TFA Target Fixed Area Flowmeter

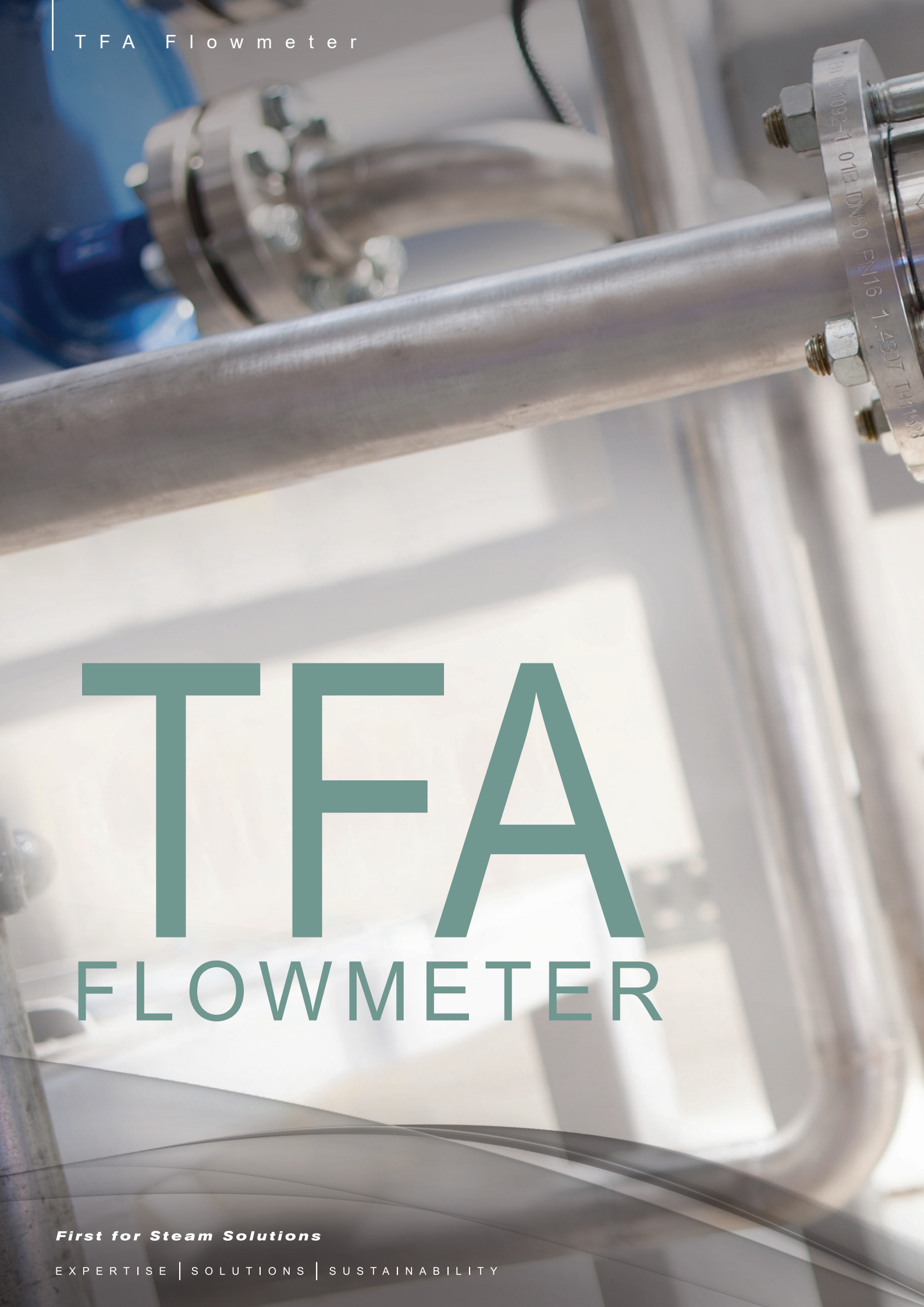
for Saturated Steam

**CONTROL &
INSTRUMENTATION
SOLUTIONS**

First for Steam Solutions

EXPERTISE | SOLUTIONS | SUSTAINABILITY

spirax sarco



TFA FLOWMETER

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spiraxsarco.com/flowmetering

> “THE TFA FLOWMETER IS A GOOD SOLUTION FOR MEASURING MY ENERGY USAGE IN SMALLER STEAM PIPE SIZES”
>
> TFA Flowmeter customer

Reliable, accurate point of use steam metering

Spirax Sarco’s innovative TFA Flowmeter is designed to meet the challenges of economically monitoring steam flow in small line sizes, so you can accurately assess energy use to help reduce consumption and improve performance in every area of your plant.

No moving parts – gives you greater reliability.

Cost-effective – measures steam flow in smaller line sizes with easy compact installation.

Designed for steam velocities – accurate metering at lower flowrates and improved equipment life.

Improved management information – accurate costing with point of use accountability.

Benefits

High performance under varying process conditions

The TFA Flowmeter is a high performance meter which includes automatic in-line density compensation eliminating inaccuracy caused by changes in steam density. This is necessary as the pressure in steam systems almost always fluctuates; unless this is taken into account the accuracy of the measured flow results will be affected.

Highly Reliable Innovative Design

The TFA Flowmeter's robust design with no moving parts gives you excellent reliability reducing plant downtime. Specifically designed for use on saturated steam, the TFA Flowmeter operates on a target principle, by measuring the force produced on a fixed area plate by the fluid flow. The strain is converted into density compensated mass flowrate that can be transmitted via a 4-20 mA or pulsed output.

Lower erosion in your pipelines

Spirax Sarco specifically designs its products to operate within best steam engineering practice. This enables our flowmeters, including the TFA Flowmeter, to operate at lower steam velocities, reducing erosion and increasing the operating life of your equipment.

Lower flow rate with a 10:1 turndown

The TFA Flowmeter is designed specifically for steam, so unlike many other flowmeters, does not require an increase in flow velocity in order to gain accuracy and turndown. The TFA Flowmeter will maintain a 10:1 turndown ratio at lower flow rates, whilst other flowmeters' performance will reduce significantly.

Other suppliers often quote flowrates at velocities of 80 or 100 m/s and higher. This can give severe problems in saturated steam systems where water is entrained in the flow.

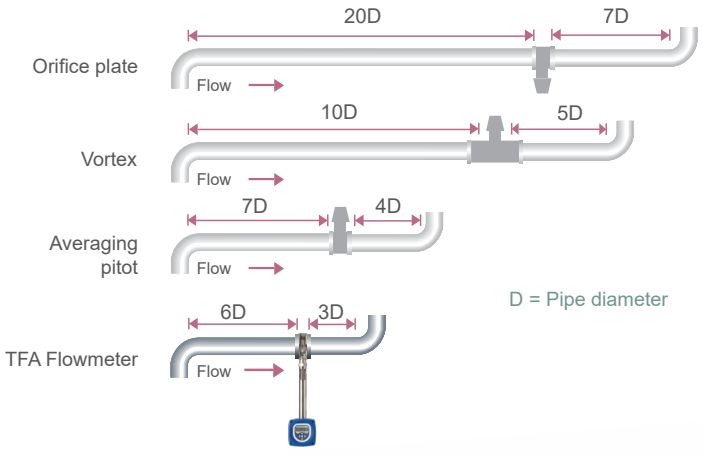
Easy Compact Installation

Most flowmeter installations require an uninterrupted length of straight pipework upstream and downstream to condition the flow for accurate metering, this can limit where you position your flowmeter.

Due to the ultra-compact wafer design of the TFA Flowmeter, it can be quickly and easily installed almost anywhere in existing pipelines - even in confined spaces or within proximity of a pipe bend, valves or other components.

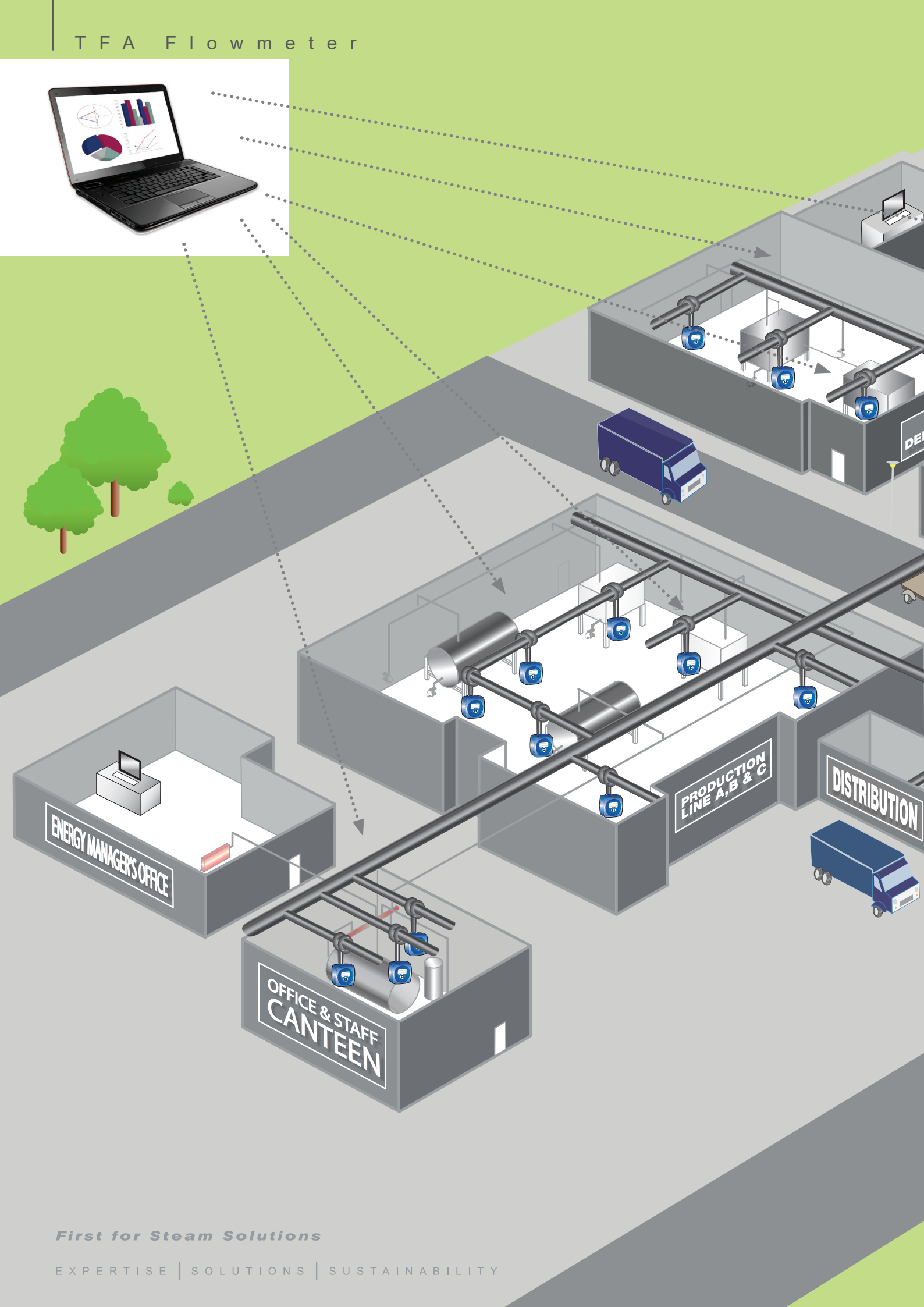
One of the smallest installations on the market…

The TFA Flowmeter requires only six pipe diameters of straight pipe upstream and three downstream, removing the need for expensive line changes and making point of use metering possible in the most difficult locations.



Did you know?

Best steam practice dictates that saturated steam is operated at a velocity that does not exceed 35m/s. Because of the properties of steam, once the flow velocity exceeds 45 m/s saturated or wet steam will act like sand paper within the pipeline. The higher the velocity the greater the destructive nature of steam.



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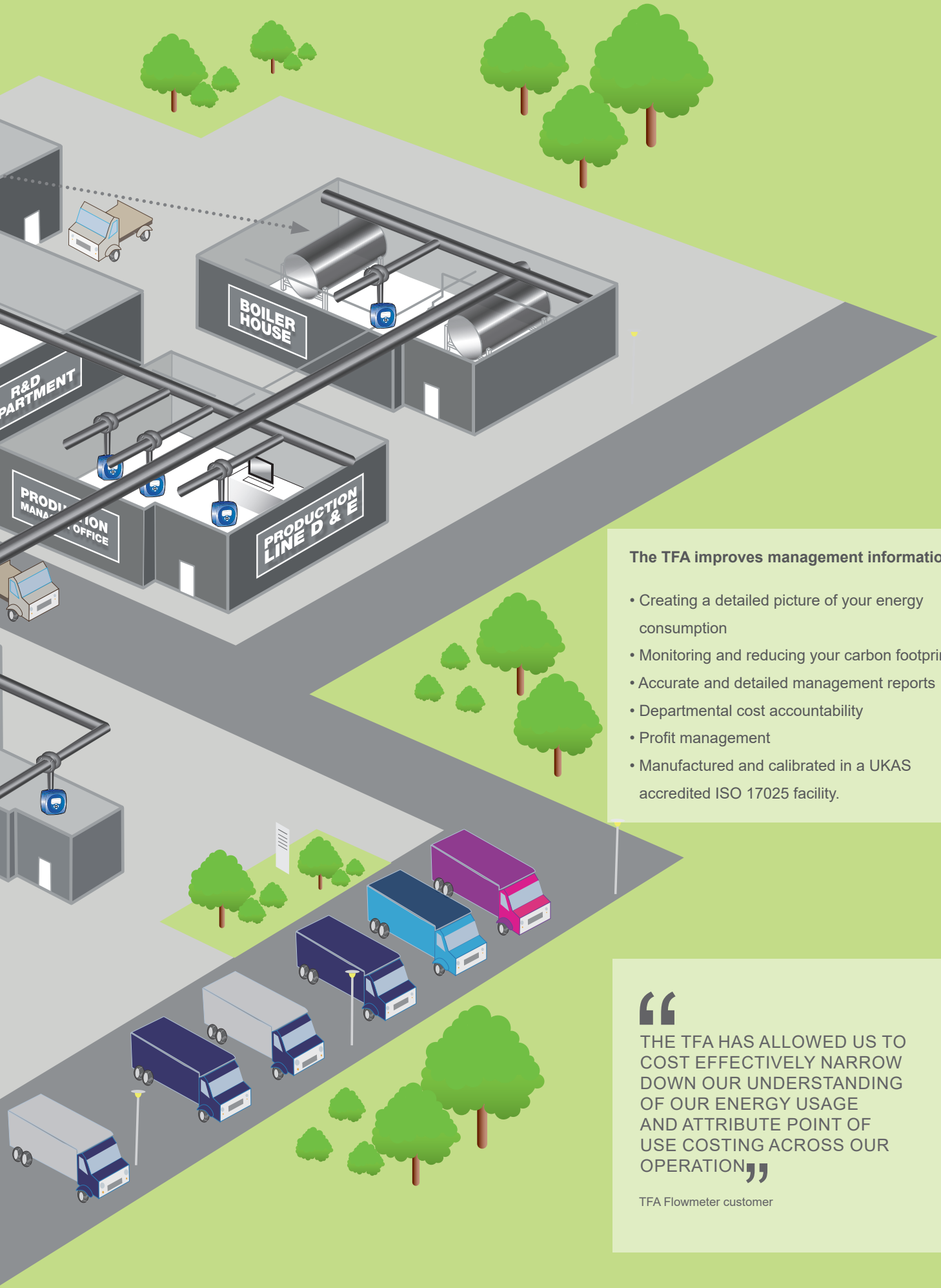


The TFA improves management information

- Creating a detailed picture of your energy consumption
- Monitoring and reducing your carbon footprint
- Accurate and detailed management reports
- Departmental cost accountability
- Profit management
- Manufactured and calibrated in a UKAS accredited ISO 17025 facility.

> "THE TFA HAS ALLOWED US TO COST EFFECTIVELY NARROW DOWN OUR UNDERSTANDING OF OUR ENERGY USAGE AND ATTRIBUTE POINT OF USE COSTING ACROSS OUR OPERATION"

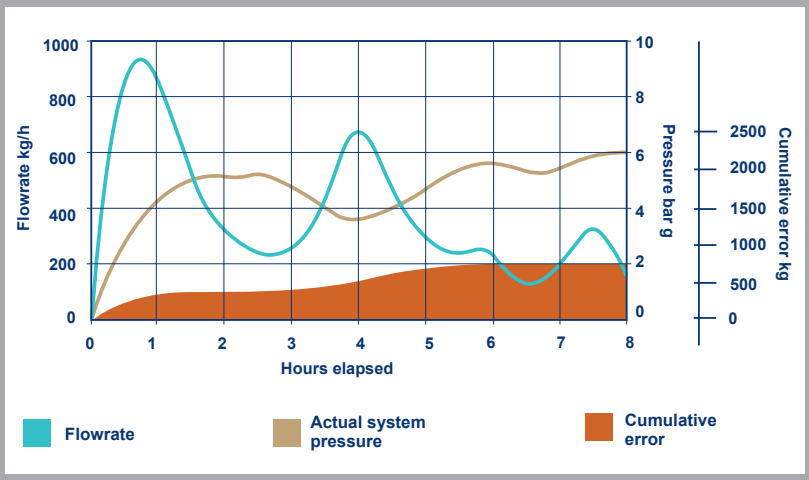
TFA Flowmeter customer

The technical section...

Sizes:	DN25 (1”), DN32 (1 1/4”), DN40 (1 1/2”), DN50 (2”)
Fluid:	Saturated steam
Accuracy:	2% System Uncertainty: 95% confidence (2 STD)
Outputs:	4-20 mA /pulse output and modbus communications
• NOTE: See the Technical Information sheet for further information TI-P193-01	

How saturated steam temperature and density change with pressure

Steam density alters with pressure changes caused by varying process loads. An uncompensated volumetric steam flowmeter calibrated to operate at 5.0 bar g will over-read by 14.4% when used at 4.2 bar g, see example below.



In the example above, a simple non-compensated flowmeter is set for 5 bar g. The actual pressure in the system varies through the day and unless this is allowed for, by the end of the day, very significant errors can arise. This can be avoided with a density compensating meter, such as the TFA.

ISO 17025 Accredited

Every TFA Flowmeter is calibrated on our internationally accredited calibration rig to guarantee accuracy.
UKAS accredited calibration laboratory 0714

UKAS CALIBRATION 0714

Turndown ratio comparison of flow technologies on saturated steam

Measuring both minimum and maximum flowrates (turndown)

TVA 50:1

Vortex 15:1

Typically up to 15 within best practice steam flow velocity of 35 m/s

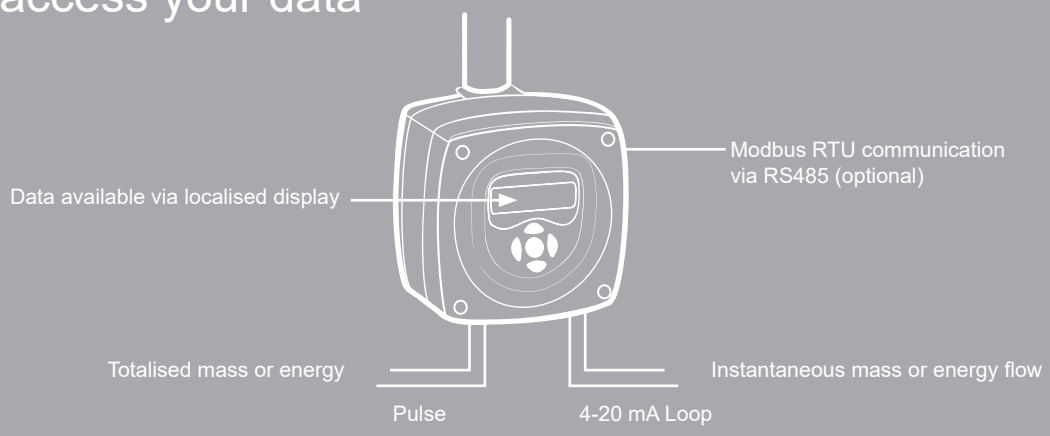
Pitot tubes 7:1

Orifice 4:1

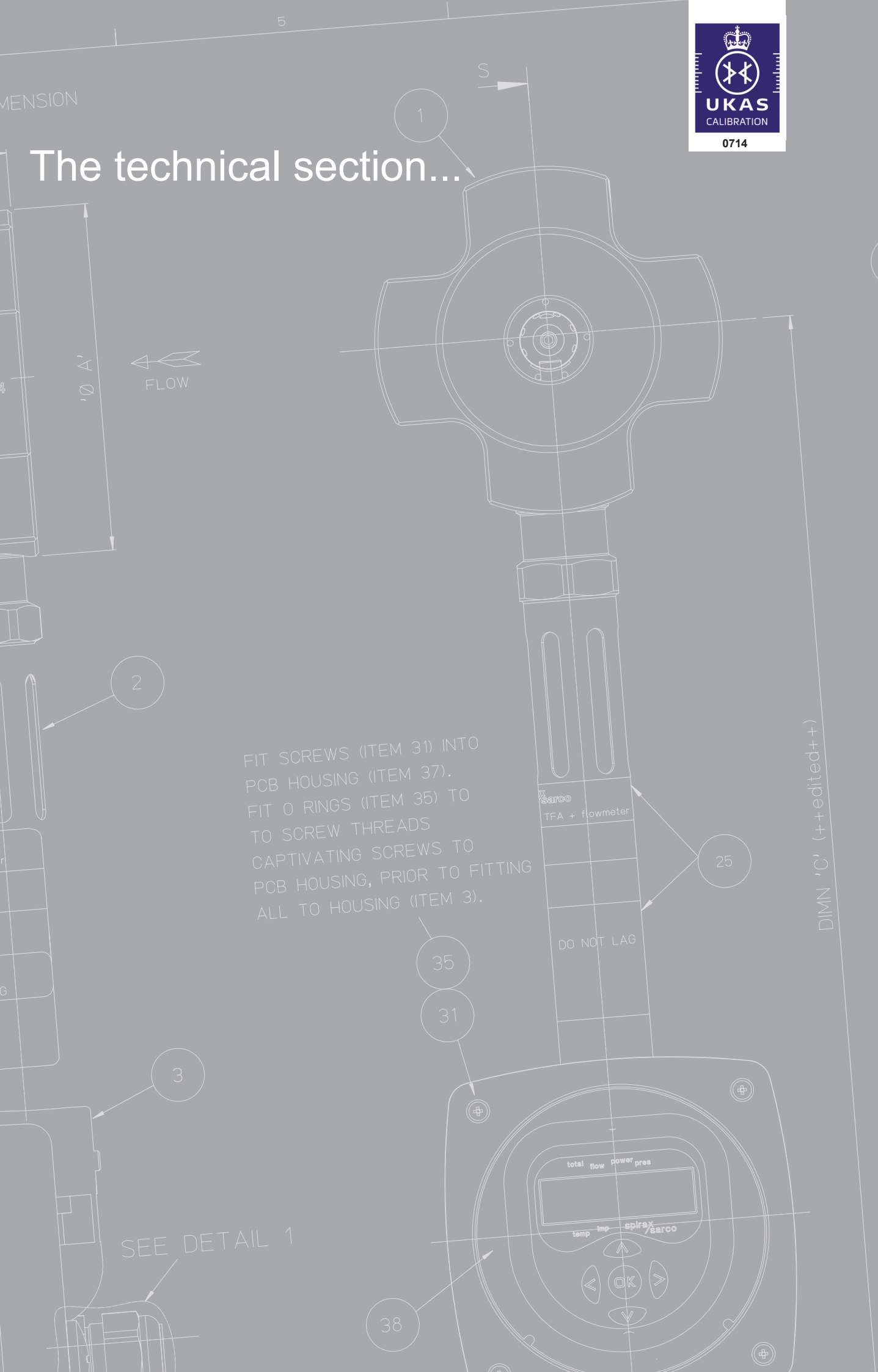
TFA 10:1

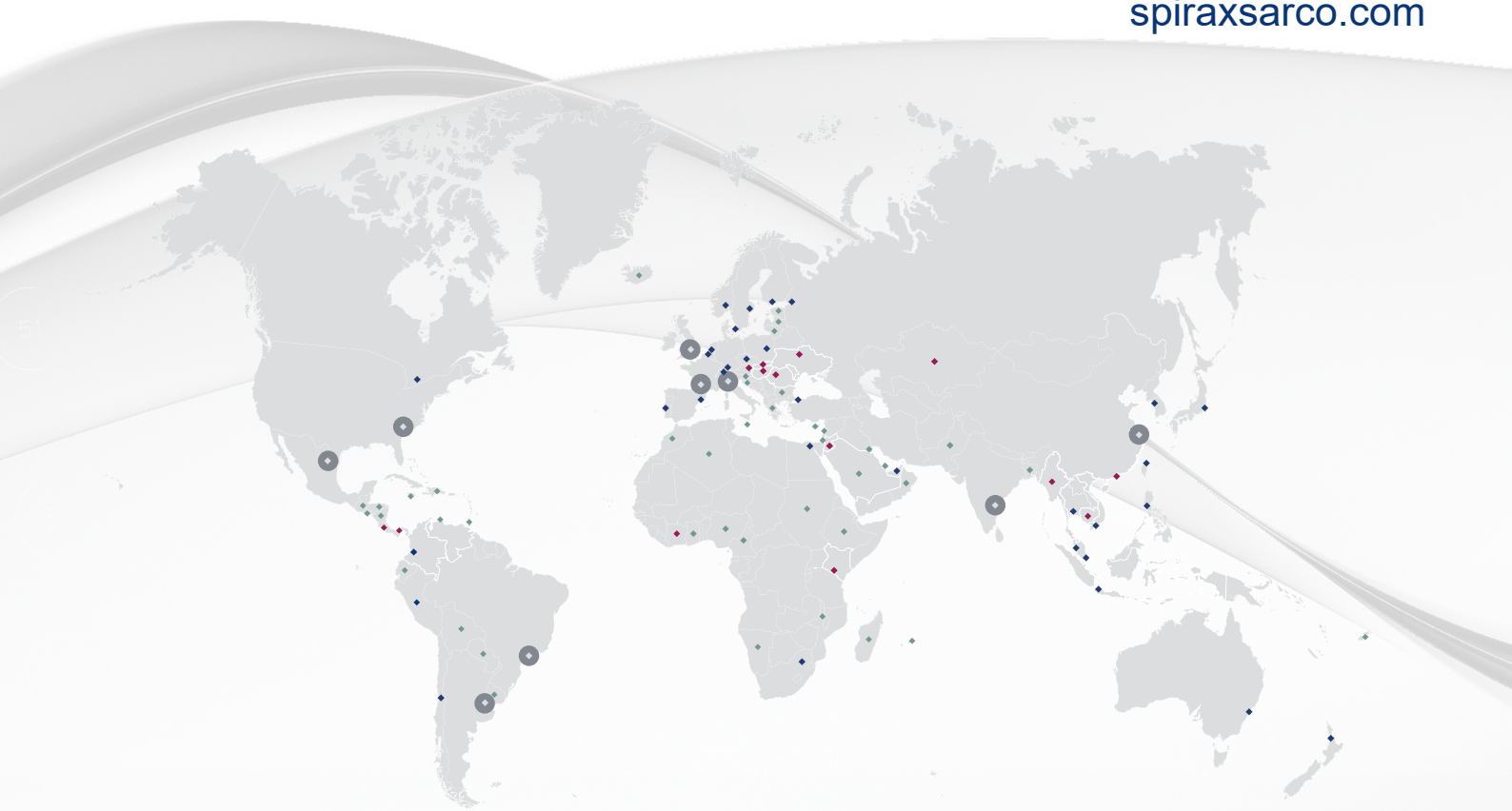
Comparison of pipe requirements for different flow technologies on saturated steam

How to access your data



The technical section...





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