Introduction

When it comes to ensuring your flowmeters meet your expectations, we have a whole range of services designed to keep them delivering the performance you require.

We have developed a range of services tailored to meet different types of needs typically encountered in a plant. (Please check with your local service provider to find out if the service you are interested in is available in your area.)

To make it easy to select the right type and level of services you need, we have grouped them into three categories.

R Rapid response

The device is a critical plant component and needs to be operational 100% of the time
• You require close to 100% availability, anything less will cost you money

O Operational efficiency and performance improvement

The device needs to be a solid performer operating at its peak 100% of the time
• You require the maximum levels of stability, response and accuracy to keep your plant performing at optimum levels

L Lifecycle management

Extend, analyze and optimize the life of your device
• You trust this product and don’t want to change it
• Extending the life of your product is important to you

Whatever your need our Service team will keep your measurement and plant performing

Measurement made easy
## Rapid response

<table>
<thead>
<tr>
<th>Service offering</th>
<th>Description of service</th>
<th>Benefits</th>
<th>Reference number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service agreement</td>
<td>On-call duty agreement</td>
<td>When a problem occurs it is good to know help is at hand when you need it:</td>
<td>2PAA112733</td>
</tr>
<tr>
<td></td>
<td>Guarantee on-site support within agreed time frame</td>
<td>Telephone support</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hot spare parts</td>
<td>When a problem occurs it is good to know help is at hand when you need it:</td>
<td>2PAA112734</td>
</tr>
<tr>
<td></td>
<td>Guarantee delivery of spare parts within agreed time frame</td>
<td>Telephone support and assistance in getting your products and plant back up and running</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Call center</td>
<td>When a problem occurs it is good to know help is at hand when you need it:</td>
<td>2PAA112735</td>
</tr>
<tr>
<td></td>
<td>Telephone support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>On-site training</td>
<td>Equipping your maintenance team with the skills to optimize the availability and efficiency of your products improving the profitability of your production:</td>
<td>2PAA112736</td>
</tr>
<tr>
<td></td>
<td>Detailed knowledge on how to use, maintain and troubleshoot problems with your products and processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recommendation on what spare parts and tools to purchase</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The skills to perform on-site repairs safely and effectively</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABB Site training</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>We offer a range of standard training courses throughout the year:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contact your local service provider to find out what courses are available and when.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Operational efficiency & performance improvement

<table>
<thead>
<tr>
<th>Engineering &amp; consulting</th>
<th>Site Assessment</th>
<th>Understand your needs, process and flow conditions to get the maximum performance from your future product:</th>
<th>Reference number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Site offering</td>
<td>Advise on what type of flow meter to install, including size, flange type, material selection, comms type, accuracy class, flow range, pressure rating, others,...</td>
<td>TBA</td>
</tr>
<tr>
<td></td>
<td>Description of service</td>
<td>Identify the best location for your flow meter in your process line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Benefits</td>
<td>Advice on installation accessories including: flow straighteners, earthing rings / lining protection flanges, others,...</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Any special earthing requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Requirement for Verification explained</td>
<td></td>
</tr>
<tr>
<td>Performance improvement</td>
<td>Improve your DP flow meter performance</td>
<td>Survey DP / Multi-variable transmitter full scale differential pressure ranges in relation to maximum span:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advise on modifications to optimise transmitter accuracy</td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td>Verification Services Uncluding use of Flow Simulators</td>
<td>Peace of mind that product health and performance has not changed:</td>
<td>2PAA112743</td>
</tr>
<tr>
<td></td>
<td>Description of service</td>
<td>Satisfies Regulatory requirements for Independent Verification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Benefits</td>
<td>Trending information provides data to show whether future scheduled maintenance is required and indication when it should be done</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Option of Warranty extensions</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Best possible method of checking product is performing without removing from the process line and checking calibration on a certified calibration rig</td>
<td></td>
</tr>
<tr>
<td>Enable Verification function and health check*</td>
<td>Enabling Verification function in products purchased without this option</td>
<td></td>
<td>2PAA112744</td>
</tr>
<tr>
<td>Verification by on-site flow measurement comparison</td>
<td>For products without verification function checking their performance is in agreement with a secondary flow measurement is a cost effective alternative to removing the product from the process line and sending it off for calibration:</td>
<td></td>
<td>2PAA112745</td>
</tr>
<tr>
<td>Extensions, upgrades and retrofits</td>
<td>On-site upgrade ProcessMaster 300 series to 500 series</td>
<td>Your ProcessMaster 300 gives you great performance, but you want to know more about how your process and product are really performing:</td>
<td>2PAA113020</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upgrade your electronics to the 500 series and take advantage of some amazing diagnostics / measurement features:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Process flow conductivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Detect gas bubbles in your process</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor temperature</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are your sensor electrodes becoming coated?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advanced grounding checks</td>
<td></td>
</tr>
</tbody>
</table>

*Please note: Verification function available only on model types: ProcessMaster, HygienicMaster, WaterMaster, AquaMaster, MagMaster
### Operational efficiency & performance improvement

<table>
<thead>
<tr>
<th>Service offering</th>
<th>Description of service</th>
<th>Benefits</th>
<th>Reference number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Extensions, upgrades and retrofits</strong></td>
<td>On-site upgrade VortexMaster / SwirlMaster 430 to 450 series</td>
<td>Your VortexMaster or SwirlMaster 430 gives you great performance, but you want to know more about how your process and product are really performing. Upgrade your electronics to the 450 series and take advantage of diagnostics / measurement features:</td>
<td>2PAA113379</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Connectivity of remote pressure-, temperature-, gas analyzer or density signal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Direct Energy metering for Steam, Gas or Liquids</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steam status supervision</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Add a digital output to your VortexMaster / SwirlMaster 430 series</td>
<td>Your VortexMaster or SwirlMaster 430 gives you great performance, but you want to add an additional digital output for:</td>
<td>2PAA113380</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact output</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pulse output</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequency output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Do-It-Yourself conversion kit (Non hazardous area only)</td>
<td>Your VortexMaster or SwirlMaster gives you great performance, but you want to add an internal RTD for:</td>
<td>2PAA113382</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Temperature compensation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Direct saturated steam mass flow</td>
<td></td>
</tr>
<tr>
<td><strong>Extensions, upgrades and retrofits</strong></td>
<td>Remote product made into an integral (COPA) product</td>
<td>During plant upgrades it may be more efficient to position the electronics with the sensor</td>
<td>2PAA112755</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On-site conversion into an Integral product</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ProcessMaster</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>WaterMaster</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VortexMaster / SwirlMaster</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Integral (COPA) product made into a remote product</td>
<td>During plant upgrades it may be more efficient to position the electronics remote from the sensor</td>
<td>2PAA112754</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On-site conversion into a remote product</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ProcessMaster</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>WaterMaster</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VortexMaster / SwirlMaster</td>
<td></td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td>On-site calibration of Thermal Mass flow meters</td>
<td>If you have more than ten Thermal mass flow meters needing re-calibration each year why not arrange for ABB to bring the calibration equipment to you: This service can save you up to half a days administration work per instrument.</td>
<td>2PAA113415</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If you regularly require your Thermal Mass flowmeters to be sent to ABB for re-calibration, why not set up an annual maintenance agreement to reduce your administration time and costs.</td>
<td>2PAA113416</td>
</tr>
<tr>
<td><strong>Calibration at ABB Site</strong></td>
<td>Peace of mind that product is performing within specification: Certified calibration certificate to show regulatory authorities 3 points of calibration covering full flow range</td>
<td>For Non ABB product please specify make and model and also quote the following reference number:</td>
<td>2PAA112781</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DN100 1/25° – 4°</td>
<td>2PAA112777</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DN150 250° – 10°</td>
<td>2PAA112778</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DN300–600 12° – 24°</td>
<td>2PAA112779</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DN700–1000 28° – 45°</td>
<td>2PAA112780</td>
</tr>
<tr>
<td></td>
<td></td>
<td>†DN1000: Contact your local service provider for a quote</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For Non ABB product please specify make and model and also quote the following reference number:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Optional extras:</td>
<td>Fingerprint to check product health after calibration</td>
<td>2PAA112783</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flow check only, no cal. certificate issued</td>
<td>2PAA112782</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Additional calibration points</td>
<td>2PAA112782</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Witnessed calibrations</td>
<td>2PAA112784</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calibration of AquaProbe</td>
<td>2PAA112783</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Express calibration service</td>
<td>2PAA113428</td>
</tr>
</tbody>
</table>

**ABB site training**

- **Maintenance**
  - Thermal Mass flow calibration at ABB site
    - ABB offer a wide range of fast turnaround calibration options specific for Thermal Mass Flow meters (all options include sensor cleaning as standard).
    - Recalibration
      - 2PAA113417
    - Recalibration with entry test
      - 2PAA113418
    - DAKKS / ILAC calibration or Recalibration according to DIN EN ISO/IEC 17025
      - 2PAA113419
    - EPA linearity sensor check for SensiFlow FMT100-P - Option (DAKKS)
      - 2PAA113420

  **Optional extras:**
  - One week Express service
    - 2PAA113421
  - Transmitter or remote unit testing
    - 2PAA113422
  - Sensor replacement
    - 2PAA113423

- **Extensions, upgrades and retrofits**
  - On-site upgrade conversion protocol
    - When performing a plant wide upgrade a change in control system often involves a change in communications protocol: Rather than purchasing new flowmeters it can be more cost effective to have an ABB Service engineer come to site and update your products’ communications for you
    - We will even commission the device and ensure that it is fully integrated in your control system

  **Electromagnetic Flow**
  - ProcessMaster upgrades to Foundation Fieldbus
    - 2PAA112784
  - ProcessMaster upgrades to HART
    - 2PAA112800
  - WaterMaster upgrades to Profibus DP
    - 2PAA112801
  - WaterMaster upgrades to Foundation Fieldbus
    - 2PAA112802

  **Differential pressure**
  - 2650SH Transmitter upgrade to external pushbuttons
    - 2PAA113401
  - 2650SH Transmitter upgrades to Advanced HART and 4 to 20mA
    - 2PAA113402
  - 2650SH Transmitter upgrades to Profibus PA
    - 2PAA113403
  - 2650SH Transmitter upgrades to Fieldbus
    - 2PAA113404

  **Coriolis**
  - FCM2000-MS2/MC2 upgrade to HART
    - 2PAA113424
  - FCM2000-MS2/MC2 upgrade to Profibus PA
    - 2PAA113425
  - FCM2000-MS2/MC2 upgrade to Advanced HART and 4 to 20mA
    - 2PAA113426
  - FCM2000-MS2/MC2 upgrade to Foundation Fieldbus
    - 2PAA113427

- **Training**
  - ABB site training
    - We offer a range of standard training courses throughout the year.
      - Contact your local service provider to find out what courses are available and when.

- **E-learning**
  - Check out our range of on-line training courses to improve your knowledge of flow products and their operation.
Lifestyle management

**Installation & Commissioning**

- **Commissioning**
  - A guarantee that your product is correctly installed and performing within tolerances.
  - Electrical commissioning with all safety aspects taken care of.
  - Verification measurements (if purchased with fingerprint)
  - Warranty extensions
  - Informal training and instruction how to use

**Extensions, upgrades and retrofits**

- On-site retrofit of electronics to latest version
  - One of the many reasons ABB flow meters are so widely used is the long reliable life time you can expect. To ensure your product stays reliable it may be beneficial to upgrade your electronics to a newer model:
    - An electronics retrofit may be cheaper than replacing the entire flow system.
    - Advances in technology mean that newer electronics platforms have additional features:
      - More detailed HMI
      - Additional diagnostic functions
      - More communication options

**Electromagnetic flow**

- Upgrade FXE4000-DE41/FXM2000-DM41 to ProcessMaster FEP321 Standard:
  - ZPAA112766
- Upgrade FXE4000-DE41/FXM2000-DM41 to ProcessMaster FEP321 Fieldbus version:
  - ZPAA112767
- Upgrade from FXE4000-DE21 / FXM2000-DM21 to HygienicMaster FEH321 standard version:
  - ZPAA112768
- Upgrade from FXE4000-DE21 / FXM2000-DM21 to HygienicMaster FEH321 Fieldbus version:
  - ZPAA112769
- Upgrade from FXE4000-DE43 / FXM2000-DM43 to ProcessMaster FEP311:
  - ZPAA112770
- Upgrade from FXE4000-DE41 / FXM2000-DM41 to ProcessMaster FEP521 standard version:
  - ZPAA112771
- Upgrade from FXE4000-DE41 / FXM2000-DM41 to ProcessMaster FEP521 Fieldbus version:
  - ZPAA112772
- Upgrade from FXE4000-DE21 / FXM2000-DM21 to HygienicMaster FEH521 standard version:
  - ZPAA112773
- Upgrade from FXE4000-DE21 / FXM2000-DM21 to HygienicMaster FEH521 Fieldbus version:
  - ZPAA112774
- Upgrade from FXE4000-DE43 / FXM2000-DM43 to ProcessMaster FEP511 (up to DN100 in standard version):
  - ZPAA112775
- Upgrade MagMaster to WaterMaster HART version:
  - ZPAA112803
- Upgrade MagMaster to WaterMaster Profibus DP:
  - ZPAA112805
- Upgrade MagMaster to WaterMaster MODBUS RTU:
  - ZPAA112806

**Vortex and Swirl flow meter**

- Upgrade VT1000/S1020 to VortexMaster / SwirlMaster FSV450 HART:
  - ZPAA113385
- Upgrade VR1000/SR1000 to VortexMaster / SwirlMaster FSV450 remote HART:
  - ZPAA113386
- Upgrade integral FV4000/FS4000 to VortexMaster / SwirlMaster FSV450 HART:
  - ZPAA113387
- Upgrade FV4000/FS4000 to VortexMaster / SwirlMaster FSV450 remote HART:
  - ZPAA113388

**Differential Pressure**

- 360DS DP transmitter:
  - ZPAA113411
- 3632SH DP transmitter:
  - ZPAA113442
- 366CSH Multivariable transmitter:
  - ZPAA113413
- 367CS Multivariable transmitter:
  - ZPAA113414

**Benefits**

- A guarantee that your product is correctly installed and performing within tolerances.
- Electrical commissioning with all safety aspects taken care of.
- Verification measurements (if purchased with fingerprint)
- Warranty extensions
- Informal training and instruction how to use

**Maintenance**

- **Electromagnetic flow meter refurbishment**
  - Price on application

**Optional extra:**

- Rental of Clamp-on Ultrasonic flow meter during refurbishment work:
  - ZPAA112750

**AquaProbe refurbishment service**

- Over time and regular use the sensing part of your AquaProbe may become more susceptible to damage and failure through accidental knocks and collisions during operation.

**AquaProbe upgrade**

- Upgrade AquaProbe I to AquaProbe II to operate with the latest electronics:
  - ZPAA112764

**Vortex / Swirl flow meter sensor check and exchange**

- For abrasive applications such as mining or dredging, it can be cheaper to pay for a newly refurbished unit:

**Spare parts**

- Things that go wrong, holding a small stack of spare parts to perform on-site repairs can save you downtime:
  - To identify which spare parts you should hold pending contact your local ABB Service representative

**WaterMaster replacement battery**

- Why not carry a spare battery unit when you visit your AquaMaster Flowmeter:

**Warranty extensions**

- One year Warranty extension for products over ten years old, a refurbishment can be a good way to ensure your product will work for another ten years.

- One year warranty extension:
  - Avoids failure which can cause un-scheduled downtime in your process

**Price on application**

- Alternative diagnostic functions
- Additional features
- Advances in technology mean that newer electronics platforms have additional features:
  - More detailed HMI
  - Additional diagnostic functions
  - More communication options

**On-site MagMaster transmitter replacement**

- Replacement transmitter fitted, commissioned and CalMaster verification performed by the professionals ensuring your system is working correctly:
  - MagMaster, AC power:
    - ZPAA112757
  - MagMaster, DC Power:
    - ZPAA112822
  - MagMaster, Dual current output, AC power:
    - ZPAA112823
  - MagMaster, Dual current output, DC power:
    - ZPAA112824

**Differential pressure transmitter replacement**

- Replacement Transmitter fitted and commissioned:
  - 264DS DP transmitter:
    - ZPAA113405
  - 26655 DP transmitter:
    - ZPAA113406
  - 2664DS DP transmitter:
    - ZPAA113407
  - 266CSH DP transmitter:
    - ZPAA113408
  - 2666CSH Multivariable transmitter:
    - ZPAA113409
  - 2667CS Multivariable transmitter:
    - ZPAA113410

**For continuity purposes rather than upgrade your electronics to a newer version it may be more beneficial to exchange your old MagMaster Transmitter for a newly refurbished unit:**

- A replacement MagMaster ensures your CalMaster verification unit continues to perform:
  - MagMaster, AC power:
    - EXCMAG1-AB01
  - MagMaster, DC Power:
    - EXCMAG2-AB01
  - MagMaster, Dual current output, AC power:
    - EXCMAG3-AB01
  - MagMaster, Dual current output, DC power:
    - EXCMAG4-AB01