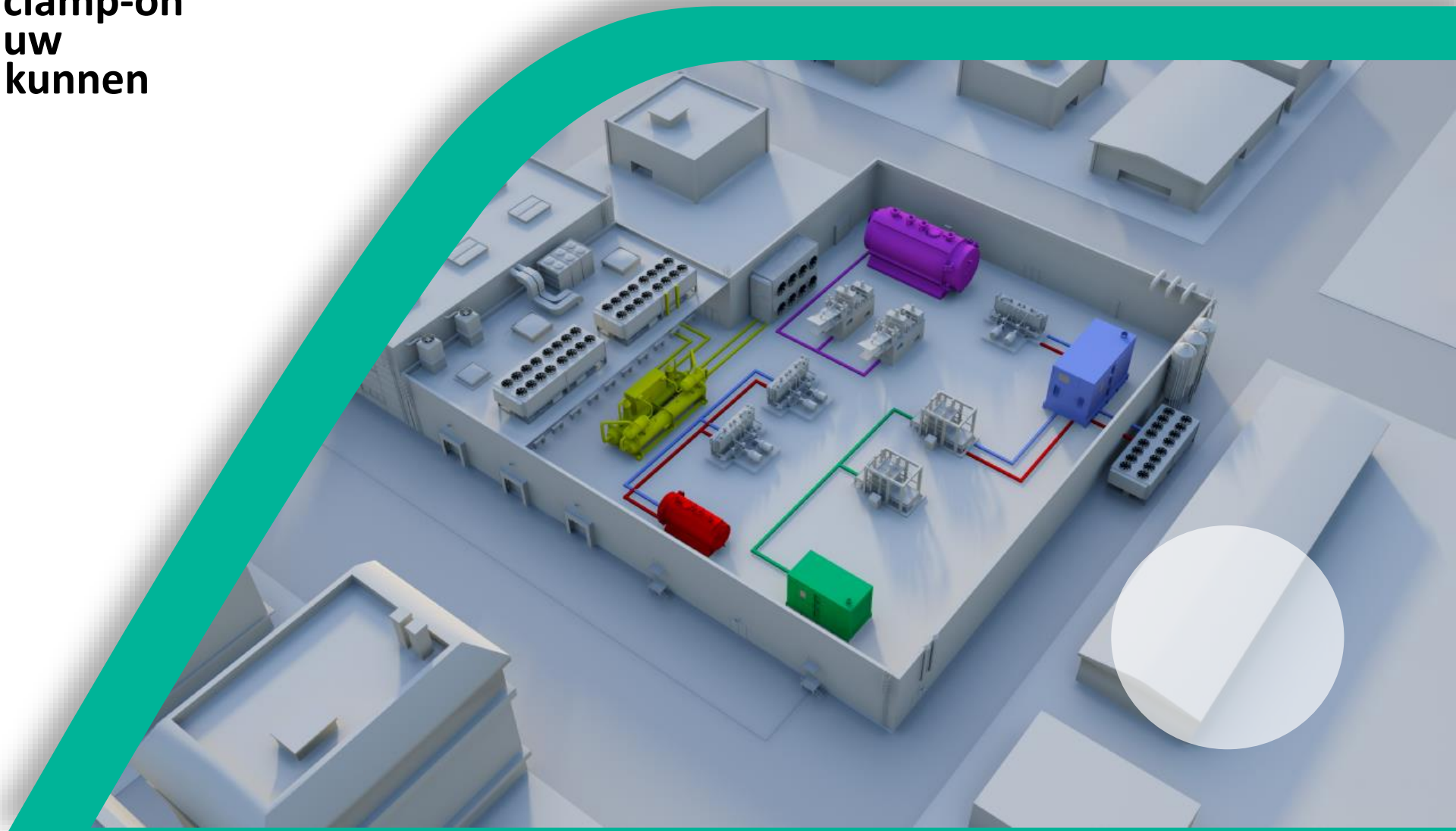
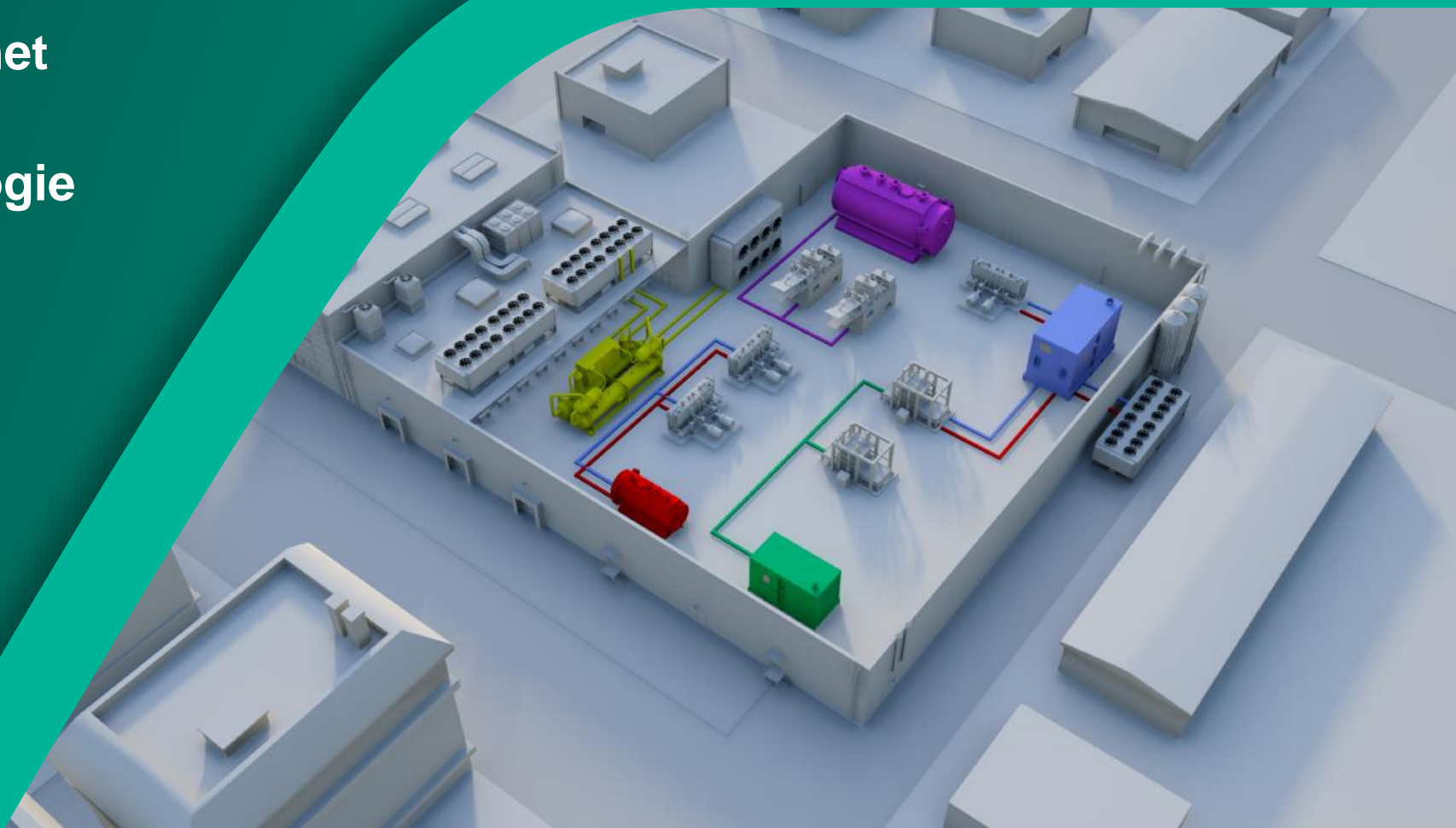


“Energy Efficiency – hoe clamp-on ultrasone flowmetingen uw energiestromen in kaart kunnen brengen”

Presentatie door:
Steven Rouvoet



1. Introductie
2. Flexible meetconcept met FLEXIM
3. Ultrasonische flow technologie
4. Stoommeting
5. Perslucht
6. Thermische rendement



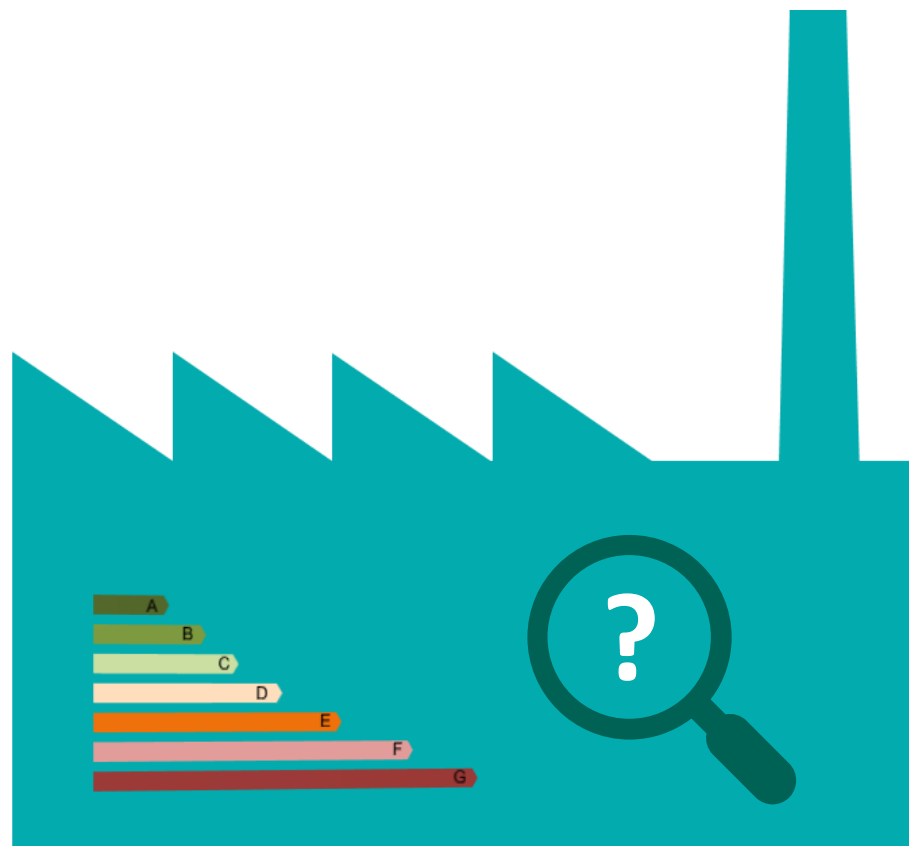


Welke
energiedragers
kan FLEXIM in
kaart brengen?



Breng uw energie stromen in kaart

Energie dragers

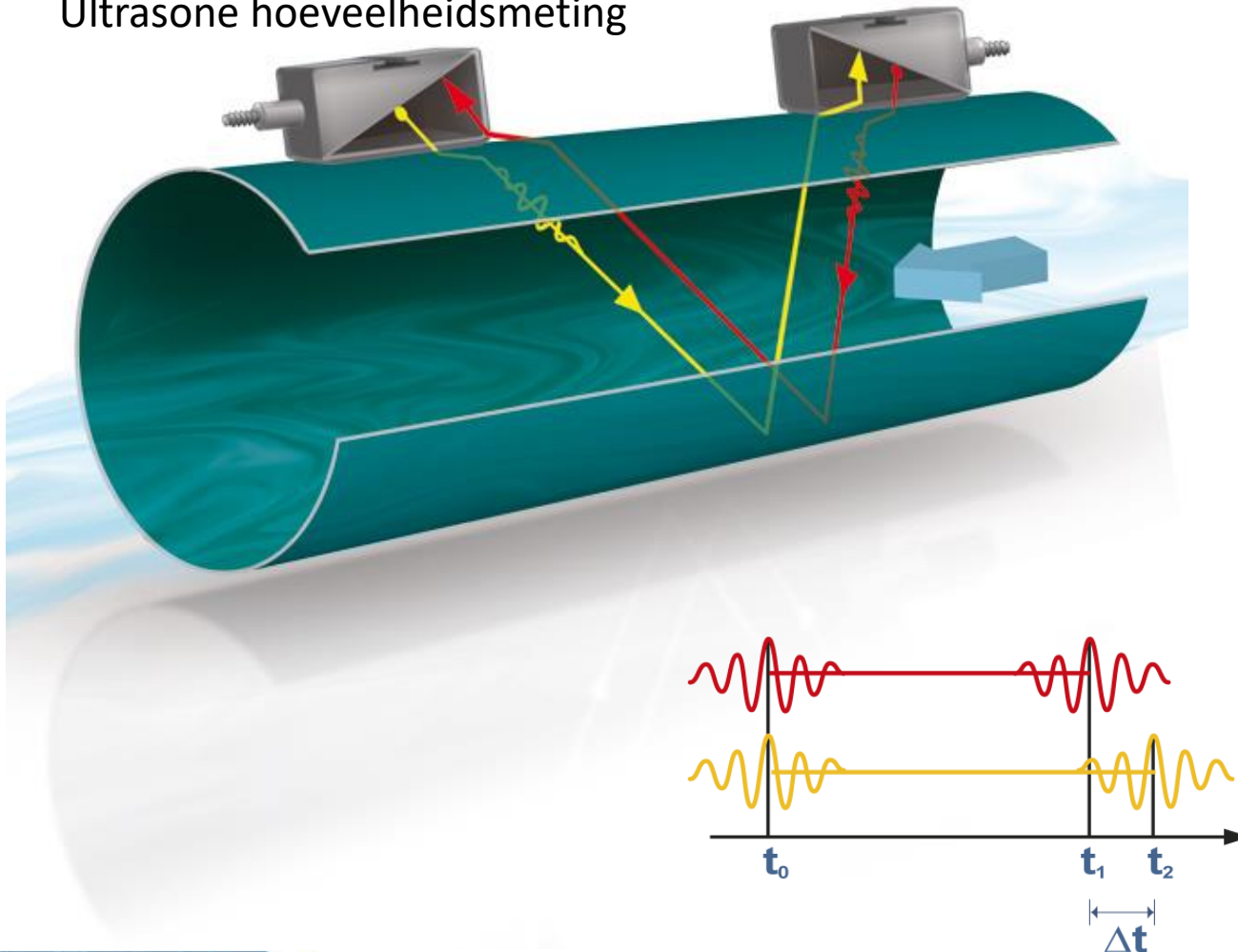




Introductie Ultrasone Clamp-on flowmeettechniek

Energiestromen – „one for all“

Ultrasonische hoeveelheidsmeting



$$Q = K_{Re} \cdot A \cdot K_{\alpha} \frac{\Delta t}{2t_{fl}}$$

Q - Volumetrische flow

K_{RE} - Voeistof mechanische correlatiefactor

A - Actief oppervlak van de buis

k_{α} - Tranducer constante

Δt - Transit Time verschil

t_t - Transit Time in medium

$$C_{Fluid} = \frac{l_{Fluid}}{\frac{t_{down} + t_{up}}{2} - t_0}$$



De grote voordelen van US clamp-on technologie

Waarom Clamp-on?



- **Geen inbreuk in leidingsysteem, geen lekkage mogelijk, veiligheid**
- **Geen drukverschil = Energie besparing, geen pompverlies**
- **Weinig ruimte nodig om de meting te monteren.**
- **Groot meetbereik 0 - 35 m/s**
- **Flexibel in plaatsing van de meting = gemakkelijk te plannen**
- **Bi – directioneel**
- **Geen onderbreking nodig van het process**



Typical Instrumentation Solutions

Performance overview

- Measurement uncertainty: $\pm 1...3\%$ of reading ± 0.005 m/s
- Repeatability: 0.15% of reading ± 0.005 m/s
- Outstanding low flow resolution down to 0.01 m/s
- Based on transit-time difference method
- Extensive diagnostic functions and Meter Verification Tool

Application range:

- Media: Liquids, Gas and Steam (3...60+ bara)
- Pipe diameter (ID): 23mm up to 1000mm
- Temperature range: -160°C to 600°C
- Explosion protection available – GP, Zone 2 and Zone 1
- Stationary and portable device available

Communication:

- Outputs: Switchable current, HART, common Bus protocols, Ethernet
- Inputs: Temperature, current, voltage



 **Advanced Meter Verification**



Steam two technologies

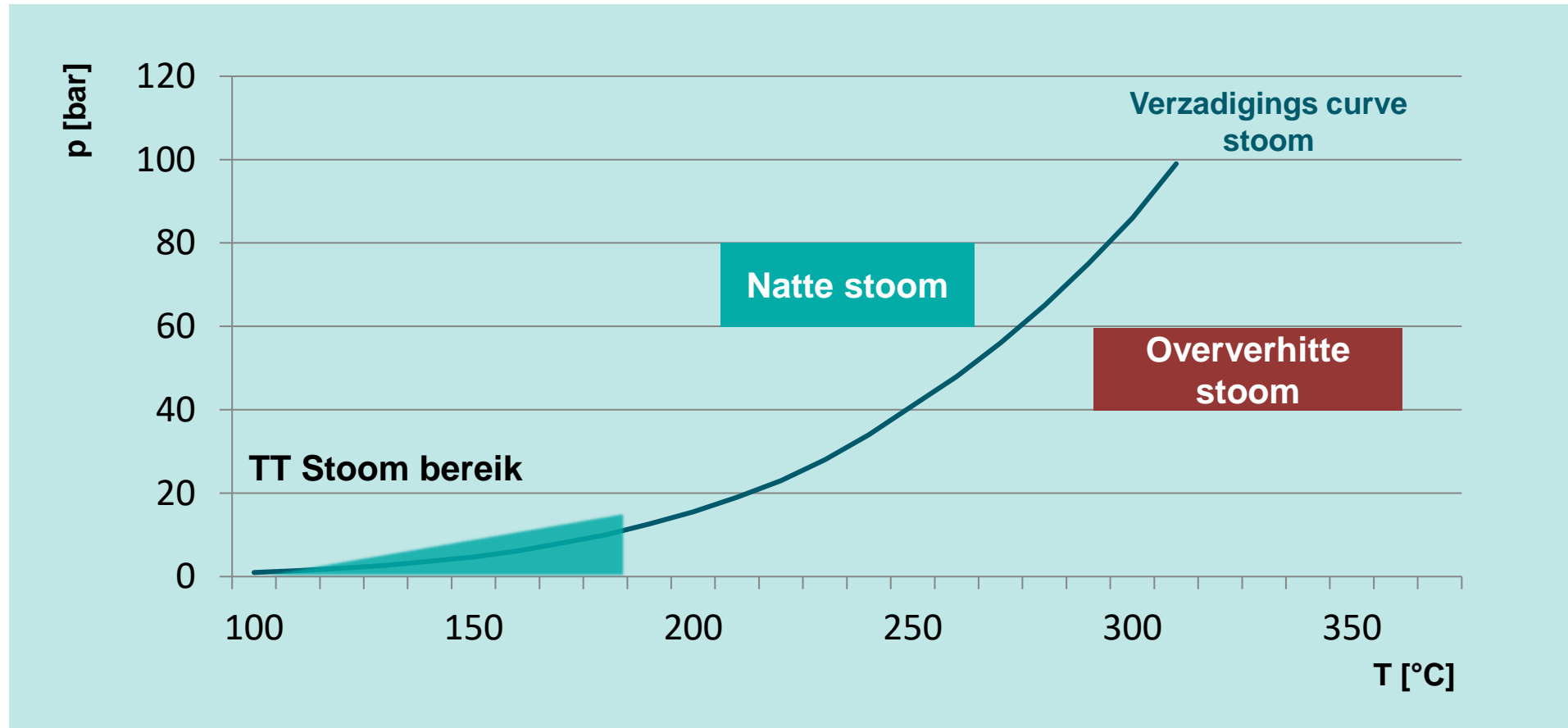
Transit Time Stoommeting
(100...180°C)

Correlation Flow Measurement
(180 ... 630+ °C)



Transit Time Stoommeting (100...180°C)

Applicatie bereik



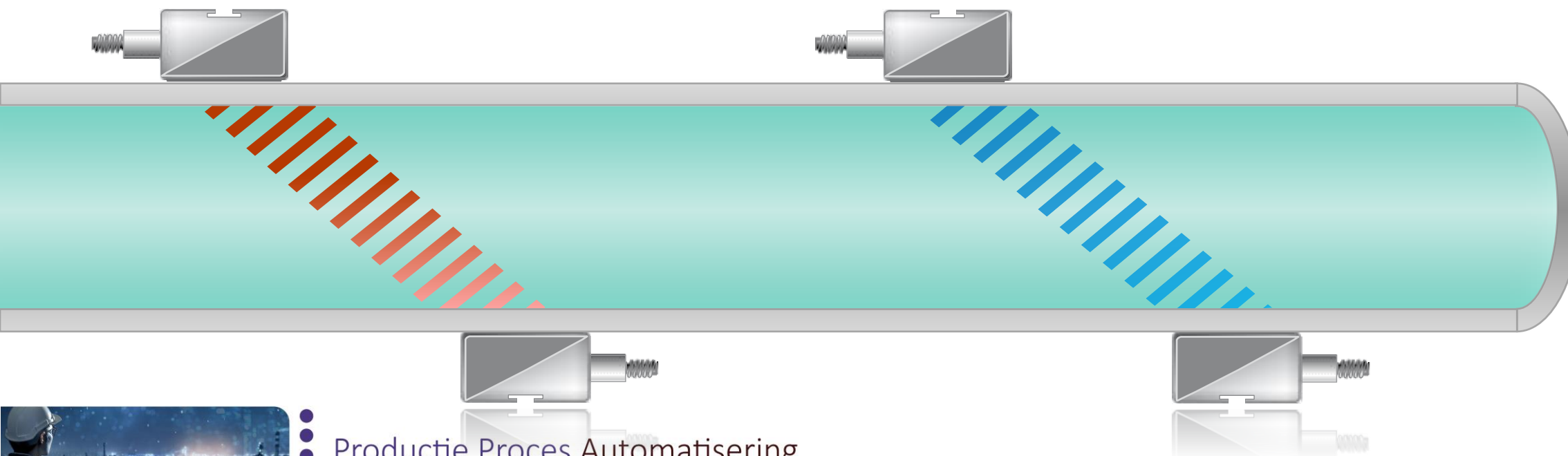
Maximum: 180°C of 10 bar verzadigde of oververhitte stoom

Minimum: 3bar of ~130°C verzadigde of oververhitte stoom

● Productie Proces Automatisering



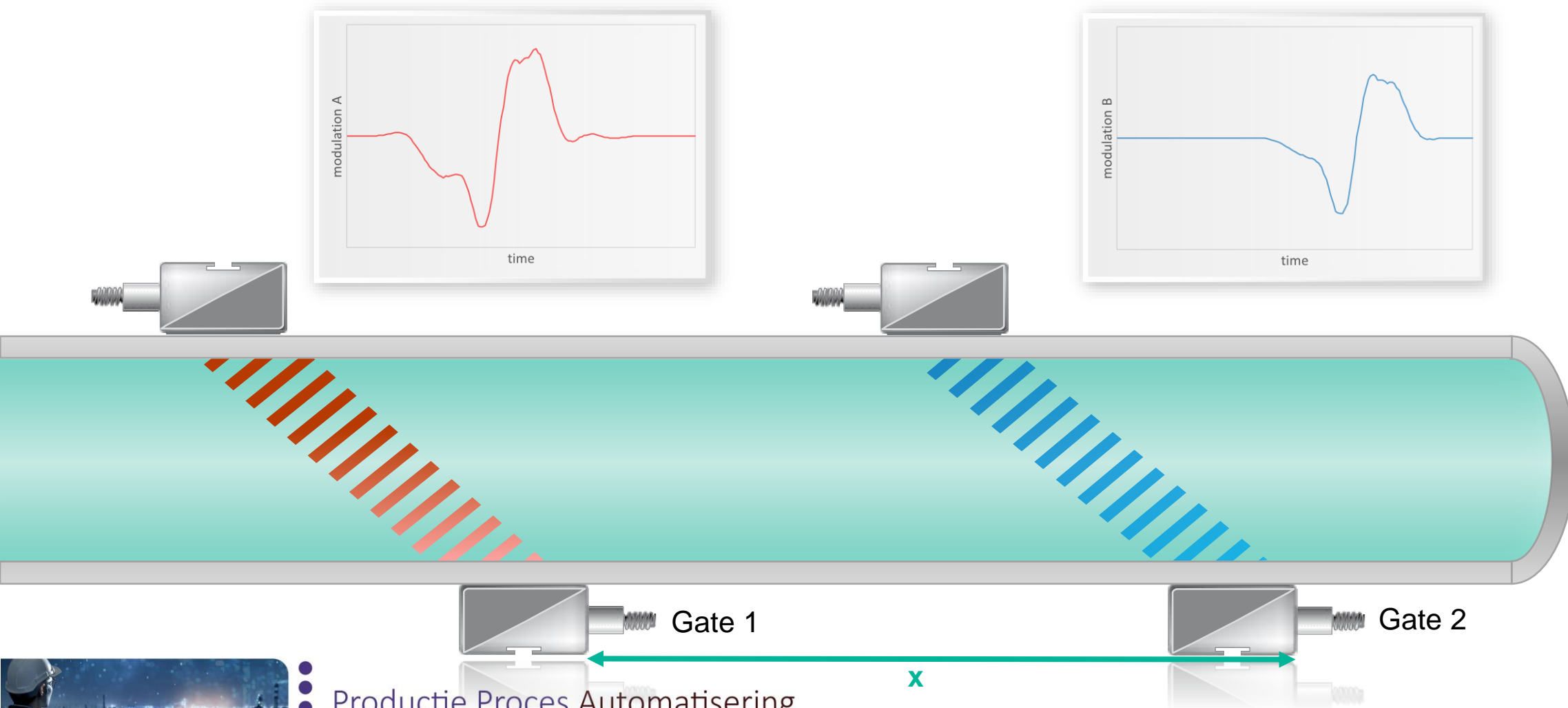
Meetprincipe: Correlation Flow Measurement



● Productie Proces Automatisering

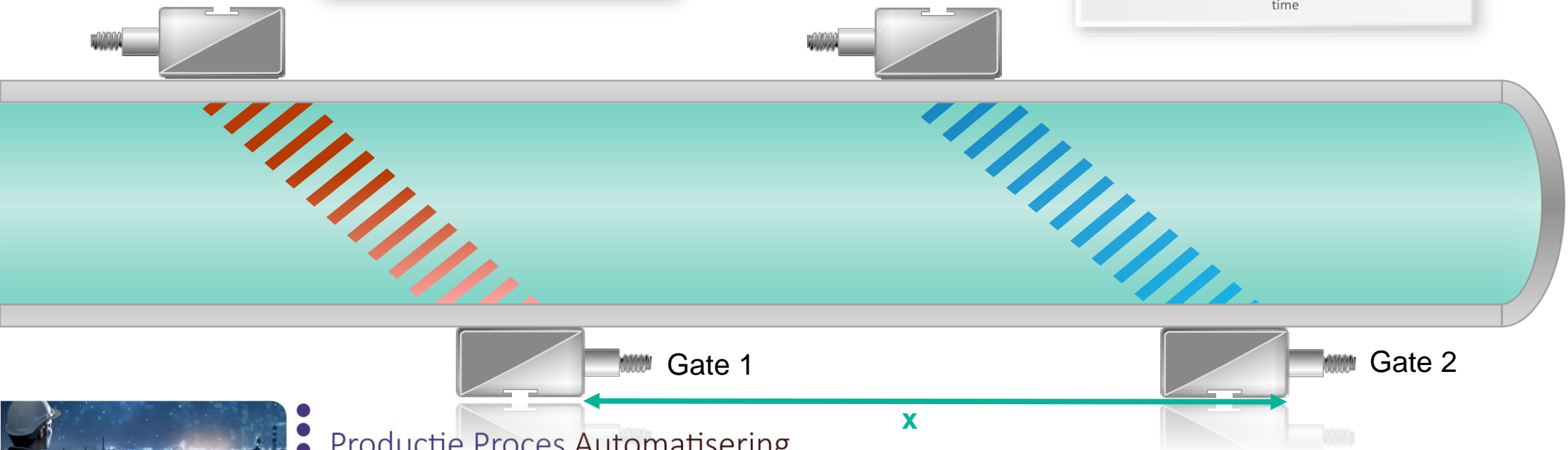
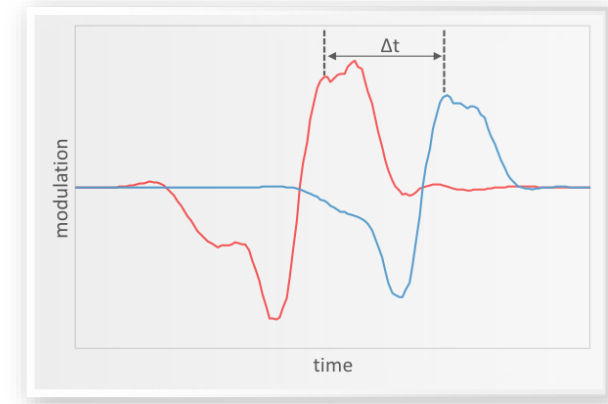
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Meetprincipe: Correlation Flow Measurement



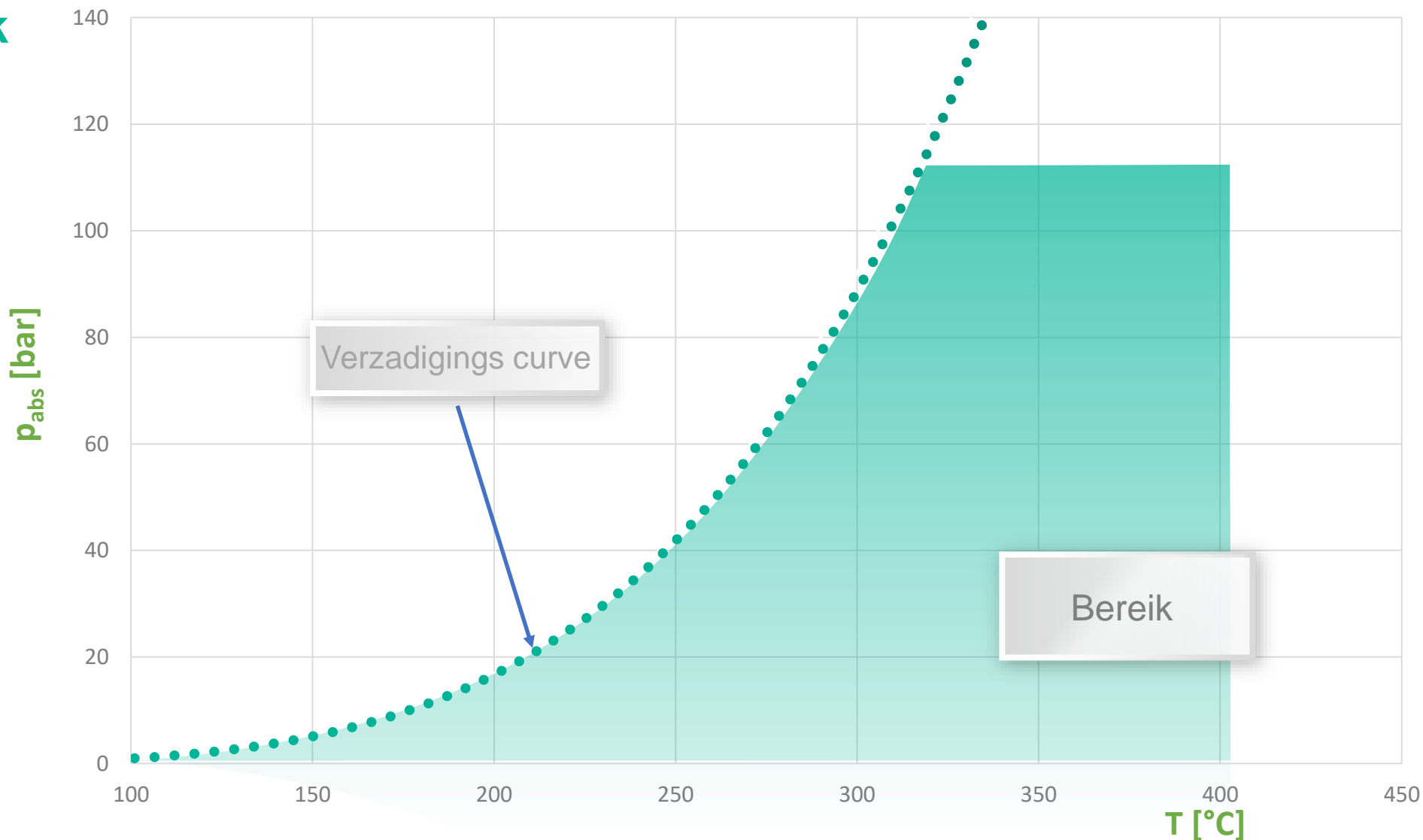
Meetprincipe: Correlation Flow Measurement

$$v = kRe \frac{x}{\Delta t}$$

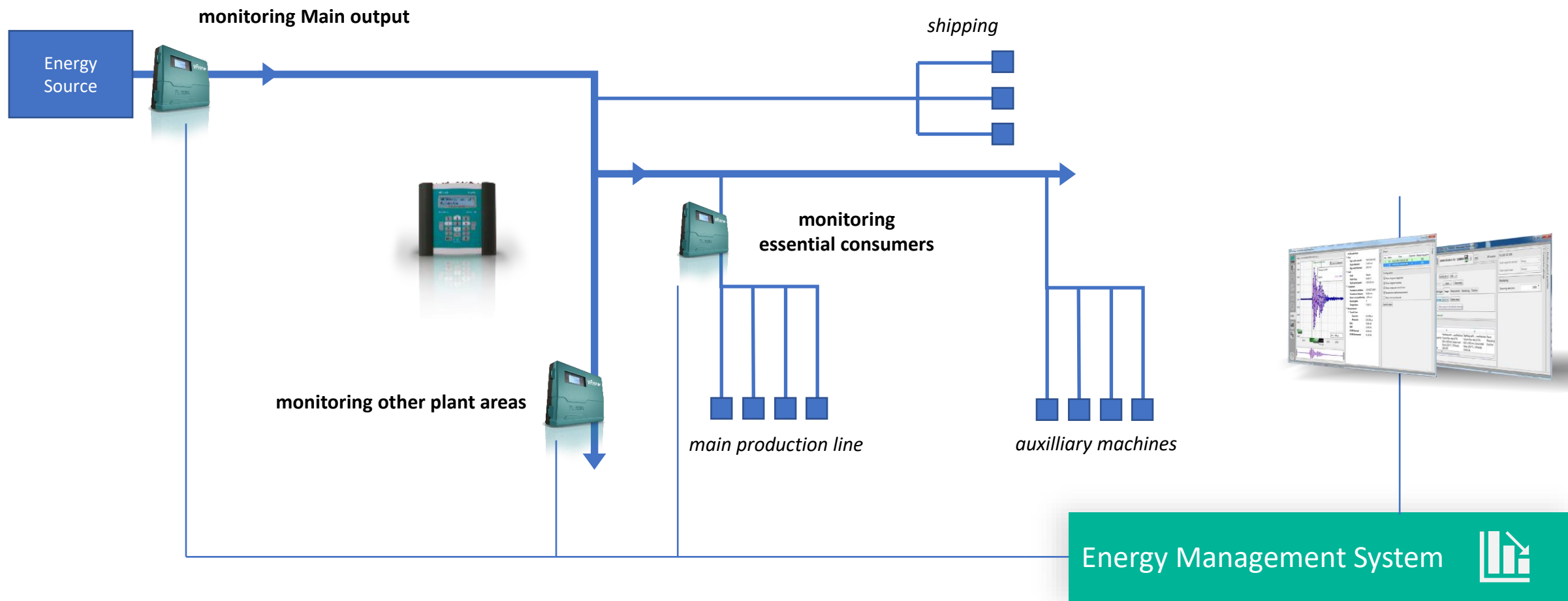


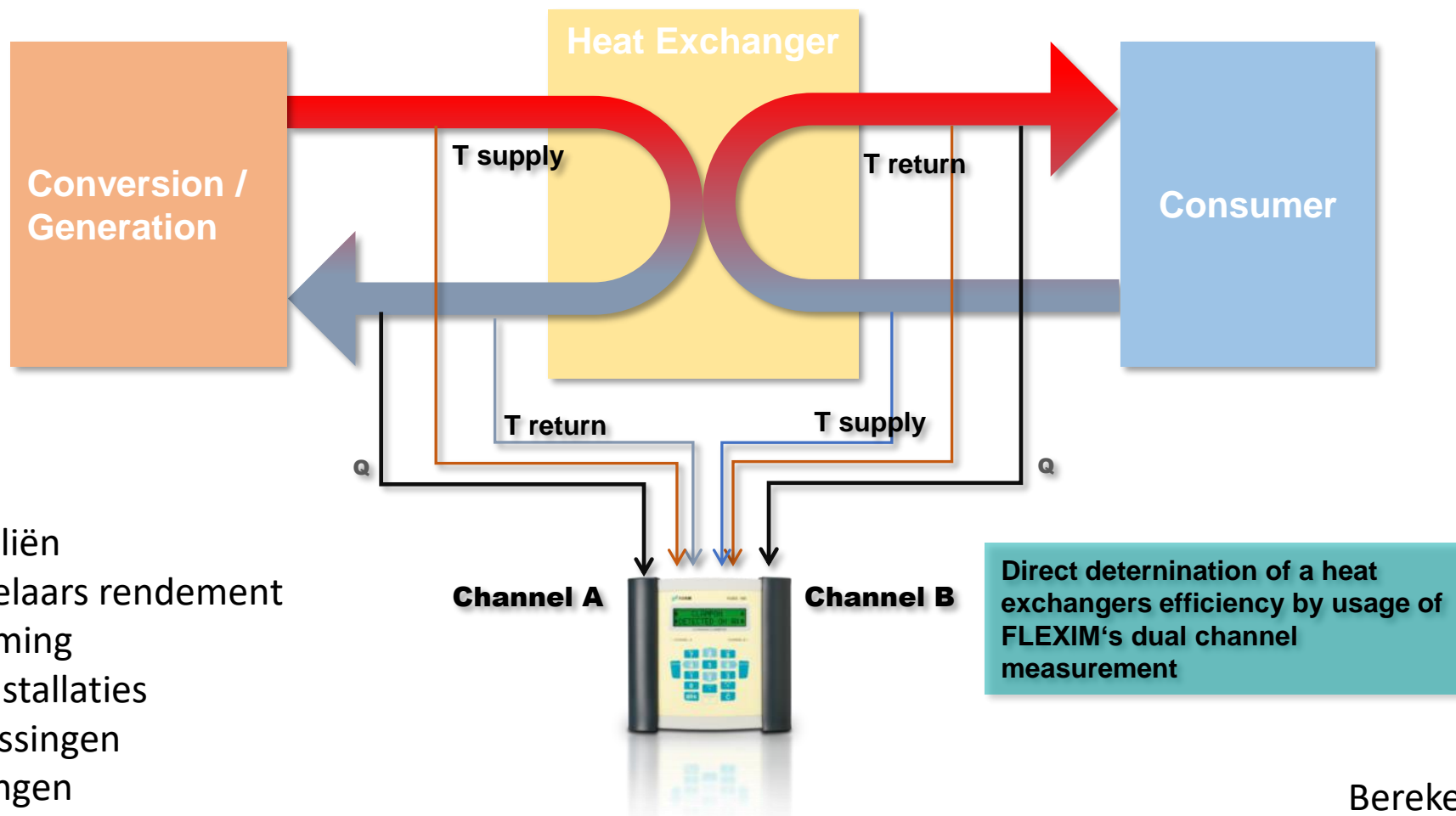
Correlation Flow Measurement (180...630°C)

Applicatiebereik



FLEXIM voor perslucht





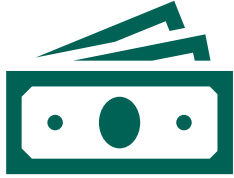
- Thermische oliën
- Warmte wisselaars rendement
- Stads verwarming
- Koel / vries Installaties
- Mobiele oplossingen
- Vaste oplossingen
- Integratie 3rd party

Direct determination of a heat exchangers efficiency by usage of FLEXIM's dual channel measurement

Berekend van 2x flow en 4x temp energie balans MJ/KW



FLEXIM Energy Management Solutions



economic, because flexible energy measuring solutions



only one, accurate, high dynamic measuring principle



quick installation - no shutdown – no disturbance to production



long term stable – drift free – maintenance free



Contact:

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Tel: 0031-621261339



●
● **Productie Proces Automatisering**

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