Preventive maintenance

Minimize your downtime risk by replacing phased-out instrumentation
Preventing risks linked to aging

Several incidents and accidents which have occurred over the past few years in industrial facilities have potentially been caused by aging installations, their maintenance and monitoring.

Such incidents and accidents are likely to occur again if the means for monitoring, maintenance and replacement are not optimized.

"The obsolescence of equipment constitutes a prejudicial risk in the event of a breakdown".

When the need arises to obtain an item which is no longer available from stock or suppliers, the consequences in terms of the time required to search for a solution and the costs of its implementation can be profound.

Solutions do exist

Obsolescence can be managed if it is anticipated!
Solutions are needed to alleviate obsolescence, or at least to minimize its effects. These close interactions with maintenance must be taken in order to limit, as much as possible, its effects on the life cycle costs of assets.

"The life cycle of instrumentation has evolved alongside developments in the electronic components involved and is subject to more rapid end of life".

"The first step is to identify which instruments are no longer manufactured or which spare parts are no longer available. This is why we have produced this preventive maintenance guide, which lists phased-out Endress+Hauser equipment and proposes new technology replacement solutions"
Today, more and more professionals in the process control industry are looking for quality training to help them with their daily responsibilities. The requirements for higher productivity are ever-increasing. More and more companies are faced with an experienced workforce of operators and technicians that will be retiring in the coming years, and are needing to train their next generation of employees. At Endress+Hauser, we have solutions.

We offer a unique training experience that can meet the ever increasing demands our customers face. What have we done differently than any other company? At Endress+Hauser, we have made investments to be sure we become the clear leader and number one instrumentation training provider in the industry.

Endress+Hauser, known for process control instrumentation and the solutions and services offered around those instruments, has been manufacturing instrumentation for nearly 60 years. We have taken that experience of instruments and the industries we serve and built it into training that helps our customers get the hands-on experience and knowledge they need.

Our training packages are not merely limited to classroom and laboratory experiences, but have been broadened to include on-line training and on-site training as well. We can even help you design a blended approach.

### Five Levels of Training Services:

**Platinum**
- Custom Training Solutions

**Gold**
- Advanced – seeking process improvements
- Access to PTU™ (Process Training Unit) Network

**Silver**
- Skilled
- Classroom Process Instrumentation Schools

**Bronze**
- Beginners
- On-line catalog of learning modules**

**Blue**
- FREE
- Novice
- Limited on-line informational videos*

**Coming soon!**

*Visit our channel at www.youtube.com/EndressHauserAG

**www.us.endress.com/training**
Quality up, expenses down

**Total calibration competence**
Endress+Hauser performs instrument calibration across a variety of measuring principles—flow, pressure and temperature. Calibration can be performed at our calibration laboratories or at your facility via our mobile calibration labs. Endress+Hauser calibration laboratories are located at multiple locations in the US and around the globe. Due to new EPA regulations regarding Greenhouse Gas reporting, traceable calibration is more critical than ever before. Our network of highly trained service professionals, equipped with innovative mobile tools and software, is available to support your critical calibration requirements.

Our experts have the know-how and the required equipment to calibrate all instrument types and brands. You may also make use of our consultation services to determine cost-optimized calibration intervals, which take the laws and regulations you have to comply with and your technical requirements into consideration.

In addition, we can also develop specific SOPs for your calibration in correspondence with regulations and our general SOPs.

**Your benefits**
- Optimum calibration intervals and cost reduction with our Calibration Life Cycle Management™ program
- Calibration of all instrument types and brands
- From in-situ through to factory calibration complying completely with international standards
- Most modern calibration and calibration management tools facilitate the best results at low cost

[www.us.endress.com/calibration](http://www.us.endress.com/calibration)
Service: 800-642-8737

A2LA accredited for flow calibrations performed in Greenwood, IN by Endress+Hauser Flowtec*
Accredited calibration service according to ISO 17025

Calibrations are performed in compliance with ISO 17025. A2LA accredited field and laboratory calibration services are available upon request.

On-site calibration benefits
- Instruments remain at their place of operation – plant availability is increased
- Brief processing time – calibration can include immediate adjustments, repairs, instrument exchanges and other maintenance work – this saves time and money
- Time saving by effective planning – depending on the plant topology, many measuring points may be calibrated without any interruption of the process in a very brief period of time
- Calibrations are conducted using standards traceable to NIST – calibration certificates meet requirements of ISO 17025

*Please refer to A2LA “Scope of Accreditation” for specific measurement capabilities by visiting www.a2la.org.
Prosonic FMU860, 861, 862 with FDU8x transducers

Out of production: 12/2007
Spare parts not available
Benefits of the new technology

- Simpler and more rapid measurement point configuration
- The FMU90 transmitter integrates all the flow curves for (height) and all the flow restricting elements for open channels
- Automatic control of the pumping stations with optimized management of the pump running times
- FMU90 transmitter will work with the old FDU8x transducers

for further information: www.us.endress.com/FMU90
www.us.endress.com/FDU90

Compatibility of functions
With additional functions

Mechanical and electrical compatibility
Interchangeable probes, transmitter not compatible
Leivelflex M FMP40

Out of production: 06/2013
Availability of spare parts ends: 05/2017
Guided radar level measurement

Levelflex FMP51, FMP57

Benefits of the new technology

- New multi-echo tracking for increased reliability
- HistoRom® offers quicker configuration and storage of parameter date
- New diagnostics capability with 4 different alarms to help classify the criticality of the alarm as per NAMUR NE-107

for further information: www.us.endress.com/FMP57

Compatibility of functions
Fully compatible with additional features

Mechanical and electrical compatibility
Yes, fully compatible
Multicap DC11, DC12

Out of production: 12/2007
Availability of spare parts ends: 12/2010
Liquicap M FMI51, FMI52

Benefits of the new technology

- Units are precalibrated from factory for conductive processes
- Setup and calibration via display or FieldCare
- Local display available
- Built-in DAT chip to store calibration data

for further information: www.us.endress.com/FMI51
for further information: www.us.endress.com/FMI52

Compatibility of functions
Yes, with additional functions

Mechanical and electrical compatibility
Yes, fully compatible
Prosonic T FMU230, FMU231

Out of production: 04/2010
Spare parts not available
Prosonic T FMU30

Benefits of the new technology

- Compact 2-wire ultrasonic transmitter
- Local display available
- Easy setup and configuration via push button or through FieldCare

for further information: www.us.endress.com/FMU30

Compatibility of functions
Yes, with additional features

Mechanical and electrical compatibility
Yes, fully compatible
Deltapilot S
DB50, DB50L

Out of production: 12/2009
Availability of spare parts ends: 10/2012
Level measurement by hydrostatic pressure

Deltapilot M
FMB70, FMB50

Benefits of the new technology

- Better measurement performance and, through this, better stock management of the raw materials for your production
- CONTITE measurement cell with high measurement stability in the event of sudden temperature variations or the presence of condensation
- Integrates digitally into the main industrial fieldbuses (Profibus®, FOUNDATION™ Fieldbus)

for further information: www.us.endress.com/FMB70
for further information: www.us.endress.com/FMB50

Compatibility of functions
Yes, with improved measurement performance

Mechanical and electrical compatibility
Yes, with 2-wire 4-20 mA output only, complete mechanical compatibility
PMC41, PMC45, PMP41, PMP45, PMP46, PMP48

Out of production: 12/2012
Availability of spare parts ends: 12/2014
Benefits of the new technology

- Better accuracy and improved long term stability resulting in improved stock management of the raw materials for your production
- Integrates digitally into the main industrial field buses (Profibus®, FOUNDATION™ Fieldbus)
- Separate housing option is available reducing temperature effect, mechanical stress and vibration. It also provides better access and visibility to the local display/control in tight spaces

for further information: www.us.endress.com/PMP51
for further information: www.us.endress.com/PMP55
for further information: www.us.endress.com/PMC51

Compatibility of functions
Yes, with improved measurement performance

Mechanical and electrical compatibility
Yes, with 2-wire 4-20 mA output only, complete mechanical compatibility
Promass 60

Out of production: 12/2003
Spare parts not available
Mass flowmeters

Promass 80

Benefits of the new technology

- Better measurement performance, better control of the flow of raw materials and finished products
- Larger range of diameters (1/24" to 10"/DN1 to 250 mm)
- Density, concentration, temperature and viscosity measurement, for improved determination of production quality
- Digital integration of measurement (PROFIBUS®, FOUNDATION™ Fieldbus, MODBUS) and consequently more precise control and increased interactivity of the manufacturing process
- Integrated batching and predictive maintenance functions
- Functional safety level SIL2

for further information: www.us.endress.com/coriolis

Compatibility of functions
With additional functions

Mechanical and electrical compatibility
Yes, fully
Promass 63

Out of production: 06/2005
Spare parts not available
Benefits of the new technology

- Better measurement performance, better control of the flow of raw materials and finished products
- Larger range of diameters (1/24" to 10"/DN1 to 250 mm)
- Density, concentration, temperature and viscosity measurement, for improved determination of production quality
- Digital integration of measurement (HART®, PROFIBUS®, FOUNDATION™ Fieldbus, MODBUS, EtherNet/IP™) and consequently more precise control and increased interactivity of the manufacturing process
- Integrated batching and predictive maintenance functions
- Functional safety level SIL2/SIL3

for further information: www.us.endress.com/coriolis

Promass 83

Compatibility of functions
With additional functions

Mechanical and electrical compatibility
Yes, fully compatible, identical sensors and fully modular I/O
M Point

Out of production: 01/1996
Spare parts not available
Mass flowmeters

Promass E 200

Benefits of the new technology

- Better measurement performance, better control of the flow of raw materials and finished products
- 2-wire 4-20 mA technology, ease of installation, reduced installation costs particularly in ATEX areas
- Digital integration of measurement (HART®, PROFIBUS®, EtherNet/IP™) and consequently more precise control and increased interactivity of the manufacturing process
- Functional safety in accordance with NAMUR 43 and 107

for further information: www.us.endress.com/coriolis

Compatibility of functions
Yes, fully

Mechanical and electrical compatibility
No, tubes made from stainless steel 904L, distance between flanges too short
Digitally compatible using HART® HMX50 converter
Variomag
Picomag, Discomag, Pulsmag / V Promag 30

Out of production: 1990
Spare parts not available
Electromagnetic flowmeters

Promag 50H, 50D, 50P, 50W, 50L

Benefits of the new technology

- Increased measurement performance and better hygienic and aseptic qualities -> improved control of your production quality
- Insensitive to the kind of fluid (conc. \( \leq 60\% \)) -> better process control and monitoring
- Digital integration of measurement (HART®, PROFIBUS®, FOUNDATION™ Fieldbus, MODBUS) and consequently more precise control and increased interactivity of the manufacturing process
- Batching function for integrated dosing solutions
- Functional safety level SIL2 (excluding 50D and 50L)

for further information : www.us.endress.com/electromagnetic

Compatibility of functions

With additional functions

Mechanical and electrical compatibility

No, distance between flanges as per ISO/DWGV
Promag 33

Out of production: 12/2002
Spare parts not available
Promag 53H, 53L, 53P, 53W

Benefits of the new technology

- Increased measurement performance and better hygienic and aseptic qualities → improved control of your production quality
- Insensitive to the kind of fluid (conc. \(\leq 60\%\)) → better process control and monitoring
- Digital integration of measurement (HART®, PROFIBUS®, FOUNDATION™ Fieldbus, MODBUS, EtherNet/IP™) and consequently more precise control and increased interactivity of the manufacturing process
- Batching function for integrated dosing solutions
- Functional safety level SIL2

for further information: www.us.endress.com/electromagnetic

Compatibility of functions
With additional functions

Mechanical and electrical compatibility
Yes, fully
Prowirl 70, 77

Out of production: 12/2004
Spare parts not available
Vortex flowmeters

Prowirl 72, 73

Benefits of the new technology

- Lifetime calibration guarantee
- Alloy measurement tube for enhanced chemical compatibility
- Digital integration (HART®, PROFIBUS® and FOUNDATION™ Fieldbus)
- Direct mass and energy measurement, with integrated temperature probe, resulting in simplification of the measurement point
- Functional safety level SIL2

for further information: www.us.endress.com/vortex

Compatibility of functions

Yes, with "Temperature measurement" function and integrated calculator (Prowirl 73)

Mechanical and electrical compatibility

Yes, fully
Compartment DXF351

Out of production: 12/2004
Spare parts not available
Flow and energy calculators

RMS621, RMC621

Benefits of the new technology

- Multichannel energy calculator (max. 3 channels) for liquid, gas and vapor
- Digital integration (PROFIBUS®, MODBUS and M-BUS) of the values and direct connection to the supervision and remote transmission systems
- Configuration and storage of programs by FieldCare
- Optional AGA8, SGERG-88, NX-19, API2540 software

for further information : www.us.endress.com/RMS621
www.us.endress.com/RMC621

Compatibility of functions

With additional functions

Mechanical and electrical compatibility
No, mechanical installation in the front of the cabinet
Yes, full electrical compatibility
T-Mass AT70

Out of production: 12/2005
Spare parts not available
T-Mass 65F, 65I

Benefits of the new technology

- Compact construction, reduced on-site installation costs
- Improved measurement performance allowing more precise optimization of gas consumption management
- Integration of the "Gas Engine" software for managing all types of gases, gas mixtures, and energy
- Digital integration of measurement (PROFIBUS®, FOUNDATION™ Fieldbus, MODBUS) and consequently more precise control and increased interactivity of processes

For further information: www.us.endress.com/65F
www.us.endress.com/65I

Compatibility of functions
With additional functions

Mechanical and electrical compatibility
No, compact construction, different length between flanges
Mypro CxM431

Out of production: 10/2006
Spare parts not available
Liquiline M CM42

Benefits of the new technology

- 2-wire transmitter connects to the analog or digital sensor (Memosens®)
- Process safety guaranteed by the measurement system to SIL2
- Simple and intuitive configuration
- Display screen for remote reading
- Can be digitally integrated into the main industrial fieldbuses (PROFIBUS®, FOUNDATION™ Fieldbus)

for further information: www.us.endress.com/CM42

Compatibility of functions
With additional functions

Mechanical and electrical compatibility
Electrical compatibility, flush mounted mechanical installation or in a ground box
Mycom CPM121

Out of production: 12/2000
Spare parts not available
4-wire Analysis Transmitters

Liquisys CCM223, CLM223, COM223, CPM223, CUM223 and Liquiline CM14

Benefits of the new technology

- Transmitter for sensors with analog or digital Memosens® technology
- Digital integration is possible using the main industrial fieldbuses (PROFIBUS®, MODBUS) Analysis and samplers
- Universal measurement module with automatic recognition of the sensor type connected to the input
- Simplification of spare parts management

for further information: www.us.endress.com/CCM223
for further information: www.us.endress.com/CLM223
for further information: www.us.endress.com/COM223
for further information: www.us.endress.com/CPM223
for further information: www.us.endress.com/CUM223
for further information: www.us.endress.com/CM14

Compatibility of functions
With additional functions and Memosens® technology

Mechanical and electrical compatibility
No, Memosens® technology is required for the sensors, transmitter dimensions are different
Mycom CPM153

Out of production: 12/1996
Spare parts not available
Liquiline CM442

Benefits of the new technology

- Multichannel transmitter for sensors with Memosens® Digital technology
- Digital integration is possible using the main industrial fieldbuses (PROFIBUS®, MODBUS)
- Universal measurement module with automatic recognition of the sensor type connected to the input
- Simplification of spare parts management

for further information: www.us.endress.com/CM442

Compatibility of functions
With additional functions and Memosens® technology

Mechanical and electrical compatibility
No, Memosens® technology is required for the sensors, transmitter dimensions are different
ASP port A/D

Out of production: 09/1995
Availability of spare parts ends: 01/2014
Automatic samplers for liquids

Liquiport 2010 CSP44

Benefits of the new technology

- Portable sampling system
- External sensor connection using Memosens® technology, data logger incorporated with service socket for data transfer
- Also with analog I/O

for further information: www.us.endress.com/CSP44

Compatibility of functions
With additional functions

Mechanical and electrical compatibility
Full electronic compatibility, different dimensions
ASP Station 2
(RPS11/12)

Out of production: 10/1995
Availability of spare parts ends: 01/2014
Liquistation CSF48 or CSF34

Benefits of the new technology

- Refrigerated sampling system with two-door housing, electronics and samples separated
- Numerous possibilities for event programming and sample distribution. Stores 100 programs and can run 24 subprograms
- External sensor connection using Memosens® technology, data logger incorporated with data transfer via a service socket, SD card or in-board web service
- Standard with 2 analog and 2 binary inputs for connection to flowmeters, rain gauges or TOC analyzers

for further information: www.us.endress.com/CSF48
for further information: www.us.endress.com/water-samplers

Compatibility of functions
With additional functions

Mechanical and electrical compatibility
Full electronic compatibility, different dimensions
Ecograph
(RSG20/22/24)

Out of production: 12/2006
Availability of spare parts ends: 01/2013
Graphic recorders

Memograph M (RSG40)

Benefits of the new technology

- Innovative technology with 7" TFT screen, USB port for data storage, Ethernet, PROFIBUS® and MODBUS communication for integration of measurement networks
- Process specific software package (Mathematical, Energy Monitoring, Batch, Remote alarm, etc.) allowing control and monitoring functions for integrated processes
- On-screen process visualization

for further information: www.us.endress.com/RSG40

Compatibility of functions
With additional functions

Mechanical and electrical compatibility
Yes, identical panel cut-out but different front face dimensions
Chroma Log

Out of production: 01/1995
Spare parts not available
Compatibility of functions

Mechanical and electrical compatibility
Yes, identical panel cut-out but different front face dimensions

Graphic recorders

Memograph M (RSG40)  Ecograph T (RSG30)

Benefits of the new technology

- Rapid access to information
  - no more consumables (paper, pens)

- Innovative technology with 7" TFT screen, USB port for data storage, Ethernet, PROFIBUS® and MODBUS communication for integration of measurement networks

- Process specific software package (Mathematical, Energy Monitoring, Batch, Remote alarm, etc.) allowing control and monitoring functions for integrated processes

- On-screen process visualization

for further information:  
www.us.endress.com/RSG40
www.us.endress.com/RSG30
Worldwide service close to you

Wherever you are, Endress+Hauser will provide the performance you need, be it commissioning, repair, on-site support, training or maintenance and calibration services.

As one of the largest networks of service experts in process automation, it is our desire to help you discover new opportunities and potentials for maximum benefit and minimum operating risk. We consider ourselves your partner in this task, providing the right advice and recommendations to ensure constant reduction of costs and risks.

We provide

- Commissioning and installation
- Project management
- Preventive maintenance
- Maintenance contracts
- Spare parts service
- Repair service
- Training
- Helpdesk
- Online documentation
- Calibration services

ISO 9001 Certified
08.12/SCUSA

USA

Endress+Hauser, Inc.
2350 Endress Place
Greenwood, IN 46143
Tel: 317-535-7138
Sales: 888-ENDRESS (888-363-7377)
Service: 800-642-8737
Fax: 317-535-8498
inquiry@us.endress.com
www.us.endress.com

Other locations

www.addresses.endress.com