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**TRAVAIL A FAIRE PAR LE CANDIDAT**

*Lire attentivement tout le document.*

I- **En français** : 1) Donnez 4 avantages de cette nouvelle gamme de débitmètres Vortex.  
(4 points)

- ◆ .....
- ◆ .....
- ◆ .....
- ◆ .....

___ / 1 pt
___ / 1 pt
___ / 1 pt
___ / 1 pt
___ / 4 pts

2) Donnez 2 caractéristiques propres à chaque appareil : le Vortex-VR et le Vortex -VT. (4 points)

- ◆ .....
- ◆ .....

___ / 2 pts
___ / 2 pts
___ / 4 pts

<i>GROUPEMENT INTERACADEMIQUE II</i>	<b>BEP MECSI</b>	Durée : 1 h 30 Coef. : 2
<i>Session 2001</i>	<i>Épreuve : Anglais</i>	Feuille : 1/5

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II- Traduisez en français le paragraphe [The Vortex 4 with the welded ...] jusqu'à [... from one another]. (6 points) (1 point par unité de sens)

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\_\_\_\_ / 6 pts

III- Répondez en anglais aux questions suivantes, en faisant des phrases : (6 points)

a) What can be measured with Vortex 4?

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.....

\_\_\_\_ / 1 pt

b) Where are Vortex 4 applications possible?

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\_\_\_\_ / 1 pt

c) Is the Vortex 4 shock-resistant? (Justify your answer)

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\_\_\_\_ / 1 pt

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		<b>Feuille : 2/5</b>

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d) How can the sensor be mounted?

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\_/ 1 pt

e) How is the flow direction indicated?

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\_/ 1 pt

f) What should be installed in the case of possible vibration?

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.....  
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\_/ 1 pt

\_/ 6 pts

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## VORTEX 4 - the new generation Vortex flowmeter

### Accurate flow measurement of gases, steam and liquids

The new vortex flowmeter Vortex 4 enables the user to obtain accurate, continuous flow measurements of gases, steam and liquids.

Vortex 4 measures the flow linearly and relatively independently of the media characteristics of temperature, pressure, density, viscosity and electrical conductivity. Based on its high accuracy and good reproducibility it is suitable for numerous measurement and process control tasks.

### Microprocessor controlled converter technology

Irrespective of chosen Vortex design all Vortex 4 versions are controlled by a microprocessor. This ensures an easy operation of the meter.

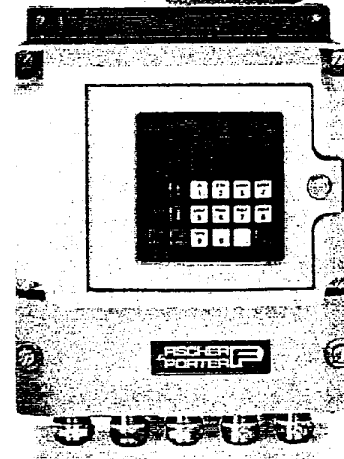
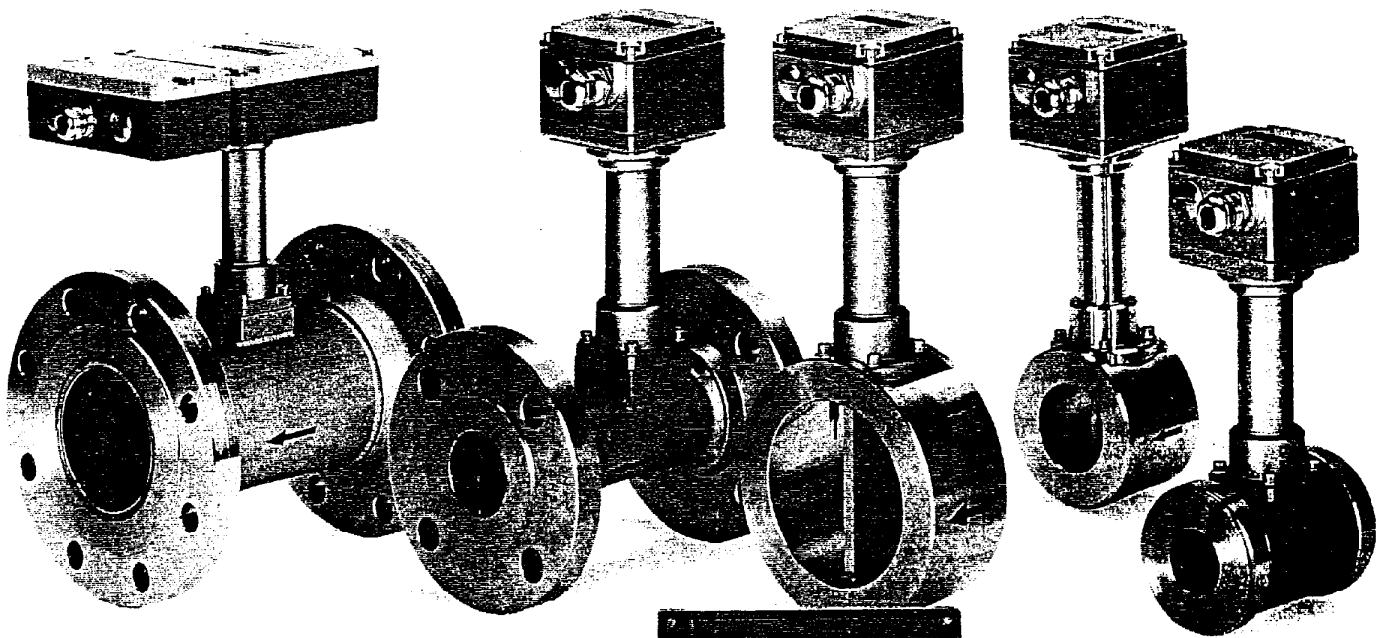
### Long term stability, no wear, no maintenance

There are no moving parts in Vortex 4. This means long term stability, wear resistance and maintenance-free measurement.

### Simple to install, low installation costs

The small size of the meter allows easy commissioning as well as low installation costs. Any mounting position is suitable for Vortex 4.

The 65 mm installation length of the wafer design allows trouble-free replacement of existing measurement equipment such as orifice carrier assemblies already in existence in the process. Higher accuracy and a greater measurement range enables you to increase the quality of your products still further and also to optimize your process.



### The new generation design

The new generation of Vortex flowmeters comprises:

- Vortex-VR: a 2-wire Vortex meter with remotely mounted converter.
- Vortex-VT: a 2-wire Vortex meter with integral converter.
- Vortex-VM: with remotely mounted converter.

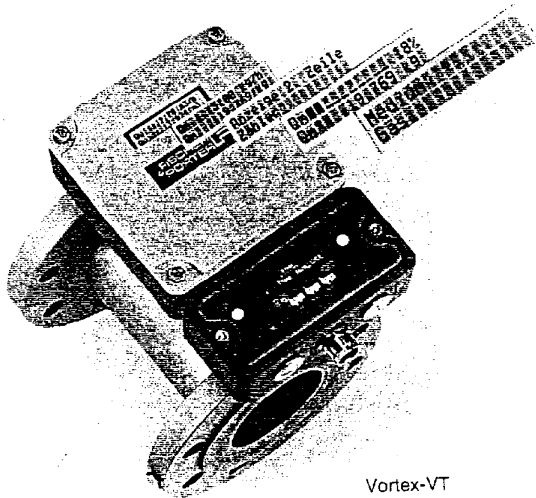
# VORTEX 4

## offers superior microprocessor technology

### Vortex-VT

The 2-wire design with integral microprocessor converter. The double-line LC display to indicate flow and totalizer is standard. The meter is easy to operate using 3 push buttons. All

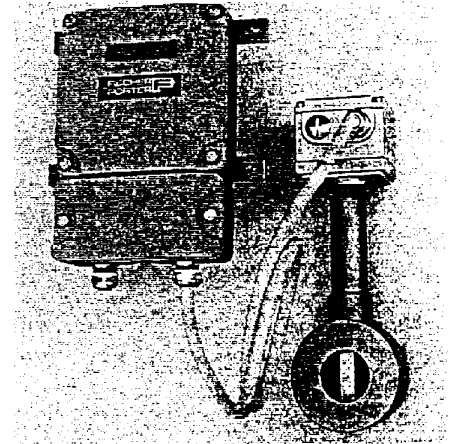
information is keyed into the converter by means of the 3 push buttons. Hook switches do not have to be set anymore. The available output is a 4 - 20 mA signal with option for the HART protocol.



Vortex-VT

### Vortex-VR

For applications where process or ambient temperatures are extreme, the Vortex-VR a 2-wire remote design is available. Furthermore the remotely mounted converter allows to install the primary at locations that are difficult to reach. The simple and convenient process operation of the converter can be carried out up to 5 m away from the primary.



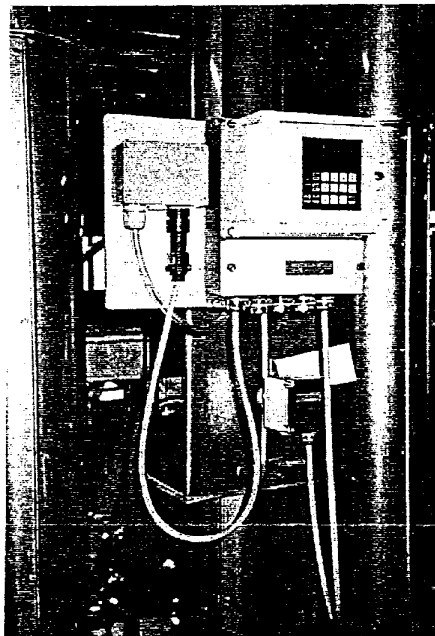
Vortex-VR

## for day - to - day applications

Vortex 4 is suitable for measuring gases, steam and all slightly viscous liquids. Applications extend from the petro-chemical industry (e.g. measuring natural gas, diesel fuel, petrol), chemical and pharmaceutical industry (e.g. measuring of liquid fuels or saturated steam for heating of boilers), gas and water distribution plants to applications in sewage works (e.g. measuring of methane gas).

□ The Vortex 4 with the welded bluff body can cope with sudden overloads. Water shocks in steam lines do not cause destruction of the vortex flowmeter. Contaminated liquids and liquids tending for deposits do not influence the measurement because the sensor and the bluff body are arranged separately from one another. □

For steam measurement the bluff body can be made of Hastelloy C. This prevents wear of the edges and assures good long term stability of the flowmeter.



Vortex 4 applied for measurement of saturated steam. To avoid heat loss the primary is completely insulated.

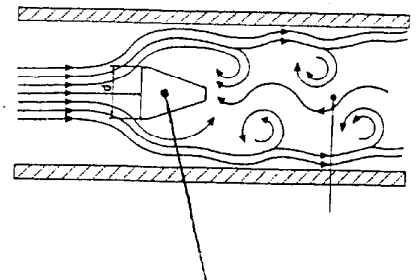
### Application

#### Installation position

The sensor can be installed in any position. The flow direction is marked by an arrow on the sensor housing.

Long pipe runs where vibration is a possibility should be clamped before and after the meter body.

When measuring liquids the pipe run must be arranged in such a way that the sensor is always filled with medium.



bluff body : obstacle