# SOFTWARE AND SERVICES

Calibration software, system supply projects and services, software support and maintenance programs
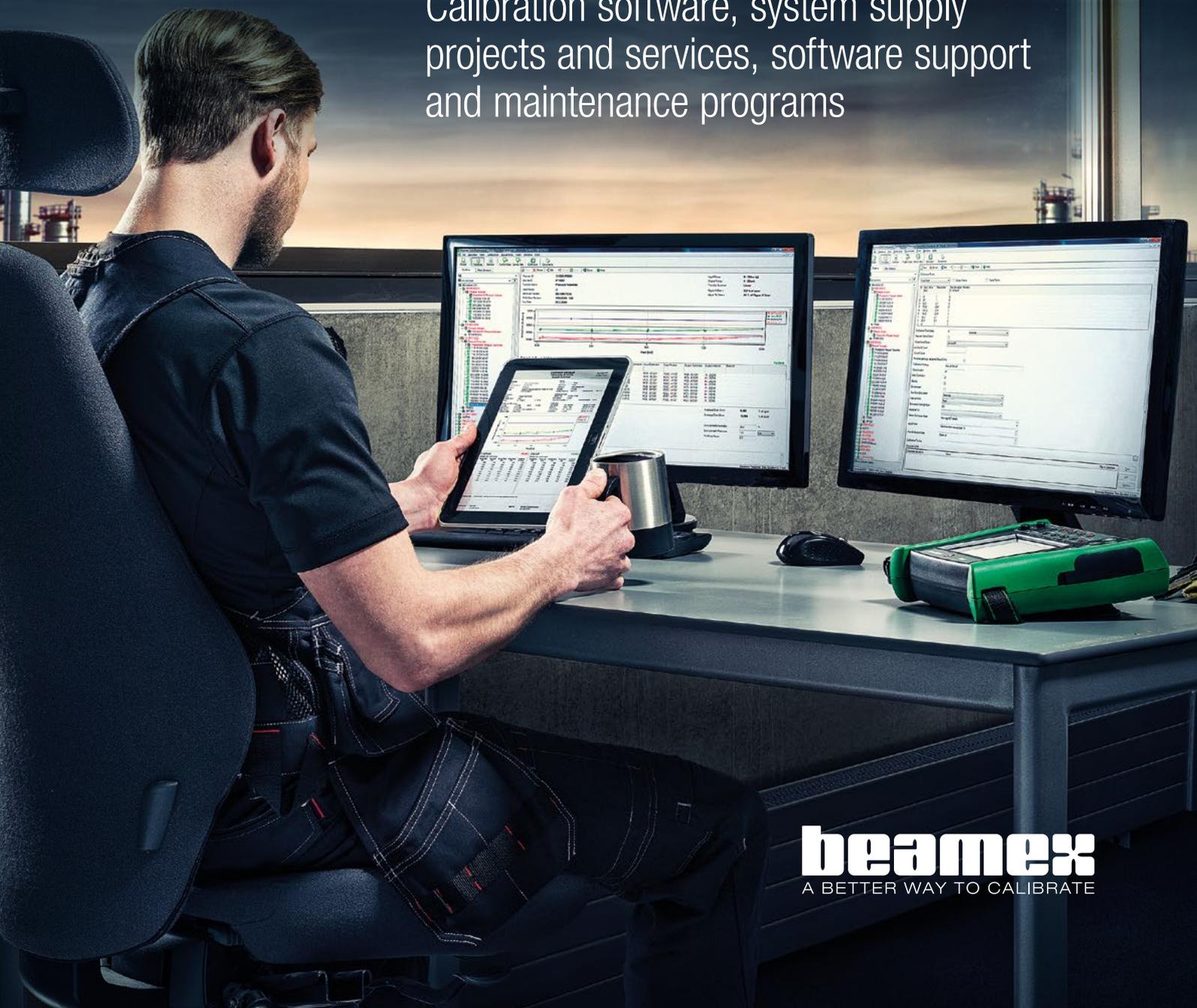
beamex

A BETTER WAY TO CALIBRATE

Calibration software and services

Beamex is a technology and service company that develops, manufactures and markets high-quality calibration equipment, software, systems and services for the calibration and maintenance of process instruments. The company is a leading worldwide provider of integrated calibration solutions that meet even the most demanding requirements.

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SOLUTIONS

Paperless calibration

The paperless calibration system comprising Beamex documenting calibrators and calibration software form an integrated and automated calibration system for improving quality and cutting costs.

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SOLUTIONS

Weighing instrument calibration

A scale must also be calibrated on a regular basis. Beamex CMX is an ideal tool for performing weighing instrument calibration.

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SOLUTIONS

Ensuring the integrity of calibration data

Data integrity is the maintenance of and the assurance and consistency of the data over its life-cycle.

13
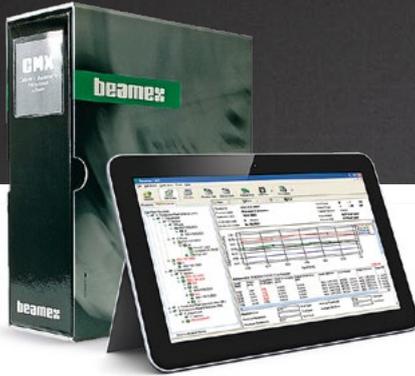
Beamex CMX
calibration software

Plan, manage and document all your calibration information efficiently and safely using Beamex CMX calibration management software.

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LOGiCAL
cloud-based software

Beamex LOGiCAL is an advanced cloud-based calibration certificate generation software.

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Beamex bMobile

Beamex bMobile is a multi-platform, mobile, paperless solution for executing and documenting process instrument calibrations, maintenance-related inspections and weighing instrument calibrations.

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System supply
projects and services

Beamex provides all the services required for the efficient supply, implementation and maintenance of a calibration management system.

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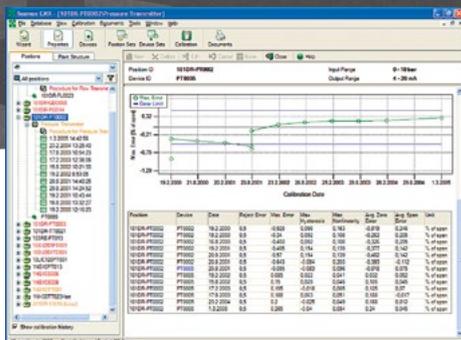
Software support and
maintenance programs

Maintain reliable operations and benefit from innovation to maximize return on your software investment.

SOLUTIONS
PAPERLESS
CALIBRATION

A paperless calibration system comprising documenting calibrators and calibration software improves quality and cuts costs. The business benefits are significant for companies that use software-based calibration systems. The entire calibration process – from initial recording of calibration data to historical trend analysis – will take less time, whilst virtually eliminating mistakes and manual errors.
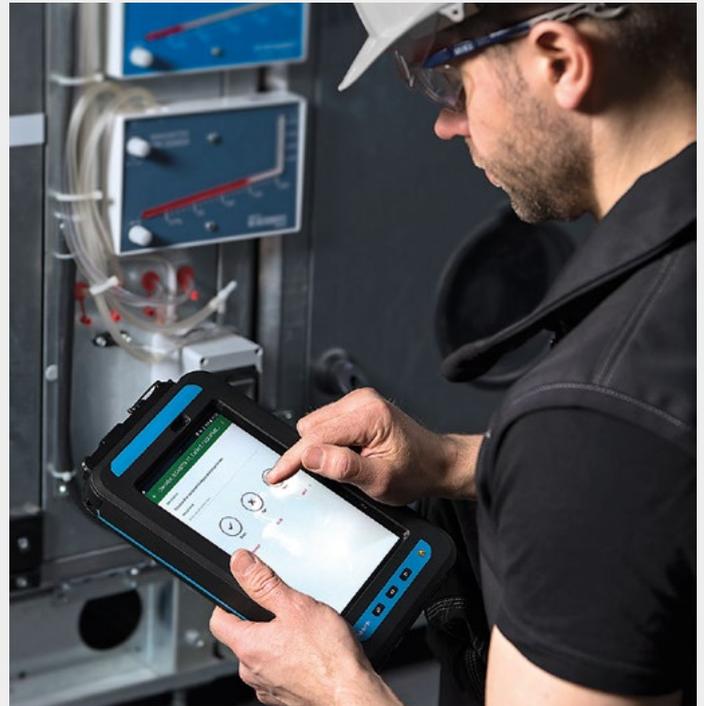
RELATED PRODUCTS

Beamex MC6 calibrator

Beamex MC6-Ex calibrator

Beamex MC4 calibrator

Beamex MC2 calibrator

Beamex CMX Professional calibration software

Beamex CMX Enterprise calibration software

Beamex Business Bridge

Beamex bMobile application

Traditional paper-based systems

While using a manual, paper-based system requires little or no investment in new technology or IT systems, it is extremely labor-intensive and means that historical trend analysis of calibration results becomes very difficult. In addition, accessing calibration data quickly is not easy. Paper systems are time consuming, they soak up lots of company resources and manual (typing) errors are commonplace. Dual effort and the re-keying of calibration data into multiple databases become significant costs to the business.

## Business benefits of paperless calibration

The business benefits of a paperless calibration system are significant. The entire calibration process – from initial recording of calibration data to historical trend analysis – will take less time, virtually eliminating mistakes and manual errors, which results in higher quality of gathered data. In turn, this means that operators, engineers and management will have more confidence in the data, particularly when it comes to plant audits. In addition, this greater confidence in calibration data leads to a better understanding and analysis of business performance and KPIs (particularly if the calibration software is integrated into other business IT systems such as a CMMS) leading to improved processes, increased efficiency and reduced plant downtime.

STEP-BY-STEP

## BEAMEX INTEGRATED CALIBRATION SOLUTION

THE CALIBRATION PROCESS

1.
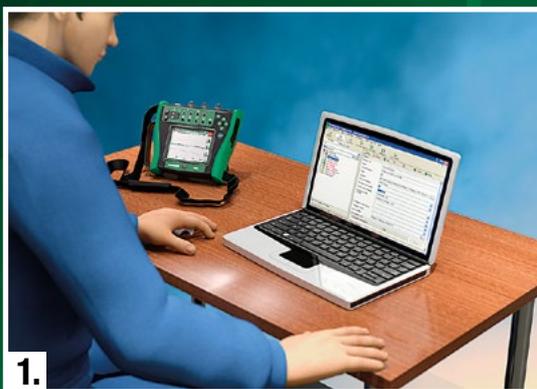
The Beamex CMX alerts what needs to be calibrated and when

- Easy, fast and efficient
- No need to search archived paper files

2.
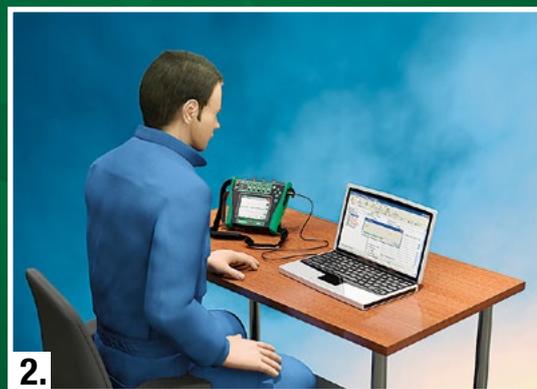
Download calibration procedures and instructions from the software to the MC6

- Fast procedure
- No pen, paper or notepads needed

5.
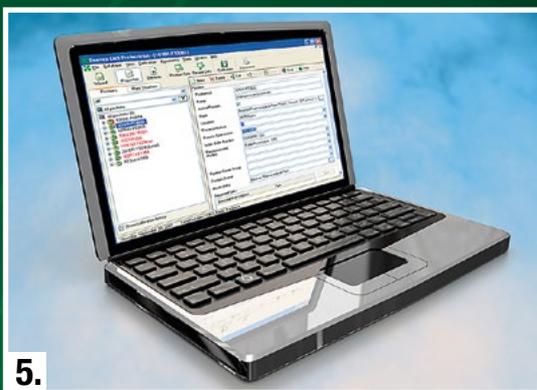
Create, store and manage calibration information safely and efficiently with the software

- All calibration data is stored and managed in the CMX database
- Calibration certificates, reports and labels in electronic format, on paper or both
- All documentation in the CMX is auditable and traceable (e.g. ISO 17025, cGMP, 21 CFR Part 11)

6.

Integration to a maintenance management system

- Plant hierarchy and work orders are stored in ERP/CMMS (e.g. SAP, Maximo) and from there transferred to the CMX, which stores all calibration procedures, standards and results
- When calibration work has been performed, the CMX sends acknowledgement of the calibration back to ERP/CMMS

3.

Perform instrument calibration and data collection with the MC6

- The MC6 replaces many individual measurement devices and calibrators
- Automated calibration is fast

4.

Upload calibration results to the software

- Automatically download calibration results back to the software
- Data transfer is fast and efficient, writing mistakes are eliminated

SOLUTIONS
WEIGHING INSTRUMENT CALIBRATION

Weighing instruments are typically very accurate, but they still need to be calibrated frequently to ensure that measurement values and uncertainty meet requirements. Weighing instruments as tools for measuring are highly common in industrial environments. Accurate weighing is required whenever invoicing and production depend on the precise weight of masses.

RELATED PRODUCTS

Beamex CMX Professional calibration software

Beamex CMX Enterprise calibration software

Beamex bMobile Calibration Application

SOFTWARE AND SERVICES

Beamex's solution for weighing instrument calibration

Beamex CMX calibration software includes eccentricity tests, repeatability tests, weighing tests, and minimum capability weighing tests to assist in complying with all calibration requirements. CMX also stores other compulsory information, such as traceability to used weight sets and weights, environment temperature before and after calibration, environment pressure and humidity, date and time, as well as information about who performed the calibration. All of this information can be entered into the PC at the workstation or a mobile device. CMX also automatically produces traceable and auditable calibration certificates of all performed calibrations. CMX calculates combined standard uncertainty and expanded uncertainty at calibration of the weighing instrument.

SUPPORTS VARIOUS GUIDELINES AND STANDARDS, SUCH AS:

- EURAMET cg-18 Guidelines on the calibration of non-automatic weighing instruments
- OIML: EN 45501 + AC
- NIST: Handbook 44 – 2007

SUMMARY OF THE BENEFITS:

- Perform various different tests to comply with all weighing instrument calibration requirements
- Store all compulsory information
- Produce automatically traceable and auditable calibration reports
- Mobile device interface

SOLUTIONS
ENSURING THE INTEGRITY OF CALIBRATION DATA

Data integrity is the maintenance of and the assurance and consistency of the data over its life-cycle. ALCOA and ALCOA Plus acronyms are used when discussing data integrity. The integrity of calibration data is vital importance in many industries, specially regulated industries such as pharmaceutical. Updated regulation by FDA and MHRA is putting more focus on the data integrity in companies seeking compliance. The calibration data is critical in ensuring product quality, compliance to regulation and ultimately for patient safety.
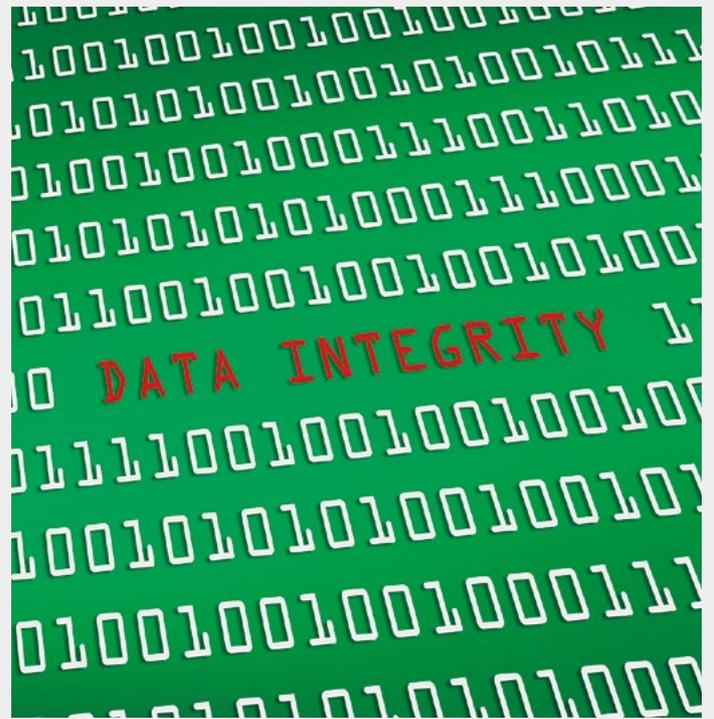
RELATED PRODUCTS

Beamex CMX Calibration Software

Beamex MC6 family of calibrators

Beamex bMobile application

MOBILE + SECURITY

## Potential data integrity issues in traditional calibration processes

Traditional calibration processes are typically using non-documenting calibrators and a paper-based documentation of calibration results. The results may be entered into a calibration software manually.

In this kind of system there is often no proper user authentication, audit trail is not kept, it is possible to tamper calibration data (accidentally or intentionally), the data and time may be tampered, manual entry errors may happen, false interpretation of handwriting and many others.

Beamex's solution for calibration data integrity – Mobile Security Plus

Beamex calibration system has been enhanced together with the calibration professionals from some of the world's most regulated companies, to ensure it fulfils the requirements for calibration data integrity.

Already in the past, the Beamex calibration solution fulfilled the requirements of 21 CFR Part 11 and relevant regulations. Now with our latest enhancements, Beamex system has been enhanced with a "Mobile Security Plus" technology. With this technology, the Beamex calibration solution further lowers the risk of ALCOA violations by identifying users on off-line mobile devices with their electronic signature and secures off-line data against potential data tampering. These mobile off-line devices include our MC6 family of documenting multifunction calibrators, and our bMobile application for tablets and mobile phones. With the latest version of the Beamex calibration solution, including the Beamex CMX calibration management software, you can safely use these mobile devices to comply with the updated regulation also in the future.
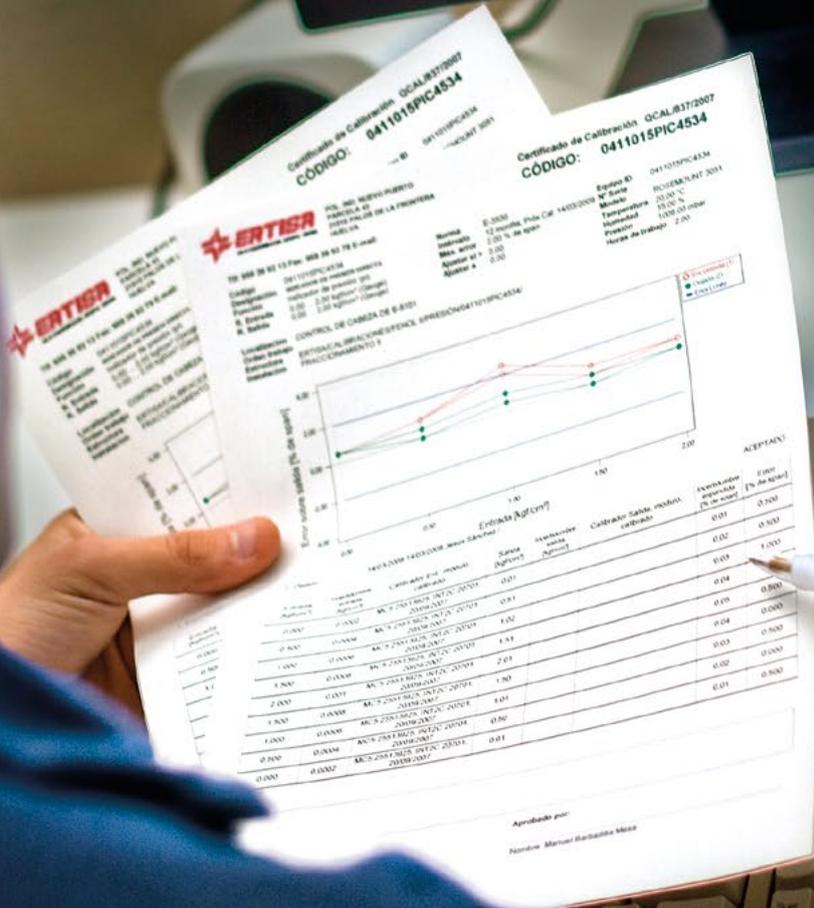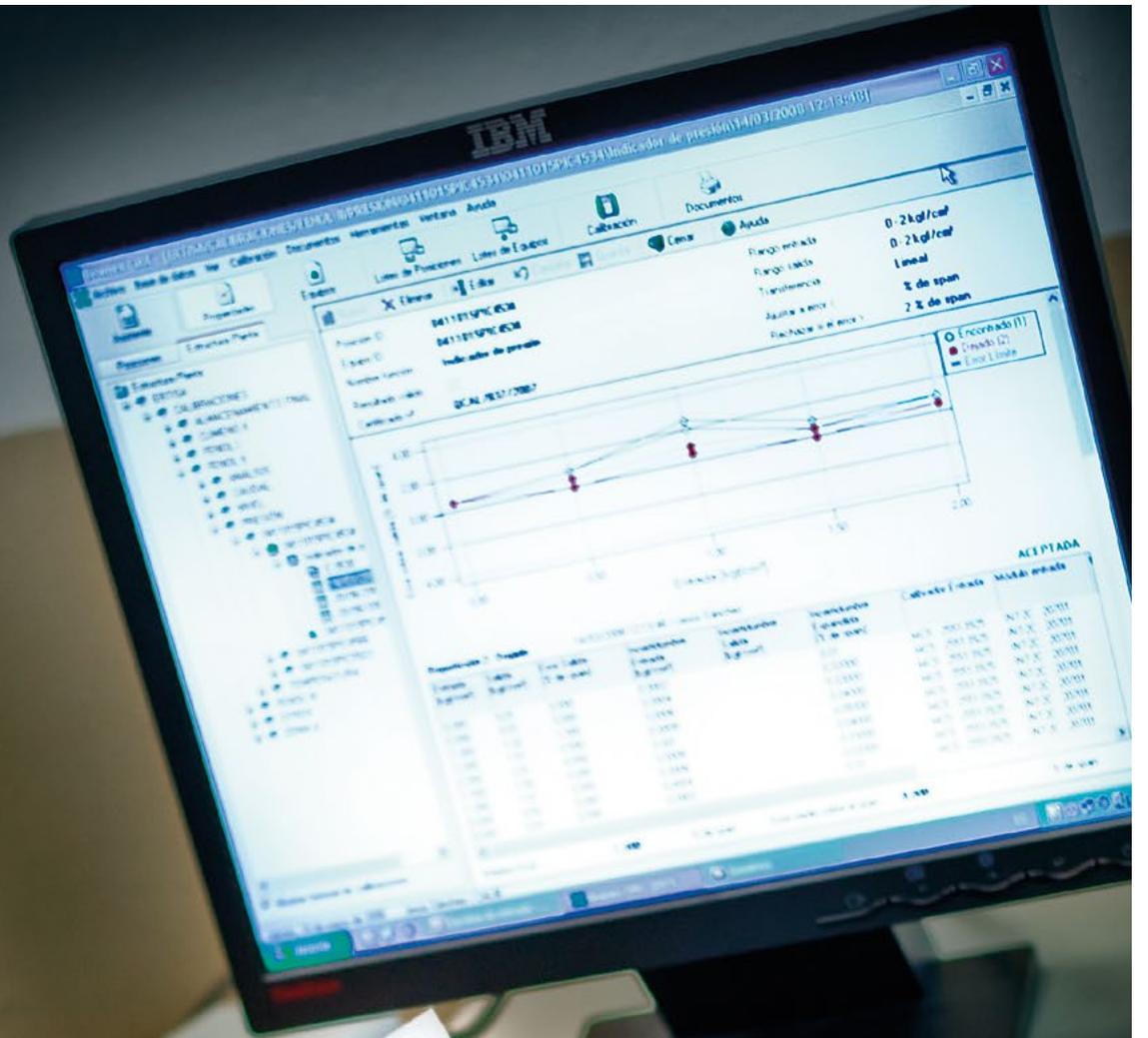
Beamex CMX calibration software

BEAMEX CMX
CALIBRATION MANAGEMENT SOFTWARE

Maximize quality and productivity of calibration asset management with Beamex CMX calibration software

- Plan & schedule calibrations
- Manage & store all calibration data
- Analyze & optimize calibration interval
- Easy and efficient to use
- Explorer-type user-interface
- Calibrator communication/manual entry
- Mobile device interface available
- Automatically produce reports, labels & certificates (electronic format/paper)

Why use software for calibration management

Every plant has some kind of system for managing calibration operations and data. There are several different ways for managing calibrations and they differ greatly in terms of quality, efficiency, accuracy of data, cost-effectiveness and level of automation. A plant can overcome the typical challenges related to calibration and improve the quality, productivity and cost-effectiveness of its entire calibration process by using software specifically designed for managing calibrations, such as the CMX calibration software.

Typical challenges related to managing calibrations:

- Huge number of instruments requiring calibration
- Planning and scheduling calibrations is a challenging and labor-intensive task
- Documentation is necessary, but it takes time and typing errors are common
- Calibration data should be accessible for audits
- Calibration interval planning and analysis

CMX PRODUCT FEATURES	PROFESSIONAL	ENTERPRISE
Optional 500 positions/tags in the database	○	
Optional 1 000 positions/tags in the database	○	
Optional 5 000 positions/tags in the database	○	
Optional 10 000 positions/tags in the database	○	
Unlimited number of positions in the database	○	●
Single workstation license	●	
Floating server licenses	○	●
Networking/multi-user support	●	●
Position/tag and device database	●	●
Position/tag and device sets	●	●
Calibrator database	●	●
Wizard for database population	●	●
Communication with Beamex calibrators	●	●
Manual data entry	●	●
Average and uncertainty calculation	●	●
Plant structure	●	●
User accounts, groups and permissions	●	●
Pickup lists	●	●
Saveable filters	●	●
Standard paper reporting templates	17	17
Importing/exporting paper reporting templates	●	●
SQL server express version	●	●
CMX database manager tool	●	●
Oracle database support	○	●
Communication with 3rd-party calibrators	○	○
Configurable user interface	○	●
History trend	○	●
Report design	○	●
Change management with audit trail and electronic signature	○	●
Weighing instrument support	○	●
Lightweight directory access protocol (LDAP)	○	●
Maintenance inspection with bMobile application	○	●
"Mobile Security Plus" technology	○	●
Communication with bMobile calibration application	●	●
Enhanced work order handling	○	●
Calibration Web Service Interface (CWSI) – calibrator communication in virtualized environments	●	●
Integration capability to various ERP/CMMS/other third-party systems	○	○
Factory type validation – URS / FDS / IQ / OQ / PQ	○	●
Possibility to import data from third-party systems to CMX	○	○
Availability of report design services	○	○
Availability of on-site validation services	○	○

● = Standard feature

○ = Optional feature

Note: Certain capabilities and functions listed above may require purchasing of professional services from Beamex.

Benefits of using CMX
Improve every phase of the calibration process

1 PLANNING AND DECISION-MAKING	2 ORGANIZING CALIBRATION ACTIVITIES	3 PERFORMING CALIBRATIONS	4 DOCUMENTATION	5 ANALYSIS AND PROCESS IMPROVEMENTS
Plan procedures and calibration strategies	Create calibration instructions that guide the technician through the calibration	With documenting mobile devices, calibration results stored in the device's memory can be automatically uploaded back to calibration software	Produce reports automatically	Analyze what is the optimal calibration interval with history trend function in the calibration software
Manage all calibration assets	Download calibration instructions to a documenting calibrator	No typing errors	All calibration data is stored in the database and can be signed electronically	All calibration records are easily accessible for audits
Maintain position, device and calibrator databases	No need for pen and paper		Print calibration certificates, reports and labels in electronic format, or on paper	
Automated alerts for scheduled calibrations			Documentation meets regulatory requirements (e.g. ISO 9001, ISO 17025, FDA, GMP/GAMP, 21 CFR Part 11)	

BUSINESS BENEFITS OF USING CMX

REDUCE COSTS	IMPROVE QUALITY AND REDUCE RISK	INCREASE EFFICIENCY
Paperless calibration management	Regulatory compliance (e.g. ISO, FDA, GMP/GAMP, 21 CFR Part 11)	Streamline and automate the entire calibration process, reduce time spent from start to finish
Analyze whether you need to increase or decrease calibration frequency – good instrument performance justifies reduced calibration frequency	Create, manage and store calibration data safely and efficiently	Replace manual procedures with an automated and validated process
	No more typing errors when documenting calibration data	Cut production down-time

SOFTWARE AND SERVICES

What the customers say

"The connection to SAP allows us to integrate the system of work instructions, planning and programming of tasks with calibrations. We can now say that we have a calibration management system which is simple, efficient and adapted to our particular needs and requirements."

Juan José Mora Mora,
Head of Instrumentation Maintenance Dept., Spain

"With this software integration project, we were able to realize a significant return on investment during the first unit overhaul. It's unusual, since ROI on software projects is usually nonexistent at first. It's extremely simple, if you think of how complicated it could be."

Jody Damron, Business Analyst, USA

"Tasks that would take a month to two months to complete, could be performed in a few weeks, time is money. By removing all the manual steps in the workflow, and eliminating all the paper from the dataflow, the plant has realized a documented time savings up to 75% on calibrating pressure transmitters and pressure switches".

Faran Rolingson, Senior Control Engineer in the I&C department, USA

"We have improved regulatory compliance in relation to ISO 9001, calibration documentation stored safely, with less possibility of human error. In terms of calibration, these are excellent pieces of equipment".

Peter Vandenberg, Senior Technical Officer Instrumentation & Controls, AGL Torrens Island Pty Ltd, Australia

Automated calibration management procedures

CMX automates calibration management procedures in various ways, including:

- Automated alerts of scheduled calibrations
- Automatic downloads of intstruments and calibration procedures to calibrators
- Downloaded procedures guide the technician through the calibration
- Calibration results are automatically uploaded from calibrators back to calibration software
- Uncertainty calculation of traceable calibration results
- Calibration documents are prepared – automatically

Communication with mobile devices

Beamex calibrator support
CMX offers built-in communication with Beamex documenting calibrators for downloading and uploading calibration information. It's fast and efficient and there's no need for pen and paper.

CMX also communicates with Beamex bMobile calibration application installed on a mobile device, such as a tablet or a mobile phone. The bMobile can be used for inspection check-lists and calibration of weighing scales and process instruments.

CMX also supports communication with many other major field calibrator brands.

Documentation

Paperless calibration data management
Storing documents in the CMX database is easy, safe and efficient. The CMX comes with a selection of ready-made standard calibration reports and certificates. All these reports can be saved in different electronic formats (e.g. Word, HTML, PDF, Excel).

Paper documenting
If you want to print and store paper copies of calibration certificates, reports, route lists and other documents, just simply drag and drop a work order to a local or network printer. You can also link or store external documents in the CMX.

Easy to use

Explorer-like browser interface
The explorer-type user-interface allows you to navigate through calibration records quickly and easily.

"Drag and drop" functionality
In CMX, you can move equipment by simply dragging and dropping it.

Meeting regulatory requirements

ISO 17025, cGMP and 21 CFR Part 11
CMX stores and documents calibration information in auditable and traceable format by meeting regulatory requirements such as ISO 17025, cGMP and 21 CFR Part 11.

Change management and audit trail
The change management function in the CMX complies with FDA requirements (21 CFR Part 11 Electronic Records and Electronic Signatures). Change management stores record history including timestamp, record author or editor, record status and a unique key to the Audit Trail. Audit Trail tracks detailed information of what data fields have been added, modified or deleted, by whom, when and why. Audit Trail also saves illegal login attempts.

Data Integrity
The Beamex CMX also offers enhanced functionality with mobile device to lower the risk of ALCOA data integrity violations by identifying offline mobile device users with electronic signature and protecting data against tampering.

Optimize calibration interval

Reduce calibration costs and improve quality by planning the optimal calibration interval for instruments.

- Every calibration event is stored into the database; the history trend is created automatically.
- Analyze and determine the optimal calibration interval for instruments.
- Make decisions regarding increasing or decreasing the calibration interval.
- Graphical display of the history trend.
- Make conclusions concerning the quality of the instruments.

Adapts to your needs

- A database between 500 and unlimited positions (CMX Professional / CMX Enterprise)
- Installed into a single workstation or onto a floating server
- Report design and ability to customize user interfaces
- Mobile device interface allows manual entry of data on site, download of work orders, and testing of procedures and routines
- Multilingual

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Beamex LOGiCAL

Cloud based calibration certificate software

Beamex LOGiCAL

CALIBRATIONS MADE LOGICAL

Document your calibrations anywhere anytime.

Manually documenting your calibration results with a pen and paper is time consuming and prone to errors. Using documenting calibrations and calibration software automates your documentation, which saves time and improves the quality of your records by eliminating errors.
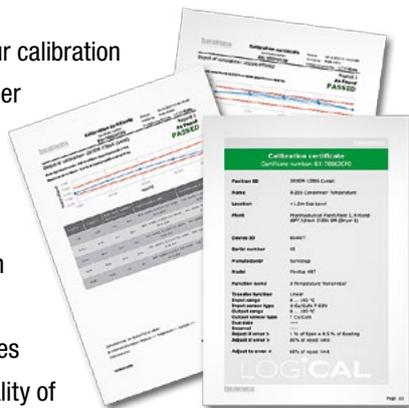
LOGiCAL – Document calibrations anywhere, anytime

Beamex LOGiCAL is an advanced cloud-based multilingual calibration certificate generation software. It offers an affordable and easy way to document calibration results.

LOGiCAL reads the calibration results from selected Beamex documenting calibrators and presents the results on an electronic calibration certificate in PDF format.

Why use a cloud-based software?

▶ Using a cloud-based software like LOGiCAL is extremely cost-effective.

▶ The solution is completely free and IT involvement is not necessary.

▶ Easily access the software anywhere an internet connection can be found.

▶ No worries about version updates because the application updates automatically.

Start using LOGiCAL right now!

If you have a supported Beamex documenting calibrator, you can start using LOGiCAL immediately for free by going to the LOGiCAL page to register.

Go to **https://logical.beamex.com** and start using LOGiCAL right now.

Visit the Help section on the LOGiCAL webpage for detailed instructions on how to start.

Who is LOGiCAL for?

LOGiCAL software is ideal for industries or plants with a smaller number of calibrations that are managed with a documenting calibrator. LOGiCAL also suits mobile workers who frequently travel from plant to plant.

These conditions might exist in industries like service, water and wastewater, smaller power plants, aerospace, automotive, pulp & paper among others.

Need more?

If you work in a highly regulated or a more demanding industry, such as pharmaceutical, maybe LOGiCAL is not the best solution for you. Instead, we recommend using the more advanced *Beamex CMX Calibration Management Software.*

Supported Beamex documenting calibrators:

| Beamex MC2 |
| Beamex MC4 |
| Beamex MC6 |
| Beamex MC6-Ex |
| Beamex MC6 Workstation |

Calibrations   Connections   Settings   Help

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How does LOGiCAL work?

CLIENT   **BEAMEX DOCUMENTING CALIBRATOR**

CALIBRATION CERTIFICATE
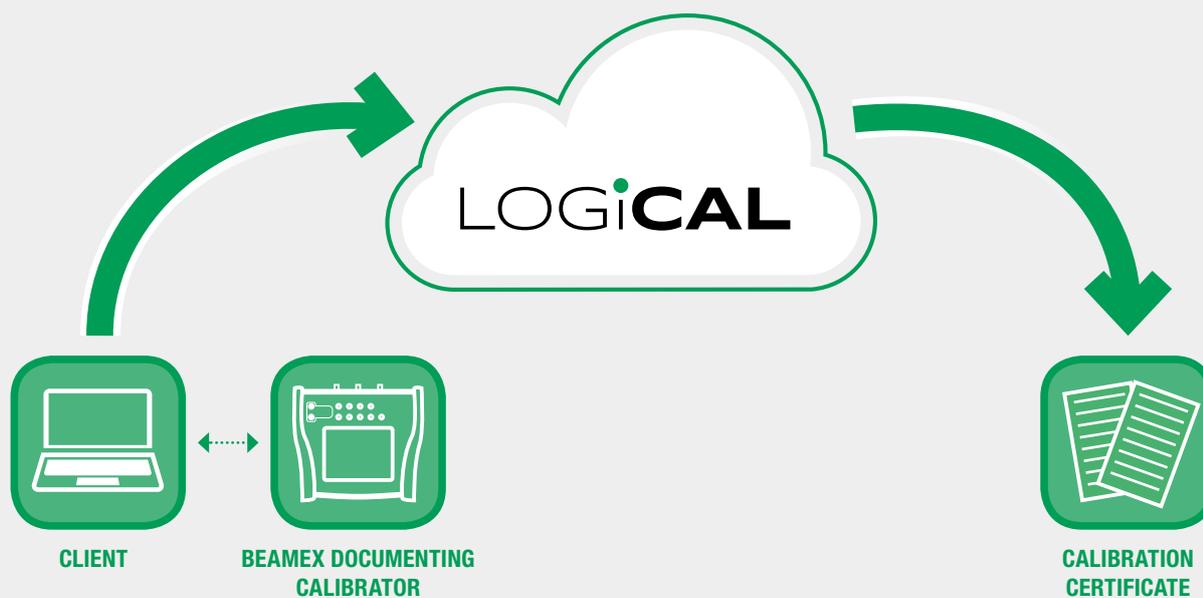
▶ Make a calibration using a Beamex documenting calibrator, like the MC2, MC4 or the MC6 family of calibrators, then store the results into the calibrator's memory. Next, upload the calibration results from the calibrator's memory into LOGiCAL. LOGiCAL converts your calibration results into a PDF certificate that can be saved or printed.

▶ The LOGiCAL cloud communicates with Beamex calibrators through a web service technology, so calibration certificates can be generated using any device connected to the internet and a web browser, as long as the calibrator is connected to the computer and running LOGiCAL. It is compatible with most browsers, such as Chrome, Internet Explorer or Safari.

▶ The LOGiCAL Client needs to be installed to the computer(s) that is communicating with the calibrator. LOGiCAL Client takes care of transferring information between the connected calibrator and LOGiCAL.

▶ The LOGiCAL client automatically transfers the information from the connected calibrator.

BEAMEX SOFTWARE AND SERVICES

Beamex bMobile

Mobile calibration application

Beamex bMobile

MOBILE CALIBRATION APPLICATION

Mobile calibration application

Beamex bMobile is an intuitive and powerful, multi-platform, mobile, paperless solution for executing and documenting process instrument calibrations, maintenance-related inspections and weighing instrument calibrations.

Go paperless: improve efficiency and reduce errors!

Many process industry sites are still using pen and paper to document their calibrations and inspections, making it an inefficient process that is prone to errors.

Beamex bMobile is an application for mobile devices for paperless execution and documentation of calibration and inspection activities in the field. It works in conjunction with Beamex CMX calibration management software.

Beamex bMobile application works off-line, complementing the on-line Beamex CMX calibration management software because, in a process plant, you don't always have the possibility to have a reliable network connection.

How does bMobile work?

Use the Beamex CMX calibration management software to plan and schedule all your calibration and inspection activities. When it is time to perform the calibration or inspection tasks, you can send the work orders wirelessly from CMX to the mobile device running the Beamex bMobile application and go out into the plant. At the point of work, the Beamex bMobile application guides you through all the activities step by step. The results are stored securely with

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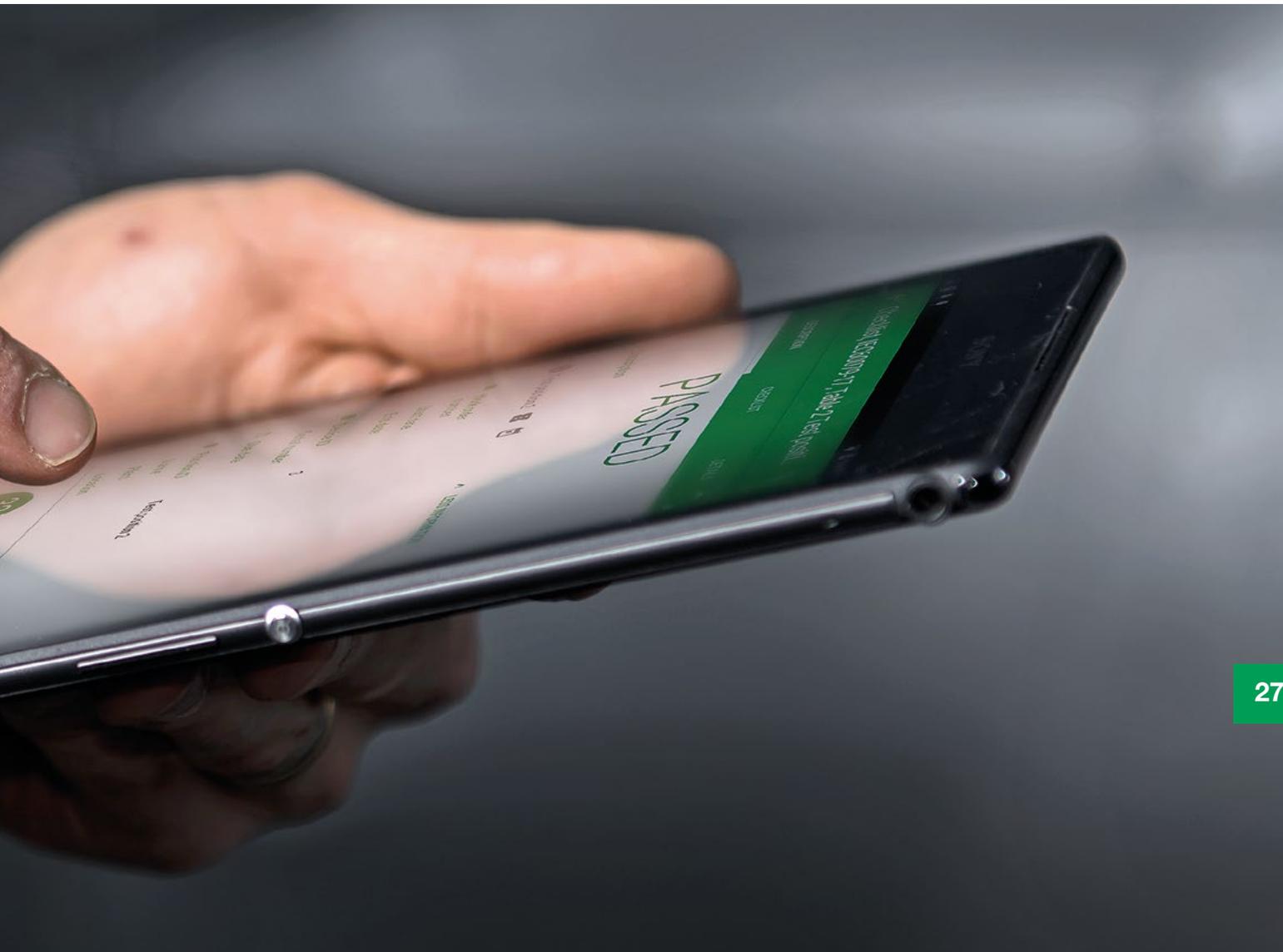
traceable information and when you return to the office, you can upload the results wirelessly to the CMX software. The results are automatically stored in the database, where reports may be printed and scheduling is updated.

Applications

▶ 1. Calibration of process instruments

Use Beamex CMX software to plan and schedule calibrations.

Send the work orders to a mobile device with the bMobile application.

Use the Beamex bMobile application to execute and document the calibrations of your various process instruments.

▶ 2. Calibration of weighing instruments

Use Beamex CMX software to plan and schedule the calibrations of your weighing instruments.

You can use CMX to document the calibration of your weighing instruments, or you can send the work orders to a mobile device with bMobile application and use that (off-line) to guide and document the calibrations of weighing

instruments. CMX and bMobile include all the different test needed for weighing instrument calibration, such as eccentricity tests, repeatability tests, weighing tests and minimum capability weighing tests.

The functionality is based on standards EURAMET cg-18, OIML: EN 45501 + AC and NIST: Handbook 44 – 2007 (with USP 41 updates).

▶ 3. Maintenance inspections

Use Beamex CMX software to plan and schedule the maintenance inspections and make detailed instructions for each inspection.

Send the work order from CMX software to a mobile device and you can go to the point of work to perform the inspections. The result is documented to the mobile device and you can upload the results to CMX software once done.

Typical inspections include hazardous area inspections, safety system inspections, building rounds, preventive maintenance checks, HVAC inspections, interlock checks and so on.

Ensure the integrity of calibration and inspection data

When the Beamex bMobile is used in conjunction with the Beamex CMX software and Beamex's "Mobile Security Plus" technology, you have a paperless system that ensures the integrity of data to the very highest of standards and minimizes the risks of ALCOA violations.

Download bMobile application

Download the Beamex bMobile Android application free from Google Play or from Microsoft Store.

The application includes a "demonstration mode", so you can try it out even without the Beamex CMX calibration management software.

bMobile – system requirements

- 4" minimum recommended screen size
- Network connectivity
- Minimum recommended hardware:

Android 5.1 or later
- Quad-core 2.5 GHz Krait 400
- 16 GB storage / 3 GB RAM

Windows 10
- Intel® Quad-Core Atom processor, Z3795
- 28GB storage / 4GB RAM

Lower performance devices will work but can slow the application down.

System supply projects and services

System supply projects a

Beamex provides all the services required for the efficient supply, implementation and maintenance of a calibration management system

Choosing the right calibration software system with the right functionality and technical specifications is typically not enough. Once the calibration software has been chosen, a new calibration software system may require integration into other systems and customer-specific configuration. Existing data from old systems may need to be imported to the new system. The new software system needs to be tested and installed for production use. Finally, people need to be trained to use the new software. To maximize the return on your investment and minimize risks related to the selection and implementation of a new calibration software system, it is essential to choose the right partner to perform the above-listed tasks. Beamex is the right partner from large-scale software supply projects to one-day training sessions.

Beamex – an experienced supplier of software systems

Beamex has an extensive background and long-standing experience in executing customer-specific projects that include provision of software systems and related services. Customer-specific software service projects are required to provide the types of calibration software solutions and professional services, where the customer has specific requirements and when Beamex's standard software and/or professional services packages with fixed specifications and fixed scope of service do not fulfill the customer's requirements.

Typical services provided in connection with system supply projects

The typical services performed by Beamex in connection with a software supply project relate to:

• System integration and connector development
• Software configuration and enterprise solutions
• Report design and user-interface configuration
• Database conversion
• Training

SOFTWARE AND SERVICES

Project phases

Larger supply projects, especially, such as customer-specific enterprise solutions, may be divided into several phases. The typical phases of a supply project are:

1. Specification/definition of the scope of work (SOW)
2. Development/implementation
3. Testing
4. Installation, verification and training

Larger and more complex projects may even be divided into two separate projects, whereby the first project involves specification and SOW and the second involves the actual development project based on the specifications arising in the first project.

Typical deliverables

Components typically included in a system supply project delivery:

1. Beamex CMX software license (existing/purchased);
2. Software license for customer-specific software components (e.g. Beamex Business Bridge);
3. Provision of services, such as software configuration, consulting, installation, project management and training (i.e. supply project);
4. Relevant documentation, such as user guides, project plan and work progress reports; and
5. Support and maintenance contract for the software system.

Project framework and documentation

Documentation is essential, especially in large and complex customer-specific software system projects. Important project documentation includes:

1. Offer / supply agreement
2. Scope of work (SOW) / specifications
3. Project plan
4. Project reports
5. Minutes of Meetings of the project steering group (if such is established)
6. Additional commercial and legal terms

Before a system supply project even starts, it is important to consider and agree on, typically in the supply agreement or project plan, several additional items that contribute to the successful implementation of a project and may also influence the cost and schedule for executing the project. These include:

- **Purpose:** the common target of the project
- **Roles and responsibilities:** defining the tasks and duties of both parties, as system supply projects are co-operative by nature
- **Project team, management and steering group:** contact persons, project managers, other key people, their tasks and duties as well as decision-making procedures and authority
- **Change management procedures:** mechanisms for making and approving changes, related to the Scope of Work for instance
- **Deliverables:** software, services, documentation and other deliverables related to each project phase
- **Schedule:** all milestones for the performance of services and delivery of all deliverables
- **Testing and acceptance:** principles defined for each phase of the project as well as the project completion
- **Presumptions and limitations:** project risks as well as tasks and duties not included in the project defined
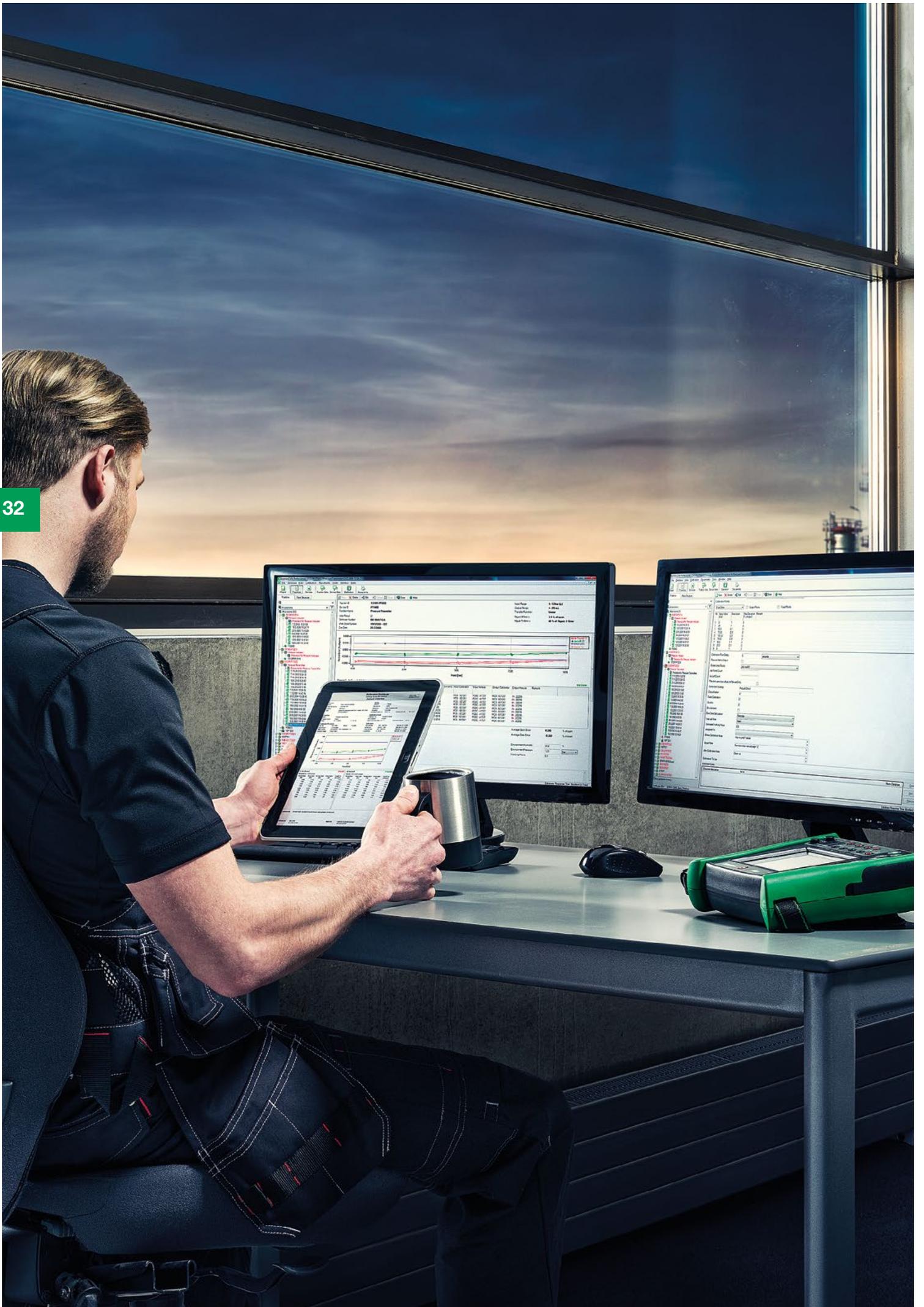
System integration: an introduction

Integrate calibration software with your ERP
and maintenance management system (CMMS).

For process manufacturers today, having a reliable, seamlessly integrated set of IT systems throughout the plant, or multiple sites, is critical to business efficiency, profitability and growth. Beamex CMX calibration software can be integrated into computerized maintenance management systems, such as Maximo, SAP or Infor EAM or your company's own, in-house software for maintenance management. Beamex offers professional service in the execution of system integration projects.

The benefits of integration

Integrating CMX with a CMM system means that plant hierarchy and all work orders for process instruments can be created and maintained in the customer's CMM system. Calibration work orders can be easily transferred to CMX calibration software.

Once the calibration work order has been executed, CMX sends an acknowledgement order of this work back to the customer's CMM system. All detailed calibration results are stored and available on the CMX database.

When the integration is finished, the customer has a system that saves time, reduces costs and increases productivity by preventing unnecessary double effort and re-keying of procedures in separate systems. When there is no need to manually re-key the data, typing errors are eliminated. CMMS integration enables the customer company to automate its' management with smart calibrators. This improves the quality of the entire system.

System integration: Beamex Business Bridge

A commercial off-the-shelf configurable solution for connecting
Beamex CMX calibration software to an ERP/CMMS system.

What is Beamex Business Bridge

Beamex Business Bridge is a standardized, but configurable software solution for connecting the Beamex CMX calibration management system to an ERP/CMMS system, such as Infor EAM or SAP PM. The main purpose of the Business Bridge software solution is to provide a transfer channel for sharing instrument, work order and basic calibration data between the systems.

Why integrate software systems

- **Minimize duplicate work**
  Productivity may increase significantly due to system integration, as data needs to be entered and kept up to date in just one place, instead of manually re-keying the data into two or more separate systems.

- **Reduce human typing errors to a minimum**
  Since data needs to be entered only once, human typing errors related to manual re-keying of data are minimized.

Beamex Business Bridge: key features

- Plant hierarchy and instruments are created and maintained in ERP/CMMS.
- Calibration work orders are transferred to the CMX calibration management system for calibration.
- When calibration work has been performed with CMX, the work order acknowledgement is sent back to the ERP/CMMS syst em.
- CMX stores the entire calibration history and produces fully traceable calibration records.

Benefits of a standardized solution

- **Less need for customer-specific software development**
  A system integration project requires less customer-specific software development work due to the standardized solution. This means quicker and more reliable delivery.

- **Operational reliability, added functionality**
  A standardized solution means availability of long-term software maintenance contracts with regular software updates for software evolution and helpdesk services.

- **Managing lifecycle risks**
  A standardized software solution, for which long-term support and maintenance contracts are available, decreases the IT system lifecycle risks.

ERP/CMMS requirements

- CMMS integration interface or data exchange module is required
- CMMS specialist must create the required configurations in CMMS

With regards to Infor EAM, Beamex is also able to offer the delivery of the Business Bridge software solution as a turnkey project, where Beamex takes the responsibility also for the above-mentioned ERP/CMMS configuration tasks.

BUSINESS BRIDGE: FEATURES

EQUIPMENT IMPORT	WORK ORDER IMPORT	WORK ORDER EXPORT
Instruments are created or updated into the CMX database depending on existence there	Requires Position in CMX db • The key may also contain position or device ID if several instruments have the same work order number	Triggers for WO export • Saving the calibration result • Saving the calibration result and result approval
Business Bridge is able to create and update: • Positions with or without functions and/or devices • Free devices with or without functions • Functions in positions and devices • Plant Structure, node description and activity without Position information • CMX Audit Trail	Create or update work order	CMX Interface sends work order/calibration result summary message to the CMM system when the work order is completed in the CMX database
Business Bridge is able to link and unlink: • Devices to and from positions • Devices can be replaced in position, if the functions match • Devices can be moved from position to another, if the functions match	No more typing errors when documenting calibration data	
Business Bridge supports • Multiple* devices in one position • Multiple* functions in one device *) Function abbreviation must be unique on position/device level		
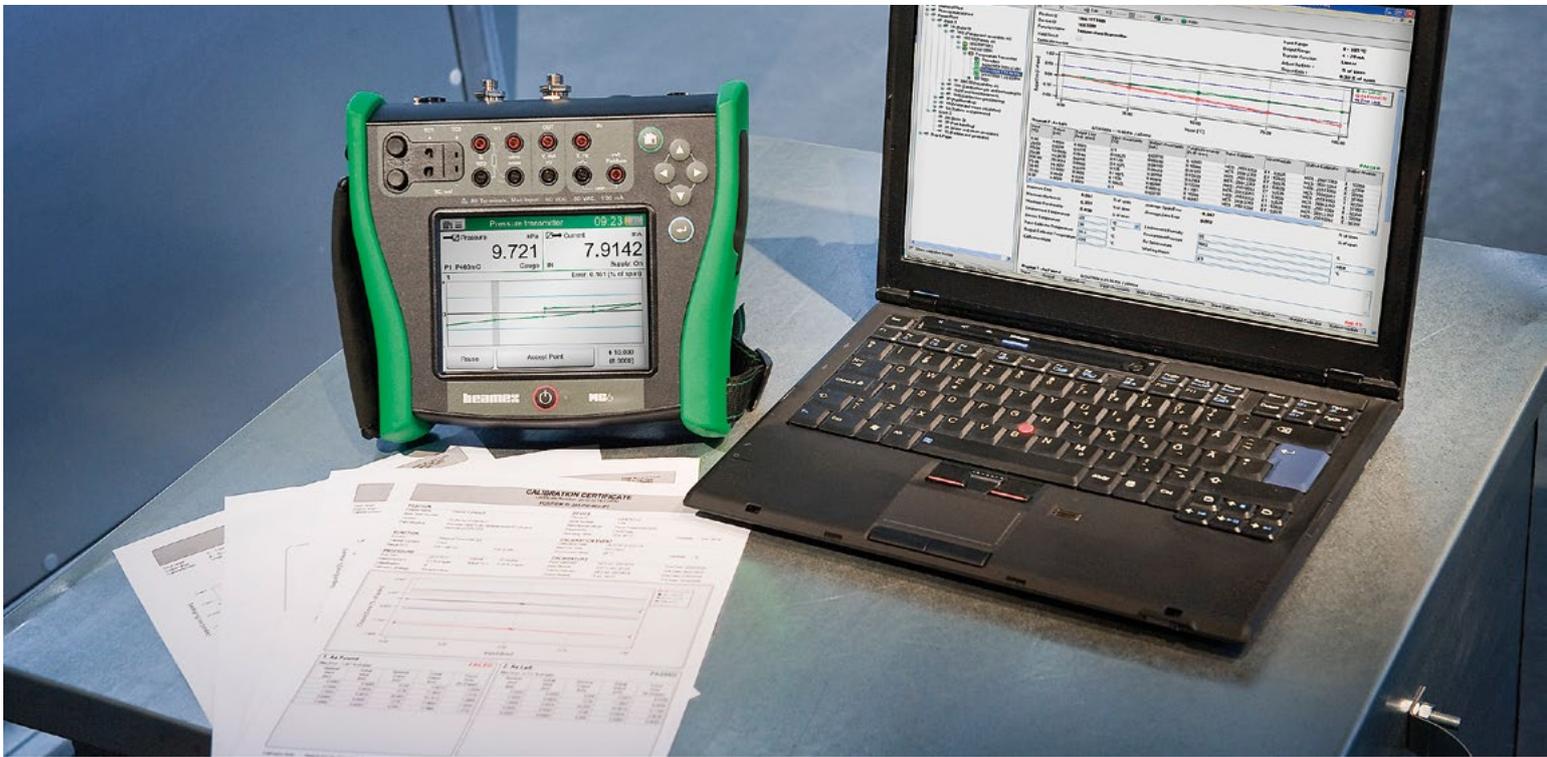
Software implementation
Maximize the return on your calibration investment

Beamex's installation services ensure that your calibration system will be up and running in no time. Installation is an essential and integral element of an investment made into a calibration system. Beamex's service team offers high-quality and efficient installation services for various products and complete calibration systems.

Availability of installation services

Installation services are available for:

- Beamex CMX calibration software
- Database installations
- CMX integration into a management system (ERP/CMMS)
- User-specific configuration of the CMX (e.g. certificates, user-interface)

Database conversions
Get an easy upgrade to a modern calibration software system

Are you using MS Excel or MS Access for managing calibration data? Or some older calibration software, which does not support modern operating systems? We are offering you a great opportunity to upgrade your existing calibration database or software to the modern and efficient Beamex CMX calibration software. Upgrading a database system has never been easier! Let the Beamex professional services team convert your existing calibration database(s) to the Beamex CMX calibration software and have your calibration system up and running in no time!

Upgrading the system is easy and efficient

Beamex offers a range of services for database conversion and database migration

- Have the new calibration system up and running in no time
- Examples of databases from where the data can be migrated: Beamex QM6, Beamex QD3, MS Excel, MS Access, third party calibration software

Why upgrade to Beamex CMX

- To install modern calibration software that supports new database platforms
- To improve efficiency of calibration management with added features
- To prepare calibration schedules and documentation quickly and efficiently
- To plan optimal interval(s) for performing calibrations
- To dramatically improve the quality and accuracy of calibration records
- To seamlessly communicate with documenting calibrators

Validation

Validation services

Beamex's validation services provide support for pharmaceutical companies in the implementation of Beamex CMX calibration software.

Factory type validation

Factory type validation for CMX defines the requirements and relevant tests for the software to ensure product quality. Factory type validation confirms that the product functions as described in the Beamex functional design specification (FDS). Factory type validation includes IQ, OQ and PQ tests as well as a validation report. For software upgrades, an example risk assessment report is available and a software release note that describes the new and/or improved functionality.

Validation workbook

If you already have a dedicated validation team, Beamex can offer a standard validation workbook.

Report design and user-interface configuration

The Beamex professional services team offers services for designing customized calibration report templates in Beamex CMX calibration software to meet your specific requirements.

In addition, the CMX user interface can be modified to meet company-specific requirements, for instance in terms of terminology.

Training courses

Training ensures that both the users of the system and the managers obtain the necessary skills to use the calibration system to its fullest potential. The training courses combine hands-on workshops with classroom lectures and demonstrations. Training increases your knowledge and productivity. It can be provided by either a Beamex professional or one of Beamex's international partners able to offer courses in your local language.

Training services are available for:

- Beamex calibration software
- General calibration and instrumentation

Training typically involves the following:

- Duration: from a few hours to a few days, depending on the scope of training
- Starts with demonstrations by the instructor
- Hands-on, supervised learning
- Questions & answers sessions
- Training material provided in written form also
- Training certificate after the workshop is completed

Choose the training method that best fits your needs:

- Online webinars
- On-site individual or group training courses
- Training courses at Beamex premises
- Standard training packages vs. customer-specific programs

Software support and maintenance programs

Software support and ma

Maintain reliable operations and benefit from innovation to maximize return on your software investment

A software service agreement is an essential part of an investment made into calibration software. In fact, the purchase of calibration software should not even be taken into consideration without first considering software maintenance and support issues. The larger the calibration investment is and/or the longer the customer expects to have the calibration system operational and in use, the more important it is to consider investing in a service agreement.

What is a software service agreement? A software service agreement is a fixed term, annually invoiced service agreement where the customer is entitled to receive specified services for specified software during the term of the agreement. The services typically include provision of software updates and helpdesk support.

Why a software service agreement

Unlike many hardware products, software products are not independent and isolated, as they are always used in an IT environment. Calibration software is no different. Since operational and IT environments evolve and change over time, the calibration software product must also evolve and change to remain in operational condition. Furthermore, as a supplier of calibration software, Beamex's R&D department is constantly developing and improving the functionality of the software, and the results of the R&D work are available to the customer through software updates.

In brief, the software service agreement assists you in maintaining reliable operations and benefiting from innovation to maximize return on your software investment.

- **Maintain reliability**
  Regular software updates ensure that your calibration software adapts to changing IT environment requirements. Furthermore, helpdesk support provides quick access to assistance if problems arise.

- **Benefit from innovation**
  With the service agreement, you will be able to benefit from the product development work at the Beamex R&D department, as the Beamex R&D continuously works to improve the performance and functionality of the software. The results of the development are available to the customer through software updates.

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BEAMEX SOFTWARE SERVICE OFFERINGS

BEAMEX SOFTWARE SERVICE OFFERINGS	STANDARD SUPPORT OPTIONS	DESCRIPTION
Object of support service	Standard software products and components	Beamex CMX Professional and/or CMX Enterprise, Business Bridge.
	Customer-specific software components	E.g. customer-specific system integration or software configuration.
Scope of services	Software updates	If software updates are included in the service agreement, the customer will receive new software versions and revisions made generally available for use by several customers. The software updates may rectify errors in the then-current revision of the software, improve software performance and contain new and/or improved functionality. Software updates are available as a service for standard software products and customized software components.
	Remote helpdesk	If problems arise when the software is in use, Beamex's remote helpdesk support provides error diagnostic services and allocates resources in aiming to repair the errors. The standard remote helpdesk services are available in English at minimum, and accessible by phone, fax or email. The support service is available during the service hours specified in the service agreement.
Support term options	Fixed term 1-, 2- or 3-year agreement	The service agreement can be either for a fixed period or it can be automatically renewed.
	Automatically renewed agreement	
Access to support	Phone	Standard remote helpdesk services are accessible by phone, fax or email.
	Fax	
	Email	

Related 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.

Workstations

A workstation can be considered ideal when most of the maintenance and calibration tasks are performed in the workshop. Beamex's workstation is a modular testing and calibration system designed for use in workshops and laboratories.

Temperature dry blocks

Beamex offers two different dry block series: the Beamex® FB Series Field Temperature Blocks and the Beamex® MB Series Metrology Temperature Blocks. The dry blocks in the FB Series are lightweight, high-accuracy temperature dry blocks for industrial use. The dry blocks in the MB Series deliver bath-level accuracy for industrial applications as well.

Calibration software

Beamex® CMX Calibration Management Software
The Beamex® CMX is calibration management software that assists in documenting, planning, analyzing and, finally, optimizing calibration work. The CMX's scalable technology and user configuration allows you to integrate it easily into other systems for a one-of-kind calibration system that fits your specific needs completely. The CMX also helps to meet the regulatory requirements, whether your plant's calibration system needs to comply with ISO 17025, cGMP or 21 CFR Part 11. By using the CMX, you will have all your calibration results in a traceable and auditable form, either printed on paper or stored in electronic format in a database.

Professional services

Recalibration and service
There are many benefits from using the services provided by Beamex's accredited calibration laboratory on a regular basis. It ensures that the calibration equipment remains in excellent condition and you are also able to provide, if needed, up-to-date proof of the calibrator's measurement accuracy. The Beamex Calibration Laboratory provides traceable calibration services in pressure, temperature, DC current, DC voltage, resistance and frequency.

Training and installation
Beamex provides worldwide services for installation and training. This way you are able to have your new calibration system up and running in no time. You also learn about the capabilities of Beamex calibration equipment, how to use it and how your organization will benefit the most from it.

Accessories

PG series of calibration pumps
The PG series includes hand-held, lightweight pressure and vacuum sources for field use. The PG series of hand pumps are ideal pressure/vacuum generators to be used as accessories for pressure and vacuum calibration.

External pressure modules
The external pressure modules introduce new configuration possibilities and add flexibility, as it is possible to calibrate even more pressure ranges with the same calibrator. This way, the Beamex calibration equipment meets your needs even better.

WORKSTATIONS

PORTABLE CALIBRATORS

PROFESSIONAL SERVICES

CALIBRATION SOFTWARE

beamex

A BETTER WAY TO CALIBRATE

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