

## **ISOIL INDUSTRIA** electromagnetic flowmeters



Water is precious. Every drop counts.

**ISOMAG** <sup>®</sup>  
*The friendly magmeter*

## ISOMAG® KEY FEATURES



Alkaline / Lithium batteries or Mains powered systems



BIV: Built In Vericator for self diagnostic



UMTS/GPRS wireless communication



Wide DN range, between 3 and 3000 mm



High Pressure **up to 250 bar**



High temperature **up to 180°C**



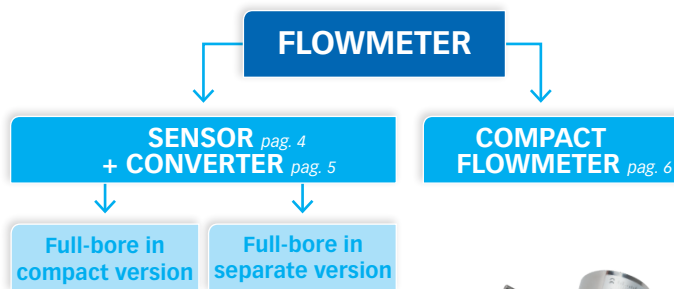
Full bore meters have been certified to work with **zero upstream and downstream straight DNs**, under ISO7145-BS1042 test conditions



**IP68 protection rate** available on all sensors and most converters

## ELECTROMAGNETIC FLOWMETER CHARACTERISTICS

An **electromagnetic flowmeter** is made of a **sensor**, installed in the pipeline, **and a converter**, energizing the coils and detecting the electrical signal.



A FEW EXAMPLES



Compact full-bore



Separate full-bore

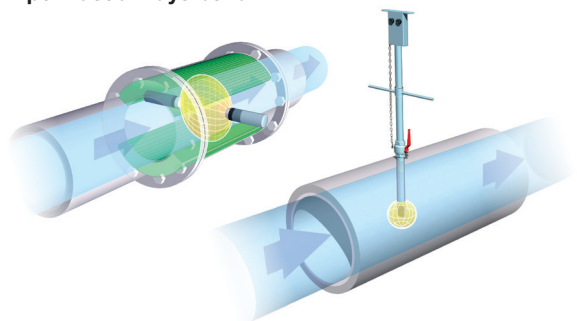


Compact insertion

The **operating principle** of magnetic flowmeter is based upon **Faraday's Law** of electromagnetic induction, stating that a «voltage will be induced in a conductor moving through a magnetic field».

Full bores and insertion electromagnetic flowmeters need **2 fundamental conditions** to operate accurately:

- **Medium must be conductive**
- **Pipe must always be full**



The main advantages of magmeters are:

- **obstructionless design** causing practically **no pressure loss**
- **corrosion-resistant wetted parts**
- **high accuracy**
- **linear signal output**

## ISOMAG® CERTIFICATIONS AND COMPLIANCES

### MATERIALS & PROCESSES



DM 174

PED


### COMMUNICATION




### METROLOGY



## THE RIGHT SOLUTION FOR YOUR APPLICATION



### WATER



- Distribution and leak detection
- District metering (DMAs, SMAs, Zones)
- Commercial metering
- Non revenue water (NRW)
- Well water metering
- Supply management



### WASTEWATER




- Water treatment
- Landfill leachate monitoring
- Additive mixing
- First flush water monitoring




### IRRIGATION



- Irrigation monitoring
- Dosing of fertilizers
- Water billing



### HVAC & R



- Energy metering and submetering
- Energy Distribution
- Efficiency calculation
- Co/Tri-generation power stations
- Hot and chilled water



### FOOD & BEVERAGE



- Filling machines
- Dosing/Batching
- Blending
- Beverage transfer measurement



### GENERAL INDUSTRY



- Mining
- Pulp & Paper
- Chemical
- Additive mixing
- Shipbuilding
- Cement production

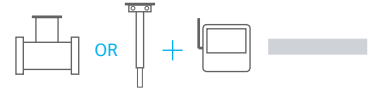
## MATERIAL RECOMMENDATION CHART

		FULLBORE SENSOR LINING						SENSOR ELECTRODES				
		PTFE	Ebonite	Polypropylene	Rilsan	Abral	PFA	AlSi316L	Hastelloy C276	Titanium	Tantalum	Platinum
<b>Drinking water</b>		0	+	+	+	0	0	+	+	0	0	0
<b>Sea water</b>		+	+	+	0	0	0	-	+	0	0	0
<b>Wastewater</b>		0	+	+	-	0/+	0	+	+	0	0	0
<b>Abrasives liquids</b>		0	0	0	-	+	0	+	+	0	-	-
<b>Pulp &amp; Paper</b>		+	-	0	-	-	+	0	+	-	+	-
<b>Food &amp; Beverage</b>		+	0	0	0	0	0	+	+	0	0	0
<b>Chemicals</b>	<b>Strong acids</b>	+	-/0	-/0	-/0	-/0	+	-	-	-/0	0/+	+
	<b>Weak acids (no HF)</b>	+	-/0	0/+	-/0	-/0	+	-	-/0	-/0	+	0/+
	<b>Strong bases</b>	+	0	0/+	-/0	0	+	-/0	-/0	0/+	-/0	+
	<b>Weak bases</b>	+	0	0/+	0	0	+	0	0	0/+	0/+	+

"-" Not compatible "0" Compatible "+" Recommended

# OUR RANGE OF MEASURING SENSORS

Choose your combination



## FULL-BORE

APPLICATIONS	MODEL	KEY TECHNICAL CHARACTERISTICS	CERTIFICATIONS & COMPLIANCE
	<p><b>MS2500</b></p>	<ul style="list-style-type: none"> <li>- <b>DN:</b> 25 to 3000 mm</li> <li>- <b>Connection:</b> Flanges UNI / ANSI / DIN / JIS</li> <li>- <b>Liner:</b> Polypropylene / Ebonite / Rilsan / PTFE / PFA</li> <li>- <b>Body:</b> Carbon steel / SS316 / SS304</li> <li>- <b>Electrodes:</b> SS316 / Hastelloy C276 / Platinum / Tantalum / Titanium</li> <li>- <b>Pressure:</b> Up to PN250</li> <li>- <b>Medium temperature range:</b> Up to -20÷180°C</li> </ul>	
	<p><b>MS1000</b></p>	<ul style="list-style-type: none"> <li>- <b>DN:</b> 25 to 400 mm</li> <li>- <b>Connection:</b> Wafer</li> <li>- <b>Liner:</b> Polypropylene / Ebonite / PTFE</li> <li>- <b>Body:</b> Carbon steel / SS316 / SS304</li> <li>- <b>Electrodes:</b> SS316 / Hastelloy C276 / Platinum / Tantalum / Titanium</li> <li>- <b>Pressure:</b> Up to PN40</li> <li>- <b>Medium temperature range:</b> Up to -20÷110°C</li> </ul>	
	<p><b>MS2410</b> <b>MS2420</b></p>	<ul style="list-style-type: none"> <li>- <b>DN:</b> 03 to 100 mm</li> <li>- <b>Connection:</b> DIN11851 / Tri-clamp / Tri-clover / SMS</li> <li>- <b>Liner:</b> PTFE</li> <li>- <b>Body:</b> SS316 / SS304</li> <li>- <b>Electrodes:</b> SS316</li> <li>- <b>Pressure:</b> PN16</li> <li>- <b>Medium temperature range:</b> Up to -20÷150°C</li> </ul>	
	<p><b>MS501</b> <b>MS600</b></p>	<ul style="list-style-type: none"> <li>- <b>DN:</b> 3 to 20 mm</li> <li>- <b>Connection:</b> Threated / DIN11851 / Tri-clamp / Tri-clover / SMS / Flanges UNI / ANSI / JIS</li> <li>- <b>Liner:</b> Polypropylene / PTFE</li> <li>- <b>Body:</b> SS304 (MS501) / Polypropylene (MS600)</li> <li>- <b>Electrodes:</b> SS316 / Hastelloy C276 / Platinum / Tantalum / Titanium</li> <li>- <b>Pressure:</b> Up to PN40</li> <li>- <b>Medium temperature range:</b> Up to -20÷130°C</li> </ul>	
	<p><b>MS5000</b></p>	<ul style="list-style-type: none"> <li>- <b>DN:</b> 25 to 80 mm</li> <li>- <b>Connection:</b> Metallic wrapper</li> <li>- <b>Liner:</b> Polyurethane</li> <li>- <b>Body:</b> Polyurethane</li> <li>- <b>Electrodes:</b> SS316</li> <li>- <b>Pressure:</b> PN6</li> <li>- <b>Medium temperature range:</b> Up to 0÷50°C</li> </ul>	

## INSERTION

APPLICATIONS	MODEL	KEY TECHNICAL CHARACTERISTICS	CERTIFICATIONS & COMPLIANCE
	<p><b>MS3810</b></p>	<ul style="list-style-type: none"> <li>- <b>DN:</b> 80 to 8000 mm</li> <li>- <b>Connection:</b> 1" G or NPT Threated end</li> <li>- <b>Liner:</b> PEEK</li> <li>- <b>Body:</b> SS316</li> <li>- <b>Electrodes:</b> Hastelloy C276</li> <li>- <b>Pressure:</b> Up to PN25</li> <li>- <b>Medium temperature range:</b> Up to 0÷100°C</li> </ul>	
	<p><b>MS3780</b></p>	<ul style="list-style-type: none"> <li>- <b>DN:</b> 80 to 2000 mm</li> <li>- <b>Connection:</b> 1" G or NPT Threated end</li> <li>- <b>Liner:</b> PEEK / FPM</li> <li>- <b>Body:</b> SS316</li> <li>- <b>Electrodes:</b> Hastelloy C276</li> <li>- <b>Pressure:</b> Up to PN40</li> <li>- <b>Medium temperature range:</b> Up to -20÷130°C</li> </ul>	

## OUR RANGE OF CONVERTERS

Check-out our tutorials on



### MAINS POWERED

APPLICATIONS	MODEL	KEY TECHNICAL CHARACTERISTICS	CERTIFICATIONS & COMPLIANCE
	<b>MV210</b> 	<ul style="list-style-type: none"> <li>- <b>Display:</b> Graphic LCD back light display / Blind version</li> <li>- <b>Housing:</b> Nylon PA6 with fiber glass / Painted aluminum / SS304</li> <li>- <b>Analog OUT:</b> Up to 2x 0/4...20/22 mA</li> <li>- <b>Digital IN/OUT:</b> Up to 1x IN / 2x OUT</li> <li>- <b>Accuracy:</b> ±0,2% of read value</li> <li>- <b>Special features:</b> High performance; Batching function; Data logger; Built-in-Verifier; Anticondense cap; Empty pipe detection; Bi-directional; Dual Range; Diagnostic function</li> </ul>	
	<b>MV110 MV110W</b> 	<ul style="list-style-type: none"> <li>- <b>Display:</b> Graphic LCD back light display / Blind version</li> <li>- <b>Housing:</b> Nylon PA6 with fiber glass / Painted aluminum / SS304</li> <li>- <b>Analog OUT:</b> Up to 2x 0/4...20/22 mA</li> <li>- <b>Digital IN/OUT:</b> Up to 1x IN / 2x OUT</li> <li>- <b>Accuracy:</b> Up to ± 0,25% of read value (better on request)</li> <li>- <b>Special features:</b> Data logger; Built-in-Verifier; Anti-condense cap; Empty pipe detection; Bi-directional; Dual Range; Diagnostic function</li> </ul>	
	<b>MV800</b> 	<ul style="list-style-type: none"> <li>- <b>Display:</b> LCD Display / Blind version</li> <li>- <b>Housing:</b> Painted aluminum / AISI 304 Raw or Polished</li> <li>- <b>Analog OUT:</b> Up to 1x 0/4...20/22 mA</li> <li>- <b>Digital IN/OUT:</b> Up to 1x IN / 1x OUT</li> <li>- <b>Accuracy:</b> ± 0,5% of read value detection</li> <li>- <b>Special features:</b> Bi-directional; Diagnostic; Empty Pipe</li> </ul>	

### BATTERY POWERED

APPLICATIONS	MODEL	KEY TECHNICAL CHARACTERISTICS	CERTIFICATIONS & COMPLIANCE
	<b>FLOWIZ MV255</b> 	<ul style="list-style-type: none"> <li>- <b>Display:</b> Graphic LCD back light display / Blind version</li> <li>- <b>Housing:</b> Nylon PA6 with fiber glass / Painted aluminum / SS304</li> <li>- <b>Analog IN/OUT:</b> Up to 2x IN (pressure or level) / 1x OUT active or passive</li> <li>- <b>Digital IN/OUT:</b> Up to 3x IN / 4x OUT insulated</li> <li>- <b>Accuracy:</b> Up to ±0,25% of read value</li> <li>- <b>Special features:</b> Alkaline or Lithium batteries: Up to 15 years battery life; HV/LV Mains powered; Built-in-Verifier; Corrosion Protection Module; Encrypted data file, Data logger; Empty pipe detection; Bi-directional; Dual Range; Diagnostic function, UMTS/GPRS Transmission</li> </ul>	
	<b>FLOWIZ MV145</b> 	<ul style="list-style-type: none"> <li>- <b>Display:</b> Graphic LCD back light display / Blind version</li> <li>- <b>Housing:</b> Nylon PA6 with fiber glass / Painted aluminum / SS304</li> <li>- <b>Analog IN/OUT:</b> Up to 2x IN (pressure or level) / 1x OUT active or passive</li> <li>- <b>Digital IN/OUT:</b> Up to 3x IN / 4x OUT insulated</li> <li>- <b>Accuracy:</b> Up to ±0,25% of read value</li> <li>- <b>Special features:</b> Alkaline or Lithium batteries: Up to 15 years battery life; HV/LV Mains powered; Built-in-Verifier; Corrosion Protection Module; Encrypted data file, Data logger; Empty pipe detection; Bi-directional; Dual Range; Diagnostic function</li> </ul>	

## OUR RANGE OF COMPACT FLOWMETERS

### FULL-BORE AND INSERTION

APPLICATIONS	MODEL	KEY TECHNICAL CHARACTERISTICS
	<b>CS8100</b> 	<ul style="list-style-type: none"> <li>- <b>DN:</b> 10 mm (Connection 1/2" or 3/4")</li> <li>- <b>Housing:</b> Noryl +30% Fiber Glass</li> <li>- <b>Electrodes:</b> Hastelloy C276</li> <li>- <b>Analog OUT:</b> 1x 0/4...20/22 mA</li> <li>- <b>Digital OUT:</b> 2x on/off for pulses or Volume or Alarms</li> <li>- <b>Accuracy:</b> ±1% of read value</li> <li>- <b>Medium temperature range:</b> Up to -20÷85°C</li> <li>- <b>Special features:</b> Diagnostic function; Bi-directional, PN10</li> </ul>
	<b>CS3900</b> 	<ul style="list-style-type: none"> <li>- <b>DN:</b> 10 to 50 mm</li> <li>- <b>Housing:</b> PTFE coated Zinked Steel</li> <li>- <b>Electrodes:</b> SS316L</li> <li>- <b>Analog OUT:</b> 1x 0/4...20/22 mA</li> <li>- <b>Digital OUT:</b> 2x on/off or pulses or Volume or Alarms</li> <li>- <b>Accuracy:</b> Up to ±0,5 of read value</li> <li>- <b>Medium temperature range:</b> Up to -10÷100°C</li> <li>- <b>Special features:</b> Temperature measurement; Diagnostic function; Bi-directional, PN16</li> </ul>
	<b>CS3795</b> 	<ul style="list-style-type: none"> <li>- <b>DN:</b> 80 to 2000 mm</li> <li>- <b>Sensor body:</b> SS316 (lining Peek)</li> <li>- <b>Electrodes:</b> Hastelloy C276</li> <li>- <b>Analog OUT:</b> 1x 0/4...20/22 mA</li> <li>- <b>Digital OUT:</b> 2x for volume/pulse</li> <li>- <b>Accuracy:</b> ±2% of read value</li> <li>- <b>Medium temperature range:</b> Up to -10÷100°C</li> <li>- <b>Special features:</b> Diagnostic function; Bi-directional, PN16</li> </ul>
	<b>CS3820</b> 	<ul style="list-style-type: none"> <li>- <b>DN:</b> 80 to 8000 mm</li> <li>- <b>Sensor body:</b> SS316 (lining Peek)</li> <li>- <b>Electrodes:</b> Hastelloy C276</li> <li>- <b>Connection:</b> 1" G or NPT threaded end</li> <li>- <b>Digital OUT:</b> 1x on/off</li> <li>- <b>Accuracy:</b> ±2% of read value</li> <li>- <b>Medium temperature range:</b> Up to 0÷60°C</li> <li>- <b>Special features:</b> Battery powered; Bi-directional; Data Logger; IP68; Built-In-Verifierator; Up to PN25</li> </ul>

### VERIFICATION TOOLS & ACCESSORIES

	WHAT IS IT?	HOW CAN IT BE HELPFUL?
<b>BIV</b> 	<b>Built-In-Verifierator</b> , available on request on MV110, MV145 and MV255 converters, is an <b>internal verification tool</b> .	This innovative device makes a <b>periodical measure of the main electrical parameters</b> of the flowmeter, <b>sends alarms</b> in case of results outside specification and allows users to generate and <b>print a report</b> stating the meter's conditions (PC needed for printing).
<b>ISOBIV</b> 	<b>External Verificator tool</b> for the MV converters. Comes with its own hardware.	The ISOBIV allows <b>onsite verification of the main electrical parameters of the flowmeter</b> and allows users to generate and print a report stating the meter's conditions.
<b>MCP</b> 	<b>Interface software</b> for MV converters.	Allows user friendly and easy <b>access to all meters programmable functions</b> . A mini USB cable is required to connect the instrument to the a PC, alternatively a Wifi connection can be used.
<b>CPM</b> 	<b>Corrosion Protection Module</b> for MV battery converters.	Additional measuring module that is able to continuously <b>monitor the electrical potential of the line</b> , providing the user with real time information on cathodic protection efficiency.
<b>GROUNDING RINGS</b> 	Metal rings to be installed between sensor and pipeline.	Used to <b>ground unwanted electrical signals</b> and provide a <b>grounding pathway around the flowmeter</b> to safely eliminate accumulated voltage or induced current in the flowing conductive fluid. Helpful in presence of non conductive pipelines materials.

## TEST BENCH AND ISO17025 CALIBRATION LABORATORY LIBRA

All ISOMAG® meters are subject to wet calibration on ISO17025 certified benches before leaving our factory.

The original accuracy is granted over the life time of the meter when is working within its specifications.

Thanks to the **Accredited Calibration Laboratory LIBRA, conforming to UNI EN ISO/IEC17025** (ACCREDIA Certificate LAT237), Isoil Industria can also offer a calibration service for liquid flowmeters in volume, flow and mass.

Instruments of manufacturers other than Isoil can also be tested and calibrated by LIBRA Laboratory.



Production Center with Calibration tower in the background.

Pipes at the base of Calibration tower.



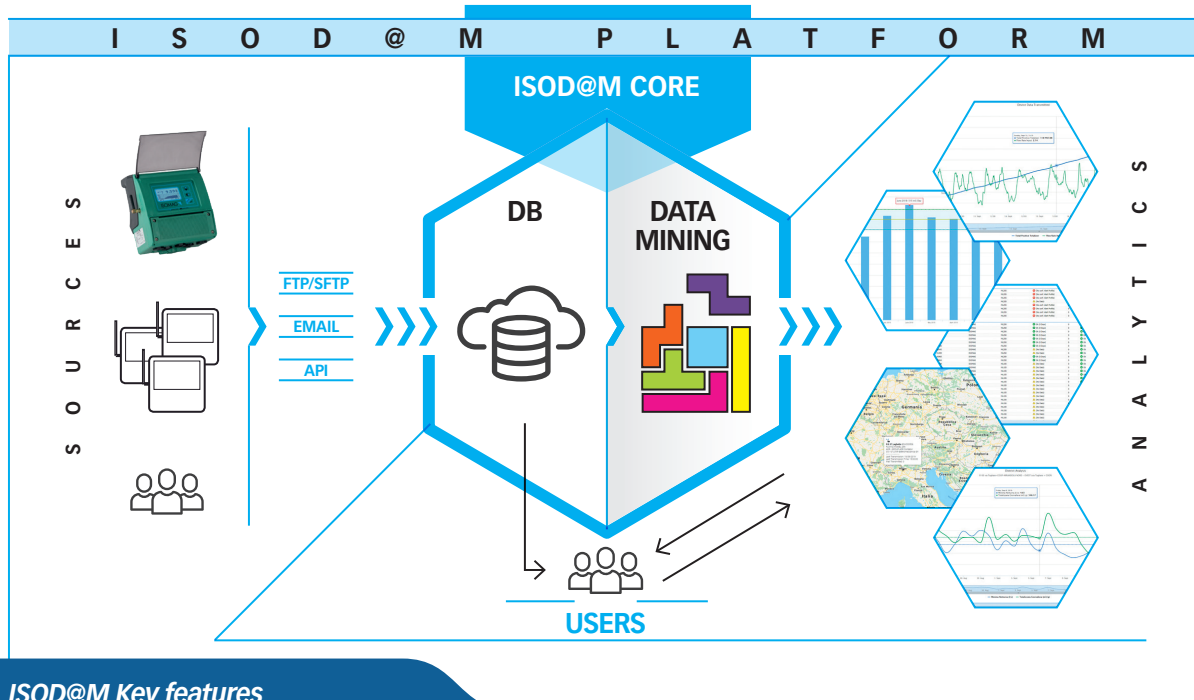
The 45 meters high piezometric tower makes Libra **one of the biggest calibration laboratories worldwide.**

The laboratory consists of 8 fully automated calibration lines running on static weight based method (Lines 1 to 6), direct comparison with a master meter (Lines 1 to 7) or with a master volume (Line 8).

Currently, **Libra calibrates sensors up to DN3000 with an impressive max flow of 4 m<sup>3</sup>/s.**

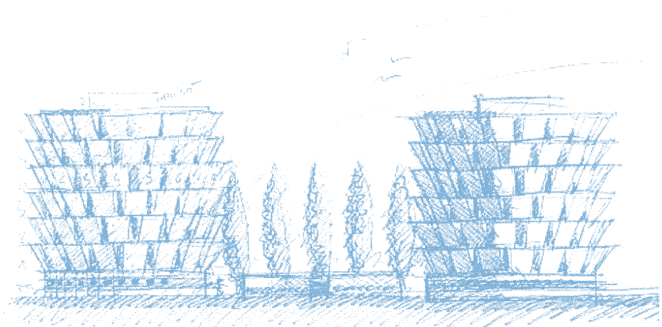
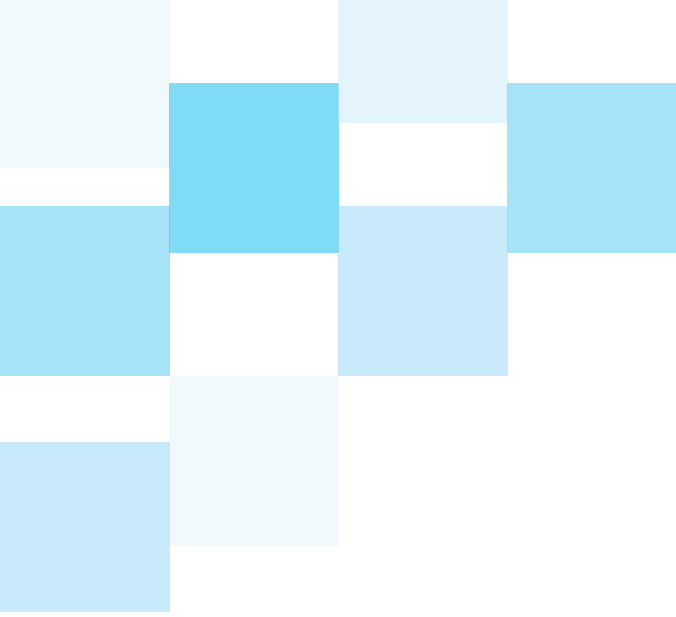
## ISOD@M: DATA ACQUISITION AND MANAGEMENT SOFTWARE

ISOD@M allows users to **easily retrieve data from field devices**, reducing time and efforts for data analysis. Based on the latest technological architecture, the platform provides high level results thanks to **advanced data mining capabilities**. Users can create their own target to improve system knowledge and control, **enhancing accuracy and diagnostic**.



### ISOD@M Key features

- Acquisition Platform System (SaaS)
- Cloud and Local installation
- Responsive software
- Multi User and Multi Level Access
- Full Data Protection
- Water Loss and District Analysis
- Preventive Maintenance Management
- Geo-Localization
- Graphic and Analytic Data Analysis



*Isoil Industria is a worldwide leading supplier of electromagnetic flowmeters. On the market since 1958, the company has been concentrating its efforts and expertise through the years towards the evolution of the electromagnetic flowmeters technology. It is worldwide recognized and present in all Countries through distributors and agents, and with branch offices in Brazil and Hong Kong.*

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