Remove, refurbish and re-commission – good as new

Measurement made easy

Harsh processes cause flowmeters to wear
— A refurbished flowmeter fitted during routine maintenance reduces unscheduled maintenance ensuring maximum uptime of your plant and process

Harsh measuring environments can affect product accuracy
— A refurbished flowmeter ensures your measurement accuracy is maintained

Increase the lifespan of your Flowmeter
— Implement a Routine Refurbishment Program

Refurbishment is often-cost effective for:
— large sizes
— custom sized or unusual flange types
— custom lay-lengths
— flowmeters over 15 years of age

Electronics upgrade to latest model
— A new electronics ensure the maximum reliability from your flowmeter
— Buy a replacement electronics, same model as before to maintain continuity
— Buy a retrofit electronics with the latest technology unlocking new features and functionality

A refurbishment comes with 1-year warranty
— Peace of mind for your measurement security
Overview
As products age they may require special attention or maintenance to ensure your measurement is accurate. Wear and tear affects the accuracy and integrity of any flow measuring device. Electromagnetic flowmeters have no moving parts, but they can still be affected by the harsh properties found in certain flowing fluids.

In some cases it is more economic for you to arrange for your flowmeter to be taken offline and refurbished rather than simply replacing it. During refurbishment why not replace the electronics or upgrade to the latest model, unlocking new features and enhancements that may improve your measurement experience.

Applications where refurbishment may be the answer
Electromagnetic flowmeters are the flow measurement of choice in tough applications like Mining, Dredging and Cement manufacture.

Liquids and chemicals containing high solids content such as sand, metal particles or rocks, can wear or coat flowmeter linings and electrodes – even the best linings and the hardest electrodes still wear over time.

The life span of your ABB flowmeter system when used in such harsh environments can be increased by implementing a routine refurbishment program on the primary flow sensor.

What can happen to a flowmeter if it is not replaced or refurbished in time?
Damage to the flow sensor lining affects not only the accuracy of the flow measurement, but also creates the possibility of the process leaking into the casing of the sensor and damaging the magnetic coils. Coil replacement is possible, but adds further costs that could be prevented.

Damage to the electrodes will create even greater errors in the flow measurement and can even cause total loss of the measurement signal. Heavily damaged electrodes create a path for the process fluid to enter the sensor casing and could again damage the magnetic coils.

Replacement vs. Refurbishment
Whilst the complete replacement of the flow sensor may be possible, a routine refurbishment program is recommended for the following installations.

— large flow sensors (> 250 mm in. diameter)
— custom-sized flange sizes/types
— custom sensor ‘lay’ lengths
— older flowmeters (> 15 years)

Our proposal
Depending on the process fluid type and application, an agreed refurbishment program will be established for routine removal of the flowmeter system and complete refurbishment of the flow sensor. The refurbishment period could range from between 6 months (for dredging applications) to 10 years.

Upon completion of the refurbishment work, a wet calibration (to ISO/IEC 17025 standards) is performed. Your flowmeter system is then returned together with a calibration certificate and 1-year warranty.

Fig. 1: Flowmeters typically sited in harsh environment
What if the product you want to refurbish is no longer available?

ABB uses a life-cycle management model with 4-phases to effectively manage products in the market, these phases are defined as Active, Classic, Limited and Obsolete.

During its lifetime, a product is successively transferred from the Active phase to the Classic, followed by the Limited and finally the Obsolete phase. A product remains in the Active phase as long as it is actively manufactured, marketed and sold. Spare parts availability is secured throughout the first three phases – Active, Classic and Limited. New Spare parts are actively manufactured in the Active and Classic phases. Depending on the phase your product is currently in will determine whether it is necessary to upgrade the electronics to a newer version.

Assured quality
All refurbishment work is carried out in our approved manufacturing and repair facility in accordance with international quality procedures (ISO 9001). All flowmeters are calibrated on NATA accredited calibration rigs to provide the end-user with complete assurance of both quality and performance of the flowmeter.

ABB workshop repairs process
ABB’s state-of-the-art workshop operates a standardized process for all equipment repairs, as shown in Fig. 3, with tight control of response times that are monitored continuously to maintain operational excellence standards.

The flow sensor refurbishment process
To ensure your product is returned in perfect condition, we perform a number of processes during the refurbishment. Below is a list of the processes we typically perform (items marked with an * are optional extras):

1. De-commission and prepare for transport to ABB site*
2. Strip down and clean
3. Remove wiring and electrodes
4. Re-line sensor with same material or better (as new technology allows)
5. Perform Hydrostatic Pressure test*
6. Replace all electrodes and wiring with same metal or better (as new technology allows)
7. Paint all exposed surfaces with Marine grade primer and topcoat
8. If product is now obsolete prepare for upgrade*
9. Perform a 1-, 3-, or 6-point wet calibration on an ABB NATA accredited calibration rig
10. Package and return product together with 12-month Warranty extension and new calibration certificate
11. Perform on-site commissioning*

Fig. 2: 4-Phase life-cycle management model

Fig. 3: ABB workshop repairs process
## Refurbishment options

<table>
<thead>
<tr>
<th>Standard sensor lining materials</th>
<th>Standard electrode materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>— basalt</td>
<td>— 316SS</td>
</tr>
<tr>
<td>— alumina ceramic</td>
<td>— Hastelloy B</td>
</tr>
<tr>
<td>— polyurethane</td>
<td>— Tantalum</td>
</tr>
<tr>
<td>— PTFE</td>
<td>— Titanium</td>
</tr>
<tr>
<td>— rubber</td>
<td>— Tungsten</td>
</tr>
<tr>
<td>— Linatex</td>
<td></td>
</tr>
</tbody>
</table>

### Sensor sizes

All sizes up to 750 mm (30 in.).

### Calibration uncertainty

In accordance with original factory calibration, least uncertainty +/- 0.15%

## Contact us

**ABB Australia Pty Limited**  
Bapaume Road  
Moorebank  
NSW 2170  
Australia  
Tel: 1300 782 527 (within Australia)  
Tel: +61 2 9738 2277  
www.abb.com

For more information visit:  
www.abb.com/measurement

**Note**

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents in whole or in parts – is forbidden without prior written consent of ABB.

Copyright© 2014 ABB  
All rights reserved

<table>
<thead>
<tr>
<th>Product serial number (if known):</th>
<th>Application (tick):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dredging</td>
</tr>
<tr>
<td></td>
<td>Mining</td>
</tr>
<tr>
<td></td>
<td>Process /Chemical</td>
</tr>
<tr>
<td></td>
<td>Water</td>
</tr>
<tr>
<td></td>
<td>Waste Water</td>
</tr>
<tr>
<td></td>
<td>Other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approximate diameter:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Lining material:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Electronics type:</th>
</tr>
</thead>
</table>