solutions

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Both new brochures can be downloaded from: http://www.beamex.com/download/brochures/index.phtml

Beamex Limited User Training Seminar in UK

■ The User Training Seminar is a regularly held event for Beamex Limited (UK). This year, the meeting was held at the UPM Kymmene Shotton Paper Mill in Deeside, UK.

A group of Beamex Limited's customers participated the 2-day event, which included training workshops, product presentations as well as open discussions. During the seminar, the attendees had also a chance to learn in more detail about the operations of the Shotton Paper Mill. This year the training

topics covered areas, such as calibrating smart devices, integrating calibration software with maintenance management systems, fieldbus calibration, weighing instrument calibration, as well as paperless calibration management.

Beamex had another opportunity to learn and receive valuable feedback from its customers. We thank all participants for such a great event!

Feedback from the participants:

"Good presentation and discussion topics. Beamex listens the customer, which is very important."

"The User Training Seminars always prove interesting for not only what you learn from Beamex and its future intentions, but what's learned from other users in the application of the Beamex products and their methods used on site."

"Again a very good environment for the exchange of ideas."

Beamex launches Premium Partner Program within its sales network

■ To ensure success in the future as well, Beamex needs partners who thoroughly understand Beamex's value proposition, customer needs, and have the ability to provide worldclass customer service and support. To encourage their partners to aim for this type of status, Beamex has introduced the Beamex Premium Partner Program. To reach the status of Premium Partner, Beamex's sales partners should meet various requirements, such as direct focus on Beamex's products and customer segments, a high position among represented product lines, trained personnel, as well as highquality customer services and helpdesk abilities.

In addition to Beamex and its sales partners, the program provides Beamex's customers with clear benefits. "Our customers are becoming more global and require local support and services in a unified manner, 'the Beamex way'. With the introduction of the Premium Partner Program, we ensure that our customers worldwide get customer service with high and



consistent quality", explains Jan-Henrik Svensson, VP Sales & Marketing, Beamex Group.

The first Premium Partner agreement was made with GERMEX GmbH (photo), Beamex's sales partner in Germany. In addition to GERMEX GmbH, Beamex has made Premium Partner agreements with three other companies: AMS Instrumentation & Calibration Pty Ltd (Australia), Gometrics, S.L. (Spain) and JMEX AB (Sweden).

Emerson and Beamex announce a strategic alliance

■ Emerson Process Management and Beamex are pleased to announce a strategic alliance that will deliver integrated asset management and calibration in regulated industries. Combining Emerson's industryleading predictive maintenance application, AMS[®] Suite: Intelligent Device Manager, with Beamex® CMX Calibration Software will provide users with an enhanced calibration management solution that enables manufactures to comply with industry regulations such as ISO 9001:2000, 21 CFR Part 11, and IEC 61511.

The alliance combines the process automation expertise and asset optimization technology of Emerson with Beamex's knowledge and technology for calibration of a broad range of instruments and precision measurement devices. The solution will provide users with an integrated offering that broadens the scope of assets that can be calibrated and includes features such as customizable calibration reports to improve analysis and documentation of asset status.

"By working together, we look to provide the most comprehensive calibration offering available to our users. This innovative solution continues Emerson's commitment to openness as we work with Beamex to deliver effective asset management solutions for the process industry. This solution will deliver improved quality, efficiency and a new level of automation to users," explain Craig Llewellyn, President of Asset Optimization, Emerson Process Management and Raimo Ahola, CEO of Beamex Group.



News

Customers trained at Beamex Headquarters



Professionals from SSAB, Sweden.

Two customers recently participated training workshops at Beamex headquarters in Pietarsaari, Finland.

Instrumentation and maintenance professionals from SSAB, Sweden's largest steel producer, participated in a two-day workshop to learn about the benefits of using Beamex[®] CMX Calibration Software.

In addition, instrumentation and maintenance professionals from Sasol, a publicly listed oil, gas and



Professionals from Sasol, South Africa.

petrochemical company from South Africa, participated in a three-day training workshop at Beamex premises to learn in-depth the benefits of using Beamex calibrators, calibration workstations and calibration software.

Comparing accuracy and uncertainty specifications

■ What is accuracy? Accuracy is one of the key criteria in selecting a process calibrator, but sometimes it's very difficult to compare the specifications of different calibrators, as the specifications may be expressed in totally different ways.

For instance, Beamex[®] calibrator specifications are given as "1 year total uncertainty". This is a conservative specification and it includes all shortterm uncertainties, such as hysteresis, nonlinearity and repeatability. Being a total uncertainty, it also includes the uncertainties of all reference standards used in the Beamex accredited laboratory, as well as uncertainties of the entire traceability chain.

The uncertainty also includes the typical long-term stability for 1 year. Being a conservative specification, the coverage factor (k=2) has been included in the specifications. Also,



It is important to know the uncertainty of the calibrator used in process instrument calibration. Beamex® CMX Calibration Software can show the calibrator uncertainty graphically in the calibration results, so it is easy to see if the calibrator is good enough for the application. the temperature effect within a normal working environment has already been included in the specifications.

All of Beamex's calibrators include an accredited calibration certificate as standard in the delivery. This calibration certificate includes a calculation of the total uncertainty related to the calibration process separately for each calibration point.

When comparing the uncertainty specifications of different calibration equipment brands and models, make sure that the specifications have been expressed with a comparable manner. A simple accuracy specification is usually not comparable with total uncertainty specification.

Go green with Beamex!

Beamex[®] MC5 Multifunction Calibrator – the choice of an environmentally conscious plant.

- It replaces 10 to 15 different measurement devices. Less waste is generated, as only one device is needed.
- It has long operating time, typically 10 to 15 years. This generates also less waste, as you can use the calibrator for a very long time.
- Extremely accurate calibrator. The more accurate a calibrator is, the more it helps your plant in producing products with both high and consistent quality.
- Used often in calibrating emission-related instruments. The MC5 is also very suitable for calibrating emission-critical instruments related to CO₂ and NO₂ applications.



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Automated calibration planning lowers costs Calibration in hazardous locations Customer success stories:

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- New England Controls, Inc.

1/2007

Introducing the world's first fieldbus calibrator Calibrating weighing instruments Customer success story:

• Teva UK Limited

2/2007

Calibration in the pharmaceutical industry How often should calibrators be calibrated? Customer success story:

• Eli Lilly and Company Limited (Speke Operations), UK

3/2007

Traceable and efficient calibrations in the process industry Improving power plant performance through calibration How often should instruments be calibrated? Customer success story:

• Georgia Power, Plant Yates (USA)

1/2008

Integrating calibration software with CMMS The benefits of using documenting calibrators The safest way to calibrate - introduction to intrinsically safe calibrators. Customer success stories:

- Reliance Industries Limited (Patalganga Manufacturing Division), India
- Mazovian Gas Company (M SG), Plant Łódź (Poland)

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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)

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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



Document as you go!

Beamex® MC4 Documenting Process Calibrator

- Automated and documented calibrations can be made quickly and easily
- Calibration capabilities for pressure, temperature, electrical and frequency signals
- Compact size and design
- Documenting communicates with Beamex calibration software







Portable calibrators Workstations Calibration software Professional services Industry solutions

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