Can a Heat Exchanger be smart?

From data to intelligence for more efficient geothermal operations

LUCIA SORBINI

The future of heat transfer is **digital**

The next generation of gasketed plate heat exchangers.

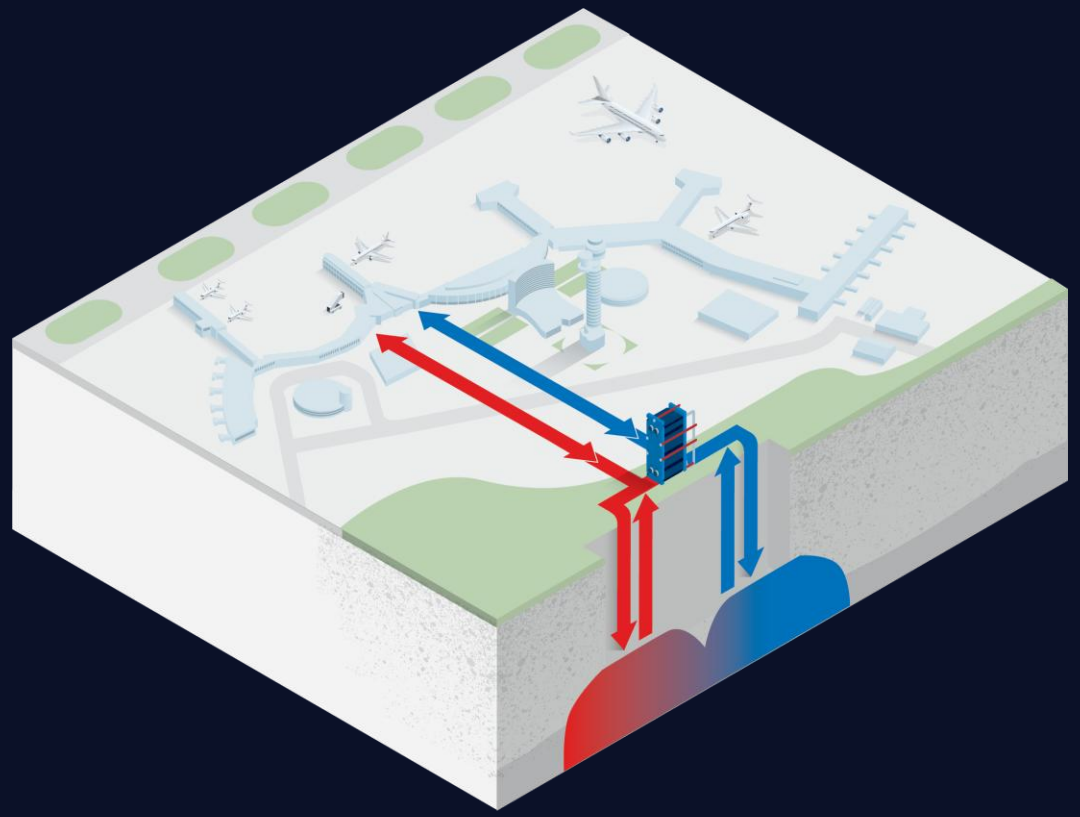
Smart, efficient and always connected

Alfa Laval

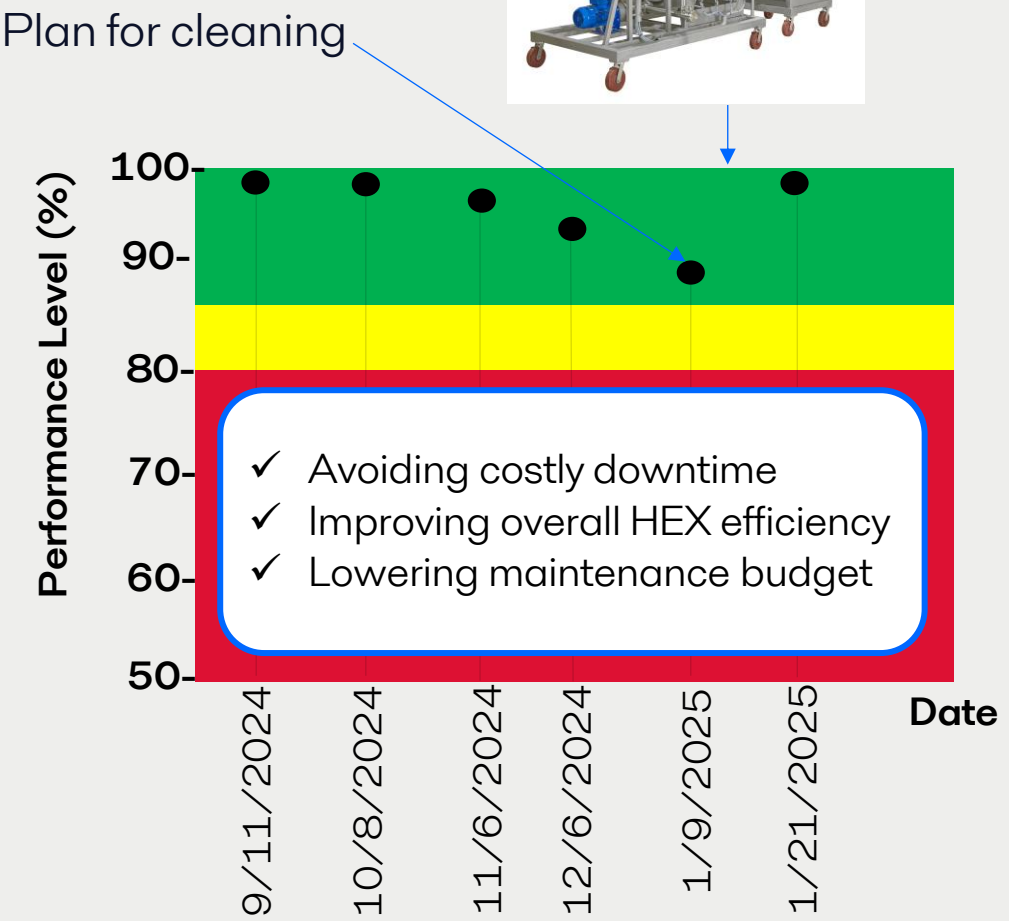
Why Heat Exchanger performance matters

- Less heat transfer
- Lower system efficiency
- Higher energy costs
- Larger environmental footprint

Fouling is heat that cannot be distributed



A heat exchanger can deteriorate without failing

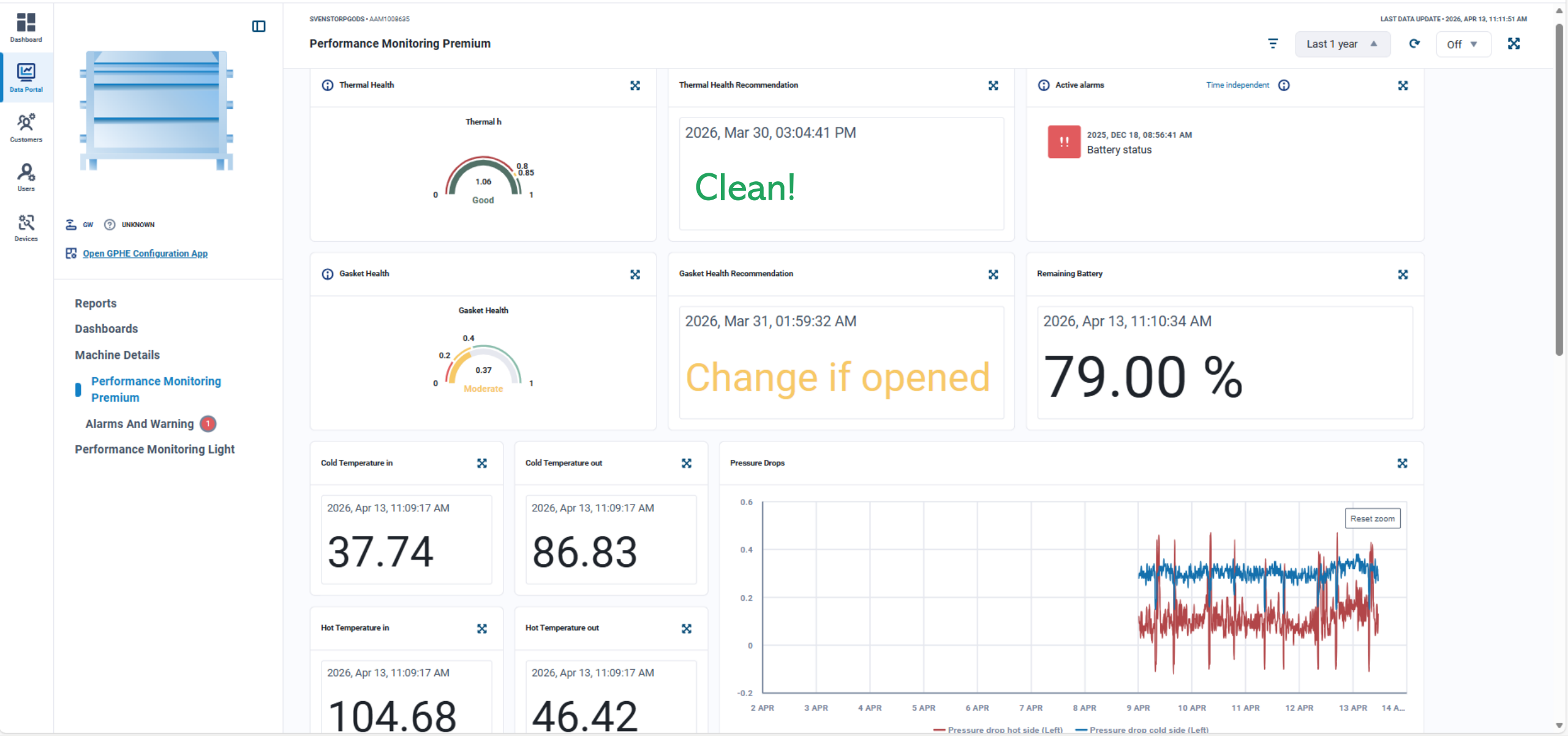


How do we collect data?

Performance intelligence
Turning data into insights and better decisions

	PERFORMANCE MONITORING LIGHT	PERFORMANCE MONITORING PREMIUM	PERFORMANCE ANALYSIS
VALUE	Essential visibility of your GPHE performance	Deeper insights and trends to optimize performance	In depth assessment and expert recommendations
METHOD			**Customer collected data**
ANALYSIS	**Dashboard** Real time overview	**Dashboard** **Personalized Report**	**Regular Report** **Personalized Report**

Aliot Platform

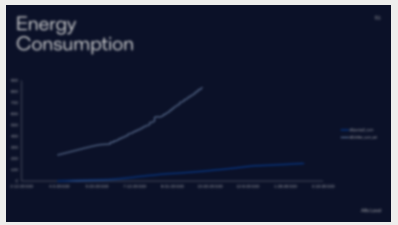


From Data to Intelligence

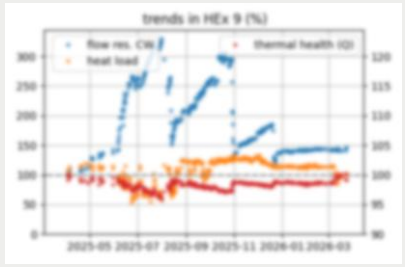
1 Operational data → **2 Alfa Laval combined expertise** → **3 Insights** → **4 Actions**

- Temperatures
- Pressures
- Flows
- Maintenance events
- P&ID drawings

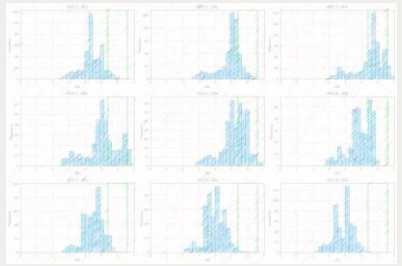
- Service, thermal and analytics experts
- Models and algorithms
- Historical trends



Energy consumption analysis



Thermal Health analysis



Performance analysis

- Visibility
- Data-driven maintenance plan
- Increased uptime
- Optimized cleaning intervals

From fixed time maintenance to conditon based maintenance

By using operational data and performance analysis, we can clean only when the heat exchanger actually needs it.

BEFORE

Fixed-interval cleaning

1 cleaning per month
(June – August)

5-8 hours
out of operation per cleaning

AFTER

Condition-based cleaning

2 cleanings over the summer
(June – August)

5-8 hours
out of operation per cleaning

6 GPHEs

1 cleaning less
Over the summer

30-48 hours
Total downtime saved

Improved energy efficiency

What would you like to know from your heat exchanger data?

HEAT DELIVERY

- Heat tranfer
- Performance
- Temperatures

OPERATIONAL EFFICIENCY

- Pressure drops
- Pumping energy usage
- Fouling

MAINTENANCE PLANNING

- When should I clean?
- How should I clean?
- Can I avoid cleaning?

A smarter way to manage heat exchanger performance

Do you have any experience with Heat Exchanger maintenance?

TODAY

Run to failure or clean at fixed intervals

Limited insight. Higher risk of unnecessary maintenance or unexpected downtime.

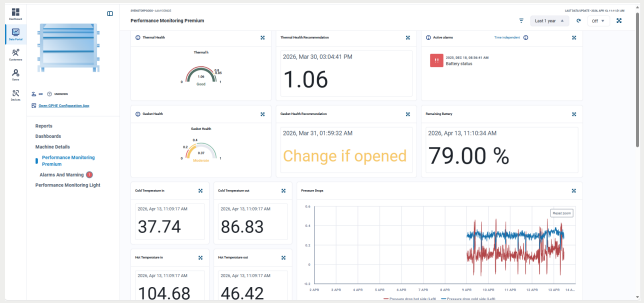
Run to failure

Fixed intervals

WITH DATA

See what is happening

Continuous data gives us a real picture of the heat exchanger´s performance.



THE OPPORTUNITY

Condition-based planning

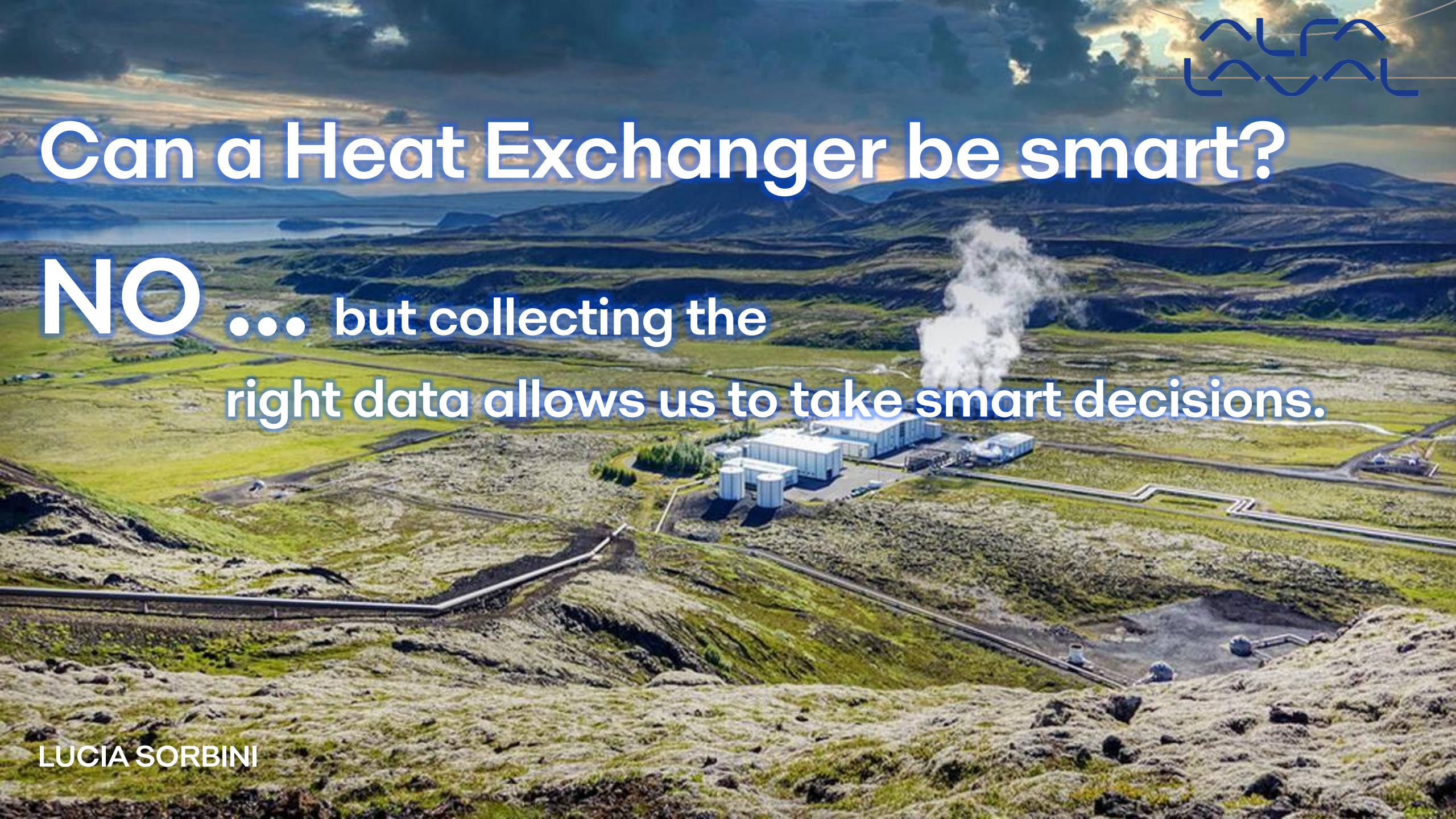
Act when it´s needed not just when it´s scheduled.

MONITOR
Track performance and identify changes early

ANALYSE
Understand the cause

RECOMMEND
The right action at the right time

IMPROVE
Higher efficiecny, lower costs, better reliability


Can a Heat Exchanger be smart?
NO ... but collecting the
right data allows us to take smart decisions.
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