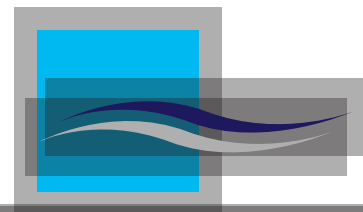
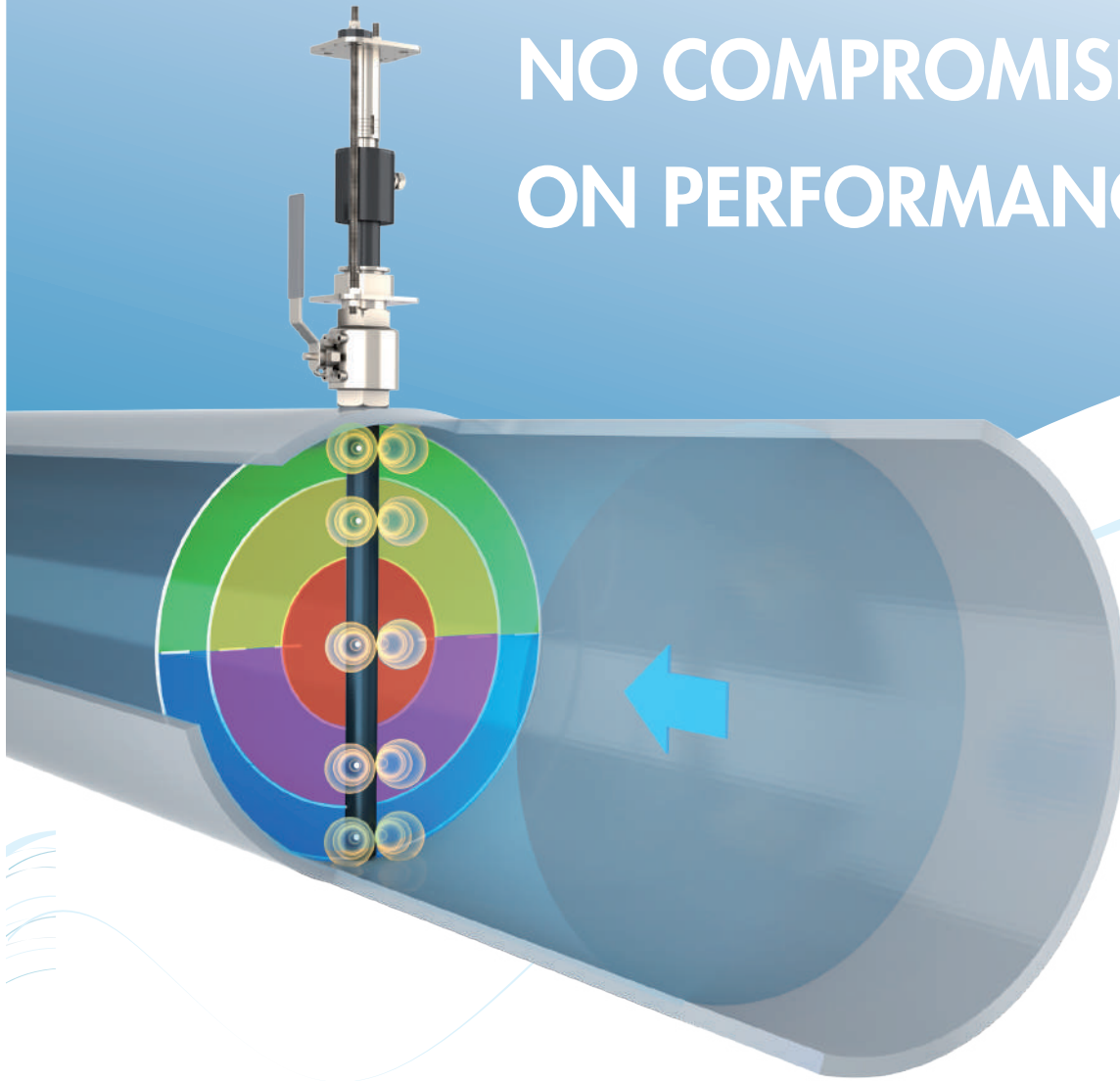


# TORPEE-MAG

FULL PIPE ELECTROMAGNETIC AVERAGING INSERTION FLOW METER

NO COMPROMISE  
ON PERFORMANCE !



**FLOW-TRONIC** SA  
NV

# TORPEE-MAG

FULL PIPE ELECTROMAGNETIC AVERAGING INSERTION FLOW METER

## How does it work?

The TORPEE-MAG is a hot tap full profile electromagnetic **insertion flow meter**. The measurement method is based on Faraday's Law of Electromagnetic Induction: when a conductive liquid moves through a magnetic field, it produces a voltage. The voltage is directly proportional to the velocity of the conductive medium.

The TORPEE-MAG has multiple electrode pairs placed along the axis of the sensor at **equal area** of the pipe. The velocity measurements are averaged together providing the average velocity across the pipe. Flow is calculated by multiplying the average velocity by the cross-sectional area of the pipe.

The specific design of the multi-electrode sensor compensates for **variable flow profiles**, including swirl and turbulent conditions achieving a much higher precision than single-point flowmeters.

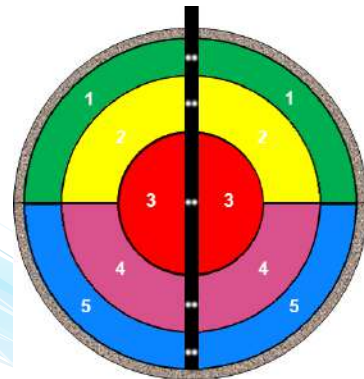
The TORPEE-MAG can be installed **without shutting down**, emptying or cutting the pipe (hot tap installation). It does not require welding flanges and installation can be done in pressurized pipelines up to 17 bar. **Cost of installation is largely reduced** by eliminating the need for heavy equipment (cranes, etc.) or extensive manpower. The TORPEE-MAG is the most economical flow metering solution for medium and large pipe sensor sizes.

The TORPEE-MAG fits in confined spaces, can be submerged and offers complete accessibility. It can be removed from pipes under pressure for **easy inspection, cleaning, calibration or verification** and reinstalled without process interruption. It is particularly cost-effective for retrofit applications.

The maximum number of coils and electrodes will depend on the pipe inside diameter: the bigger the pipe diameter, the more electrodes will be placed along the sensor.



Electrodes repartition on equal areas



(Area 1 = 2 = 3 = 4 = 5)



# Technical specifications

## TORPEE-MAG 1.5" or 2" and converter

### General

Size	TORPEE-MAG 1.5" from DN100 to DN1525 (inner Ø) – 2 to 5 electrodes TORPEE-MAG 2" from DN500 to DN2500 (inner Ø) – 5 to 7 electrodes
Weight	Depending on size of sensor
Materials	Robust sensor body: 316 stainless steel, fiberglass derivate, carbon NSF-61 certified epoxy coating available as an option Insertion hardware: 316 stainless steel Compression seal: silicone rubber (EPDM) Sensor electrodes: graphite
Cable lengths	Available from 10 m to 200 m
Protection	IP68/NEMA 6P (sensor is submersible)
Certifications	CE, BS 6920
Process connection	Min. 48 mm clear diameter for 2" TORPEE-MAG Min. 36 mm clear diameter for 1.5" TORPEE-MAG
Sensor length	Depending on inner pipe Ø and connection accessories
Connection to sensor	Separate (converter connected with cable to sensor)
Calibration	Calibration ISO 17025 traceable
Warranty	2 years

### Velocity Measurement

Method	Electromagnetic
Range	0 m/s to 6 m/s (bidirectional) (max. velocity possible depending from pipe Ø and sensor type)
Accuracy	±0.5% of reading value from 0.25 m/s to 6 m/s ± zero stability ±0.8% of reading value from 0.02 m/s to 0.25 m/s ± zero stability
Zero stability	±1 mm/s
Repeatability	0.2% of reading value
Linearity	0.2% of reading value

### Operating conditions

Fluid	Drinking water or raw water
Min. conductivity	5 µmho/cm
Flow direction	Forward flow and bidirectional as an option
Operating pressure	Max. 17 bar
Fluid temperature limits	-10°C (not freezing) to +60°C at 17 bar

### Converter information

Mounting	Separate
Protection	IP67/NEMA 6
Display	White on blue backlit LCD 128 x 64 pixels 2 programmable displays: Real-time display: indicates flow & velocity: Totalizer display: user selectable units
Outputs	2x 4-20 mA: galvanically isolated Pulse/Alarm: Two programmable functions (pulses/alarms) Pulse output for flow rate or external totalizer Alarm output for forward or backward flow detection, min./max. flow Outputs are isolated and protected transistor switch capable of sinking < 250 mA at < 35 V
Communication	Modbus protocol over RS485 interface or HART protocol (optional)
Power supply	AC: 90 to 265 VAC at 45-66 Hz (20W/25VA) or DC: 12 to 48 VDC or alkaline batteries
Operating temperature	-20°C to +60°C

Technical data contained in this brochure are subject to change without prior notice, indicative only and not binding.

# Applications

## Municipal Water

- Raw water intake
- Plant process
  - Chemical Pacing
  - Filter Balancing
  - Plant Balancing
  - Backwashing
- Plant process
  - Billing
  - Storage Management
  - Pump Station Management
- Water Loss Management
  - District Metering
  - Minimum Night Flow Monitoring
  - PRV flow based modulation

## Retrofit Applications

- Replacement of unsatisfactory flow meters such as pitot tube, propeller, single point velocity meter, differential pressure meter, full bore mag meters...

## Industrial Applications

- Cooling/chilled Water
- Power Plants

## Other Applications

- Raw river
- Non-ragging effluent
- Large diameter pipework



## Main benefits

- Cost effective due to reduced costs of installation
- Accurate
- Easy to install
- Robust construction (no moving parts, carbon fiber reinforced body)
- No site calibration needed (compared to Single Point Insertion flow meters where a calibration is needed)
- No flow interruption
- Accurate at low flow rates
- Insertion and removal under pressure (hot tapping)
- Ideal solution for retrofit applications



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