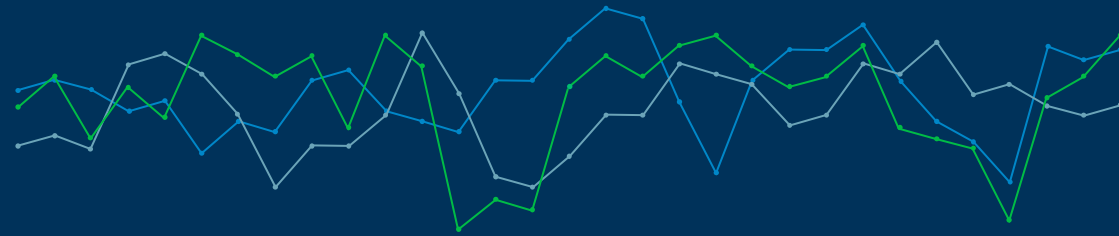


# SENSORFACT

“Smart sustainability platform”



PRESENTATION BEL Groep June 6, 2024

# Introduction

Sensorfact has developed a smart sustainability platform for the industry.

**2016**

Founded in

**2500+**

(100% YoY growth)  
customers

**100+**

Countries

**300+**

Employees



**DURACELL**

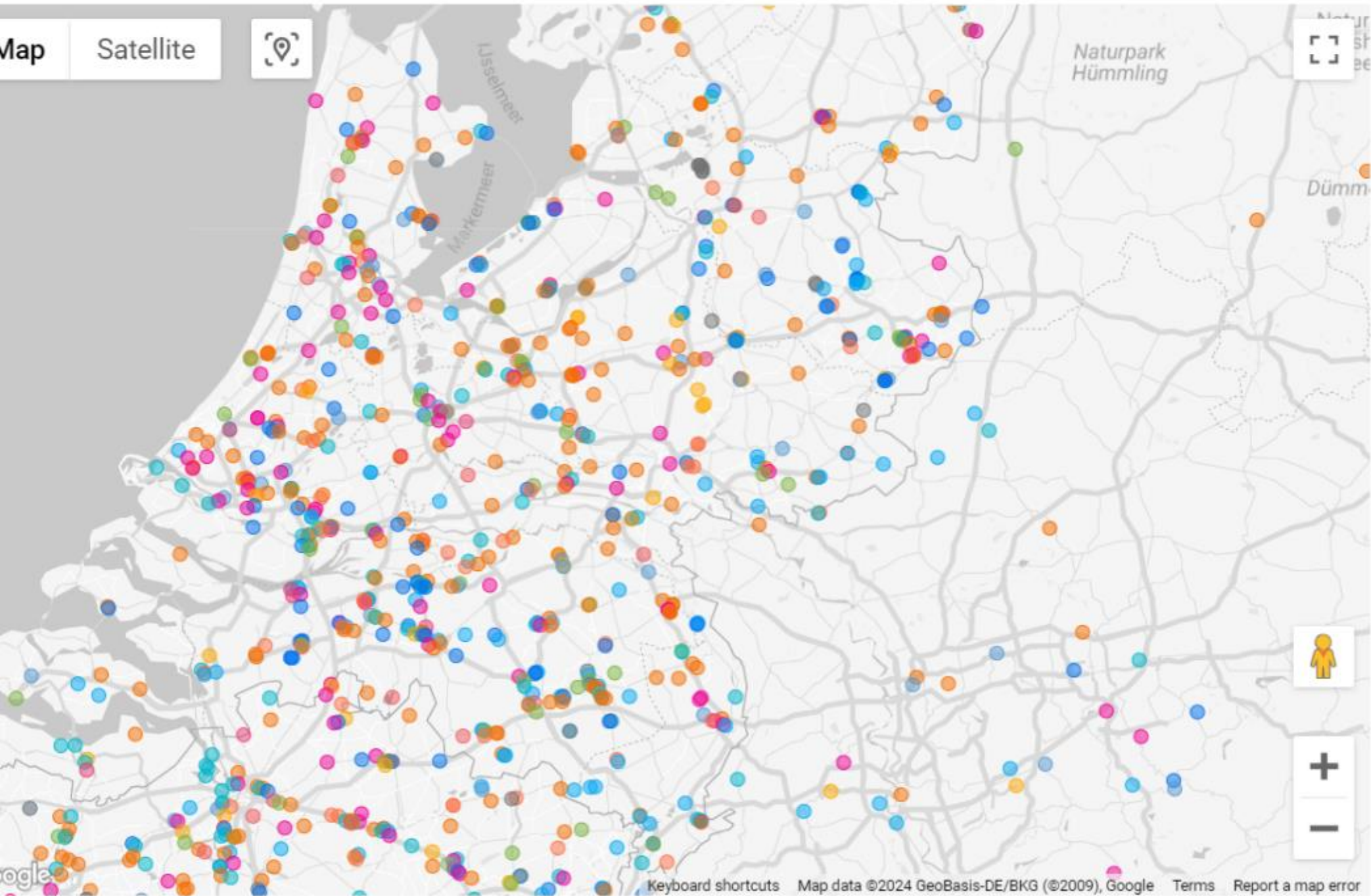


**SUDAL**



**Berry** | PET Power





# Strategic context | Vision, Mission, Ambition

## **VISION**

Reduce the human  
environmental  
footprint...

## **MISSION**

... by eliminating all  
waste in the  
industry...

## **AMBITION**

... by becoming the  
leading  
sustainability  
platform for  
industrial  
companies  
globally

# Strategic context | “Eliminate all waste in the industry”



## WASTE PILLARS IN THE INDUSTRY



**High  
Utility Costs**



**Machine Health**



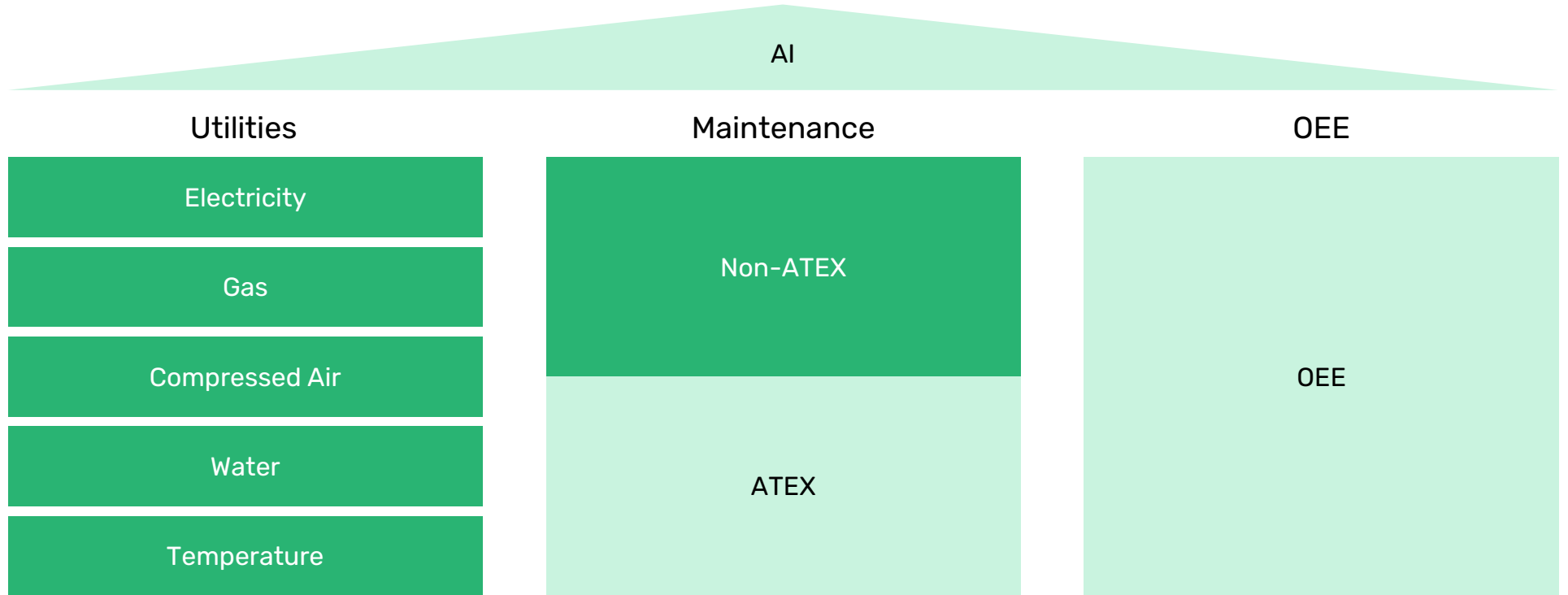
**Production  
Effectiveness**

# Our product vision and strategy

Product vision

The simple, smart, all-in-one insights platform for manufacturing companies

Our products



Our unique capabilities

Simple to use

Smart: AI-driven

All-in-one

Affordable

**SENSORFACT**

# Energy Monitoring System

Measuring **Made Easy**



# Solution

## HARDWARE

Huidig

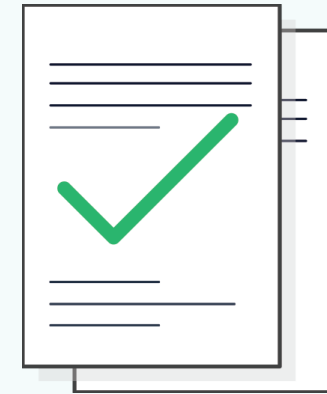


## SOFTWARE

VV7



## ADVICE



1

Wireless Click Sensors

2

Smart software  
using algorithms

3

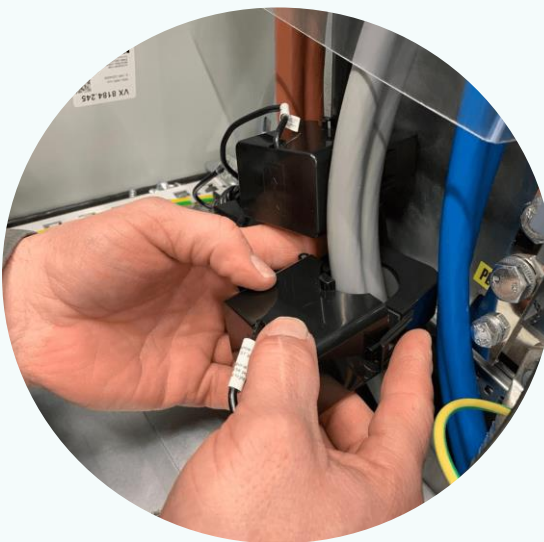
Advice from our  
energy consultants

# Plug and Play

**SENSORS**

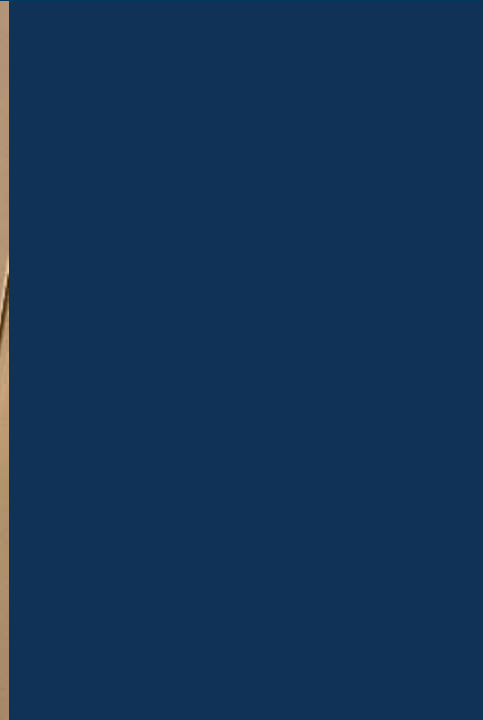


**INSTALLATION**



**BRIDGE**

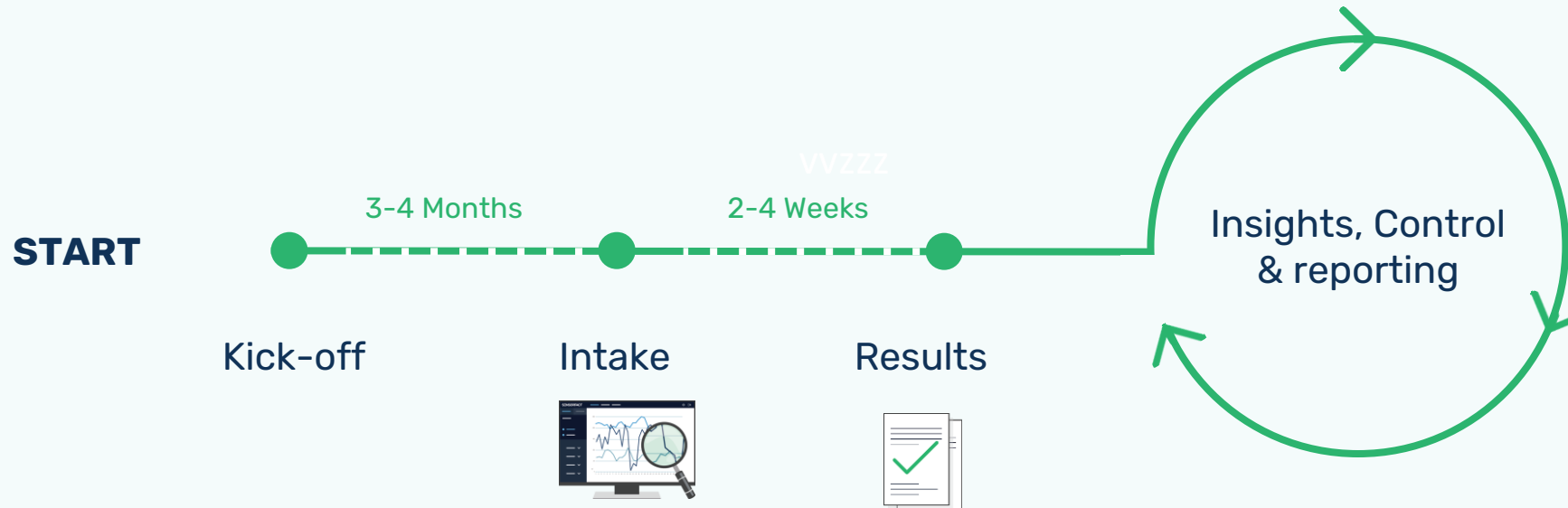




# Energy Consultancy

## How do we work?

- 3 meetings
- 20 hours data analysis
- Advisory report



# 1. Energy waste during/outside production



**Saving**  
€14,562 a  
year



**Saving**  
€1,385 a  
year

MACHINE GROUP

Power Energy Energy balance

< 3 Jun 24 / 9 Jun 24 > Export

Animal Feed

Deselect all

- Blower 2
- Blower 3
- Compressor
- Cooling fan 1
- Cooling fan 2
- Hammermill
- Hammermill fan
- Mixer 1
- Mixer 2
- Press

Aviation

Bakery

Brewery

Building Materials and Industry

Chemicals

Cool/Freeze Industry

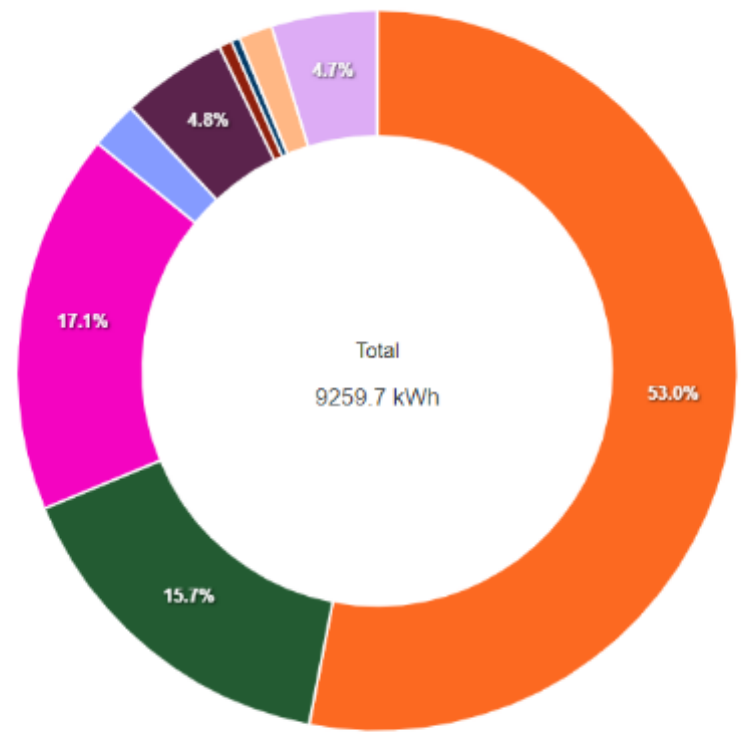
Extrusion

**i** We've just released a new feature. You can compare two periods in one view.

Start to compare periods X

Energy balance (kWh) 03 Jun 2024, 00:00 - 09 Jun 2024, 23:59

Display kWh €



Legend: Hammermill, Cooling fan 1, Hammermill fan, Mixer 1, Cooling fan 2, Blower 3, Mixer 2, Compressor, Blower 2

**SENSORFACT**

# Smart Condition Monitoring

Predictive Maintenance *Made Easy*



# Maximising Uptime



## Reduce unplanned downtime

- 5-20% Less productivity per year (on average)
- > 20% higher costs (reparation, stock, energy)
- Stressful and dangerous (exploding machine)

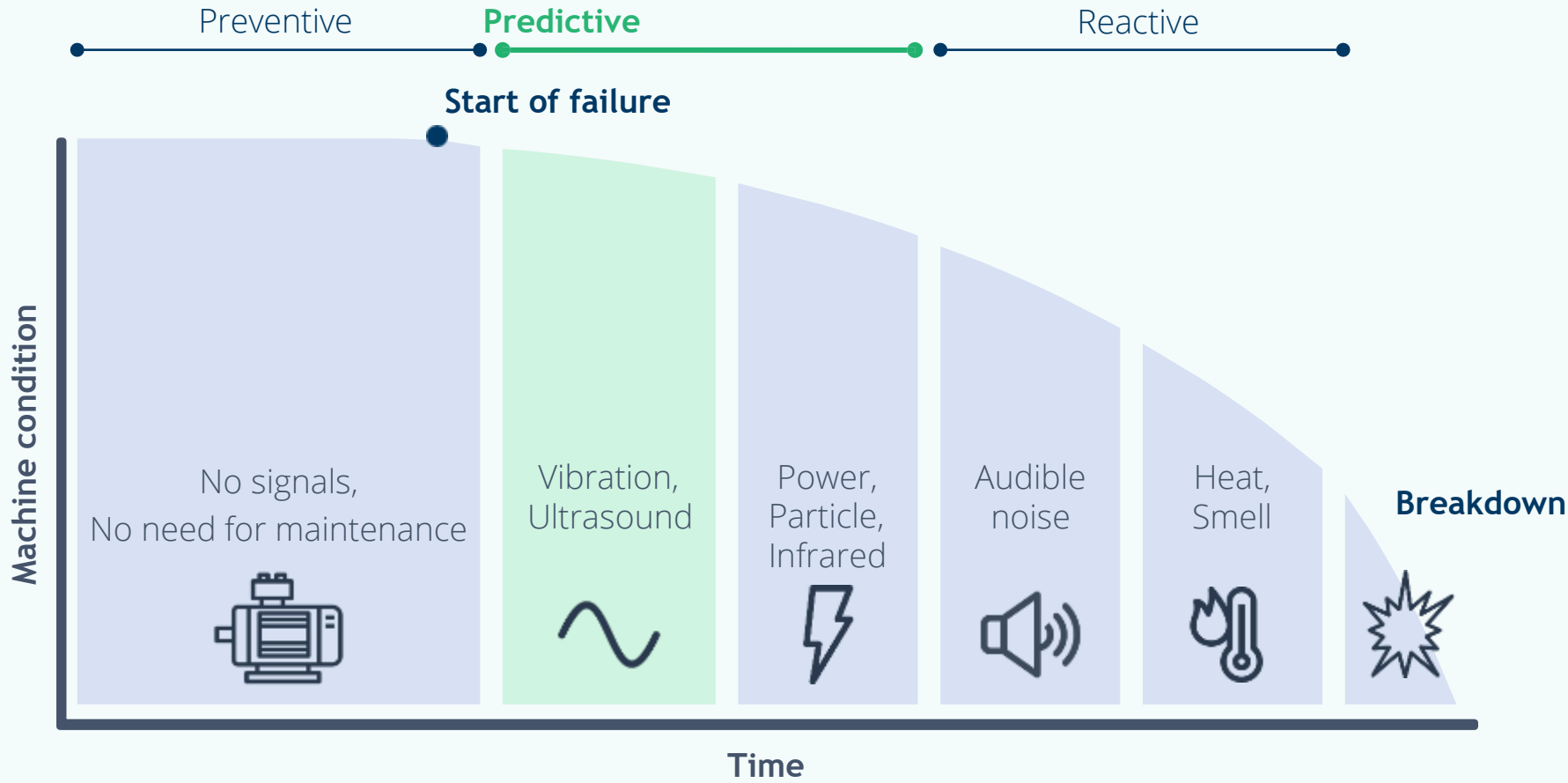


## Reduce planned maintenance

- Maintenance is often not (yet) needed
- More effective use of maintenance budget
- Extend the healthy lifetime of your assets

# Predictive Maintenance • How can we prevent unnecessary breakdowns?

## Machine breakdown process



## Solution

Our easy-to-install hardware has high-end specs at low costs



Tri-axial acceleration meter (0-12kHz detection\*)



Temperature meter



Magnetometer for RPM detection



WiFi connection for large data transfers



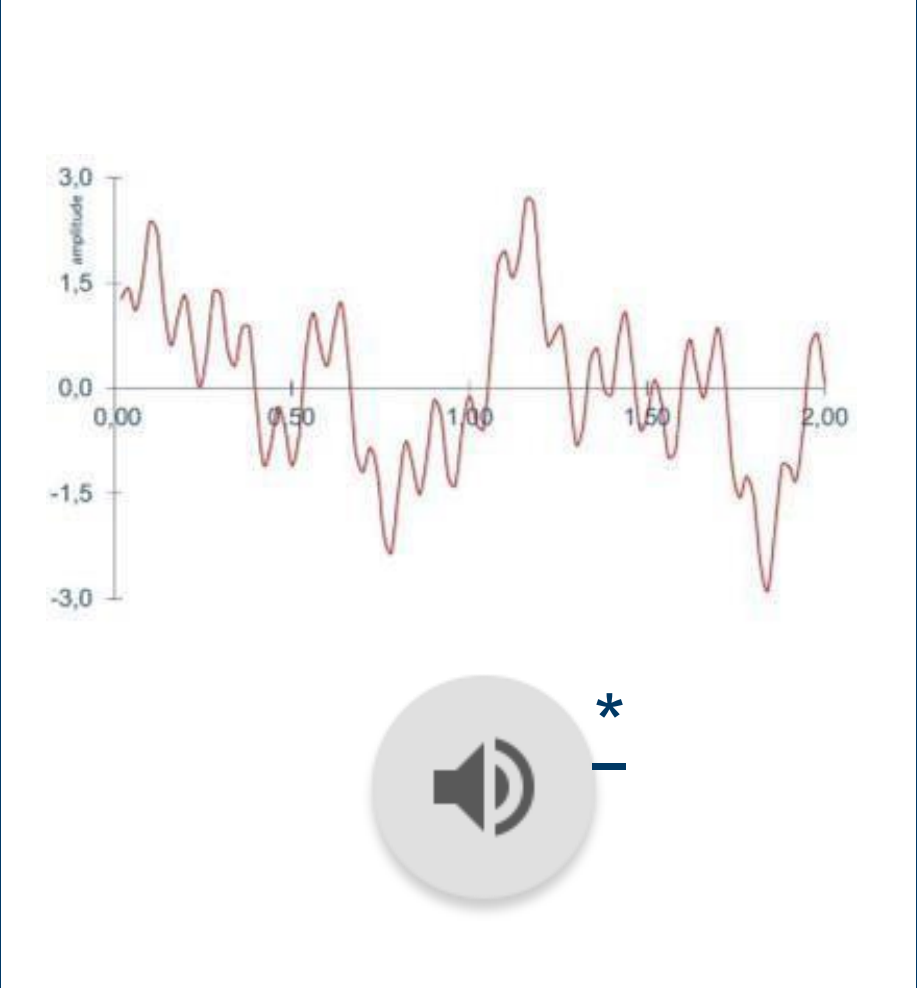
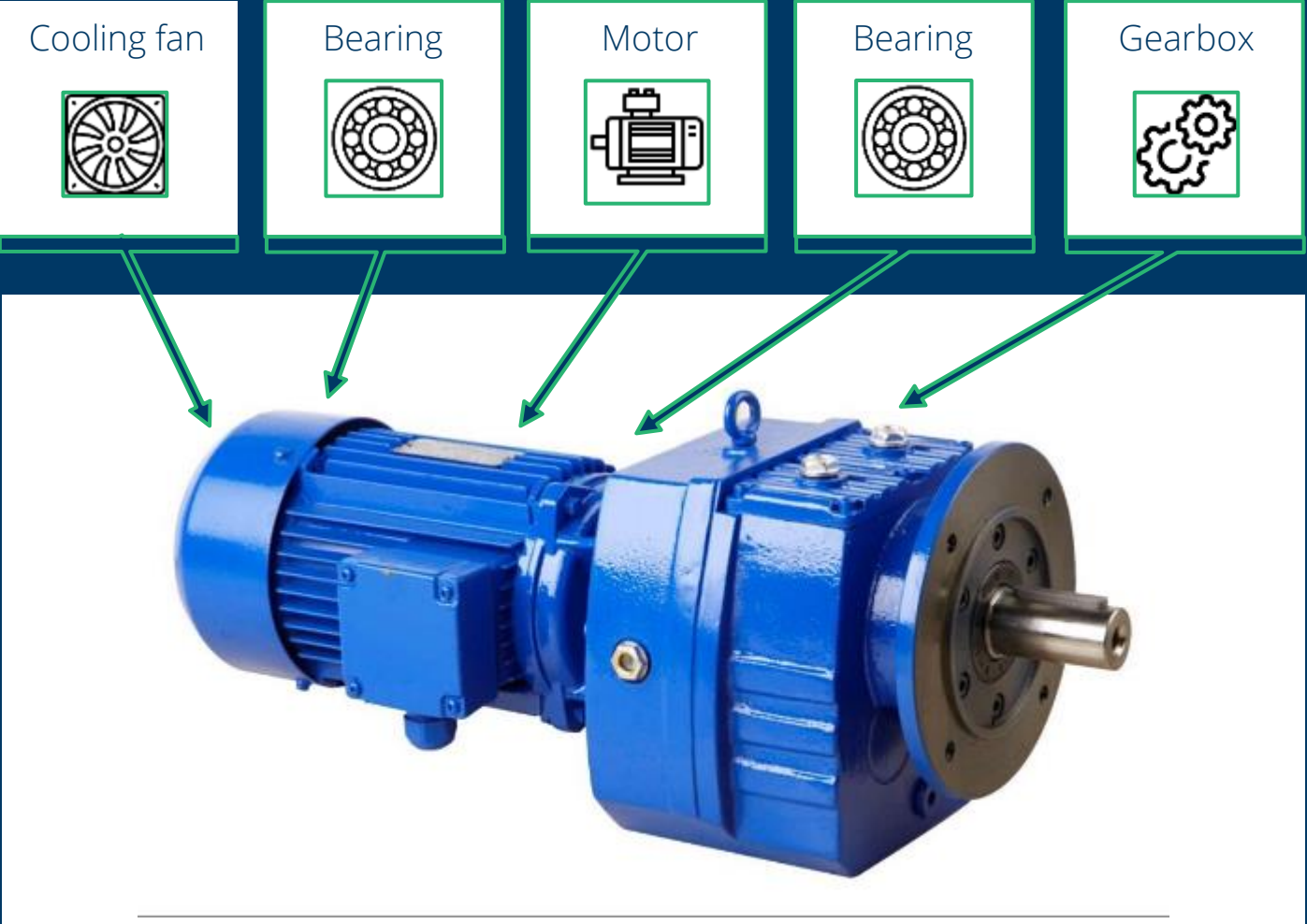
Easy installation with magnet & M8 connector



Water & Dust proof (IP67)

\*0-6kHz cleanly, 6-12kHz digitally enhanced

# Defects • Sound & Vibrating Parts



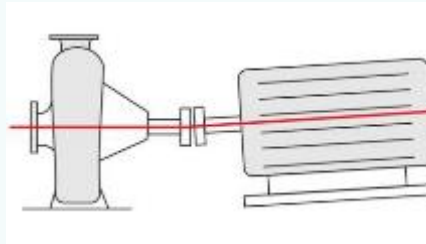
# A first step is to distinguish standard vibration patterns

Low-frequency:  
Velocity RMS

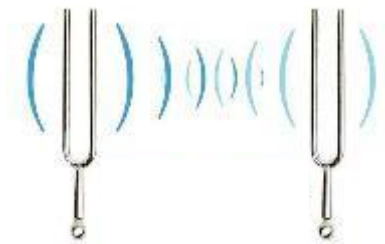
Unbalance



Misalignment



Resonance



High-frequency:  
Acceleration RMS

Gearbox wear



Bearing problems



Cavitation



🏠 Asset Overview

🏭 Production Line

🔧 Pulling Engine ▾

🏭 Water pumps

🔧 Water Pump A ▲

🔊 DE Bearing

🔧 Water Pump B ▲

🔊 DE Bearing

🏭 Hydraulic System

🔧 Motor hydraulic pump ▾

🏭 Extruder System

🔧 Motor with VSD ▾

🏭 Grinder

🔧 Grinder Motor ▾

All assets

🔍 Search by asset or measuring point

Sort by **Status** ▾

<p>Water Pump B   DE Bearing 🔔</p> <p>🔊 Vibration Status</p> <p>● ● ● ●</p> <p>Last updated: today at 10:03</p>	<p>Pulling Engine   Motor fin 🔔</p> <p>🔊 Vibration Status</p> <p>● ● ● ●</p> <p>Last updated: today at 10:05</p>	<p>Motor hydraulic pump   DE Bearing 🔔</p> <p>🔊 Vibration Status</p> <p>● ● ● ●</p> <p>Last updated: 14/09/2023</p> <p>🚫 Offline</p>	<p>Motor hydraulic pump   Motor fin 🔔</p> <p>🔊 Vibration Status</p> <p>● ● ● ●</p> <p>Last updated: 13/09/2023</p> <p>🚫 Offline</p>
<p>Motor with VSD   Motor fin 🔔</p> <p>🔊 Vibration Status</p> <p>● ● ● ●</p> <p>Last updated: today at 10:07</p>	<p>Grinder Motor   DE Bearing 🔔</p> <p>🔊 Vibration Status</p> <p>● ● ● ●</p> <p>Last updated: 08/05/2024</p> <p>🚫 Offline</p>	<p>Water Pump A   DE Bearing 🔔</p> <p>🔊 Vibration Status</p> <p>● ● ● ●</p> <p>Last updated: today at 10:03</p>	

**SENSORFACT**

# Compressed Air Monitoring

Air Efficiency *Made Easy*



# Maximizing compressed air efficiency



## The problem

Compressors **large energy consumers**

**Insufficient insight** in where air is going

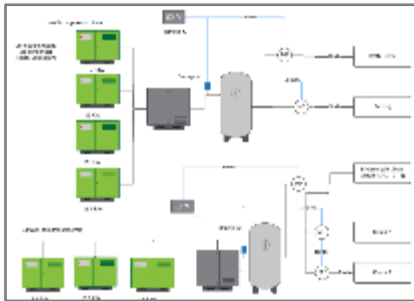
**Leakages occur** but unsure when & where

## The solution

	<b>Insight</b>		Consumption per line
	<b>Leakage detection</b>		Automated alerts
	<b>Advice</b>		Custom advice

# Technical Assessment & Installation

## Determine sensor location



## Connect to piping system

Installation under pressure possible if  
Sensorfact installs sensors



## Install sensors, start measuring & saving



Close sidebar <<

System 1 ^

ng

m

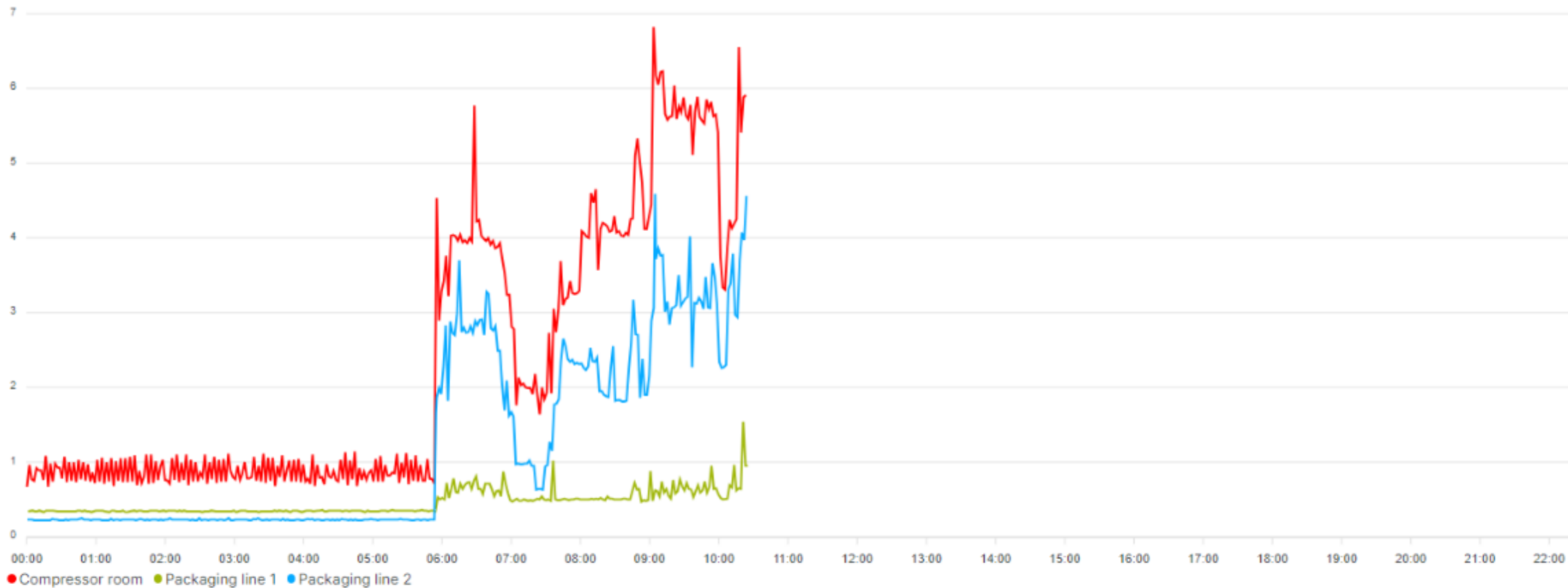
ing room

2

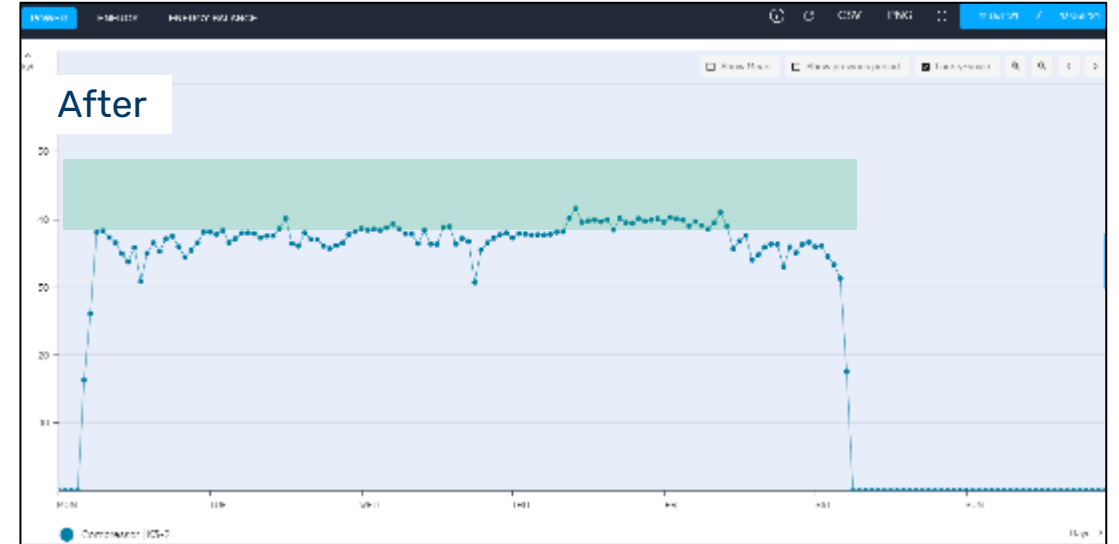
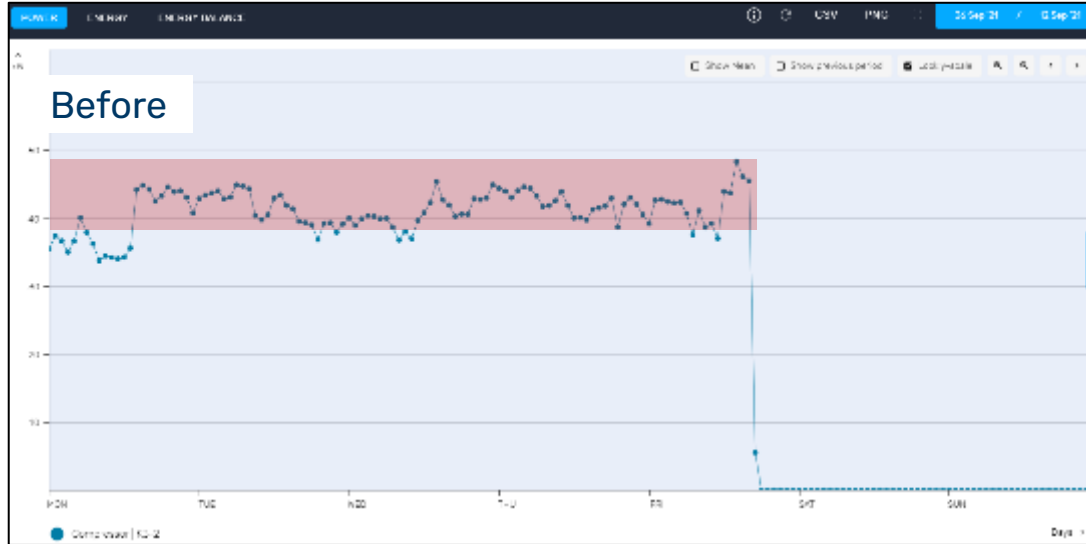
1

### Compressed Air Flow (m<sup>3</sup>/min) ⓘ

📈 Display m<sup>3</sup>/min cfm



# Pressure reduction

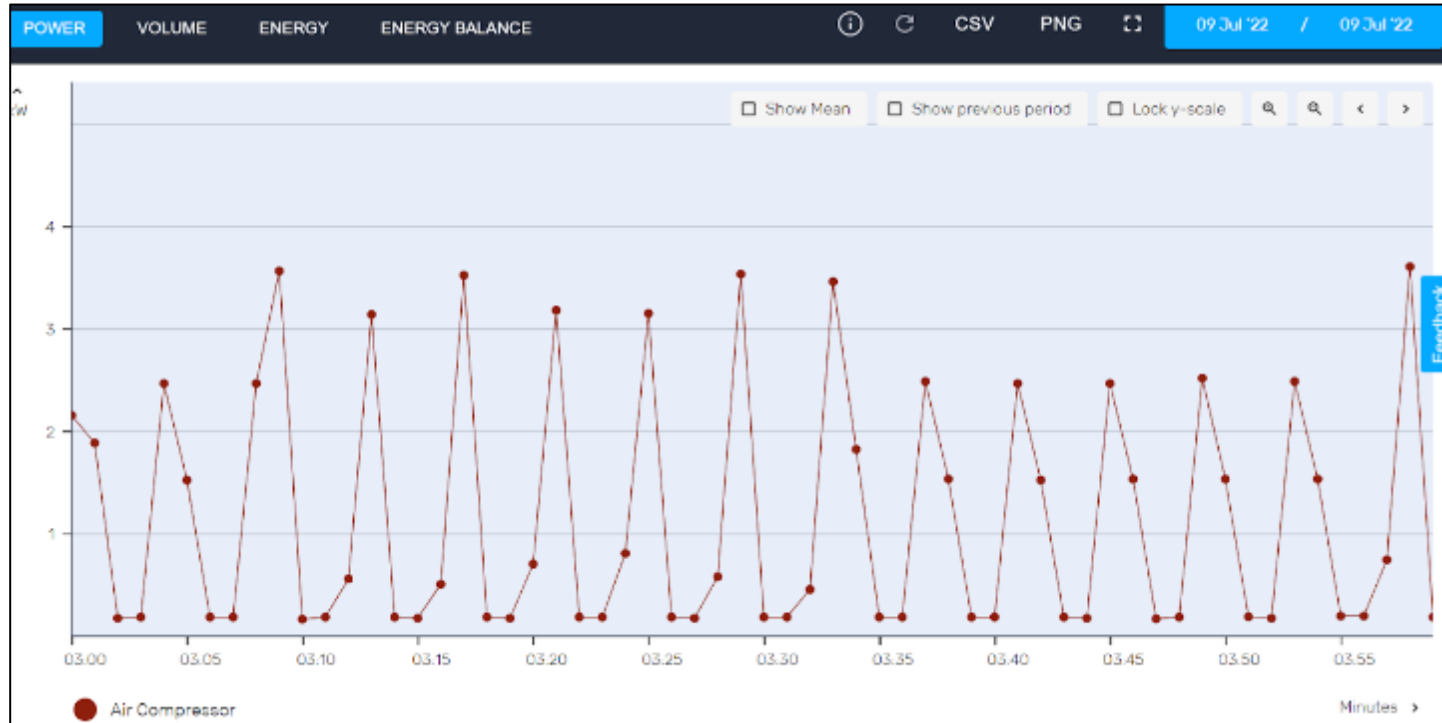


## Saving opportunity

Reduction of 0.2 bar  
Variable energy price: €88.61/MWh  
Yearly savings: 31.4 MWh  
 $€88.61 * 31.4 \text{ MWh} = €2,763$

Savings  
€2,763

## Compressed air leakage



Peaks in the energy consumption of air compressors outside production hours can indicate compressed air leakages.

**Saving**  
€5,862 a  
year

## Most found savings

- 1 Energy waste during/outside production
- 2 Compressed air leakages
- 3 Pressure reduction
- 4 Insulation of plastic molding machines

**SENSORFACT**

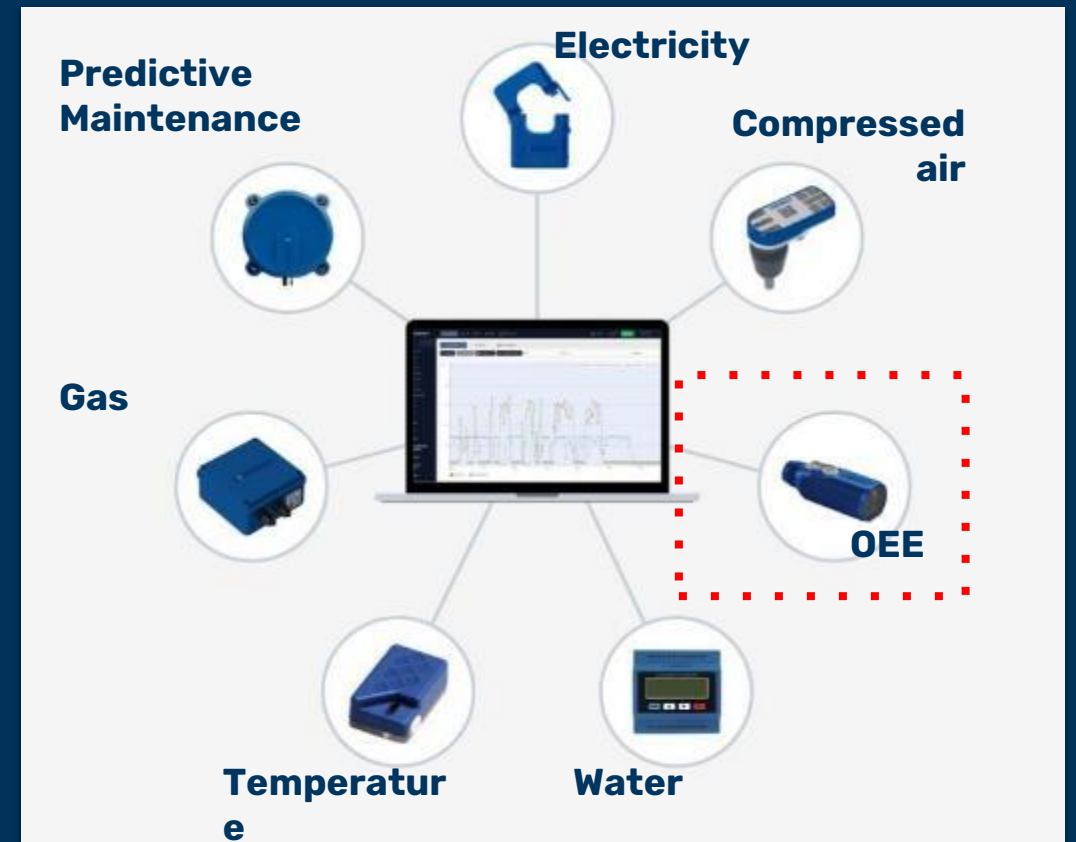
# OEE Analytics

Production Optimisation *Made Easy*



# Our platform

A complete, intelligent IoT platform for all measurement needs



# All-in-one solution

## SENSORS

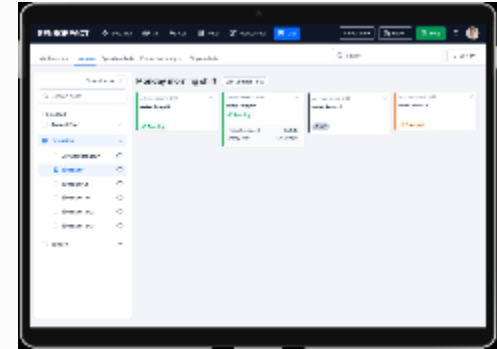
Huidin



## GATEWAY



## SOFTWARE



1

Easy to install and wireless

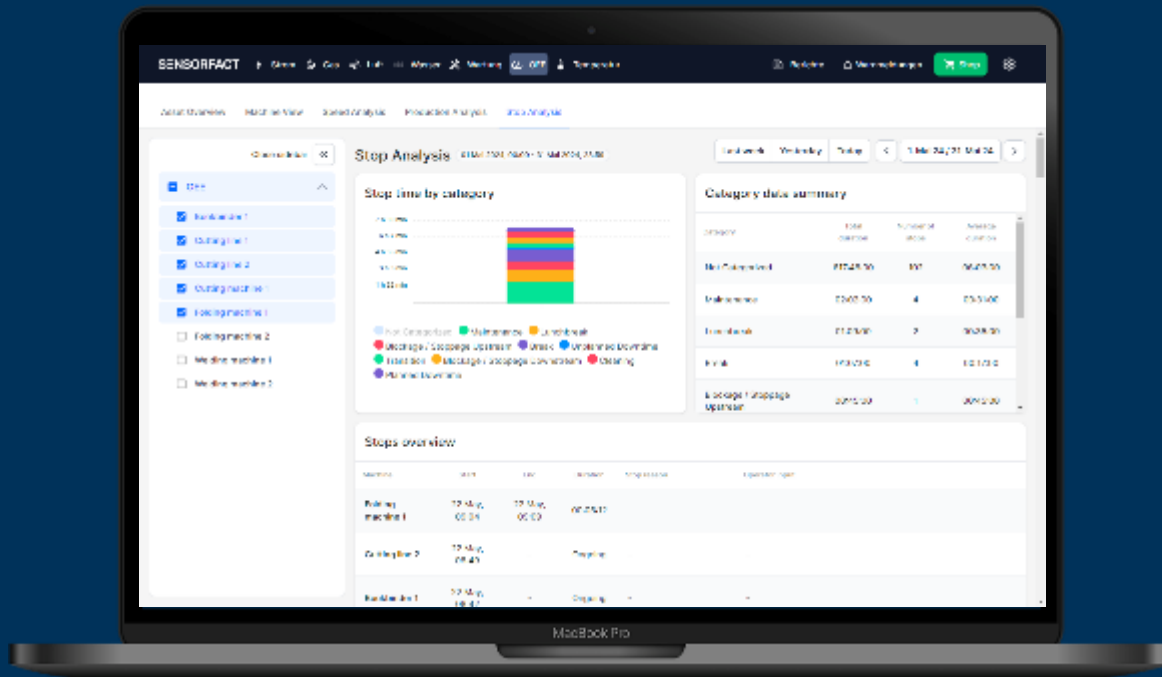
2

Real-time data transmission to the platform

3

Intuitive software with dashboards & alerts

# Our software at a glance



**Simple installation**  
(no integration with PLCs required)

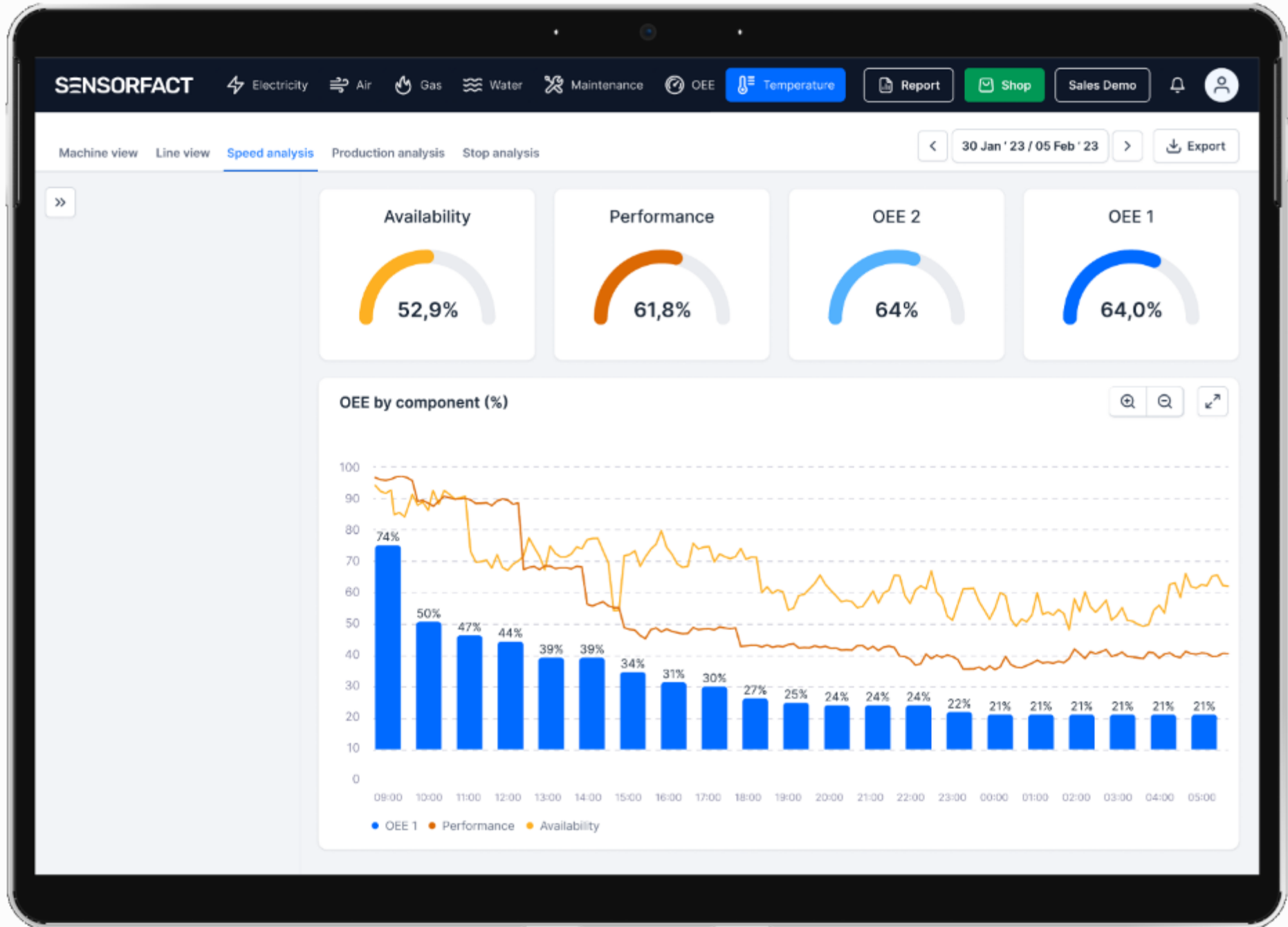


**Real-time data in intelligent software**

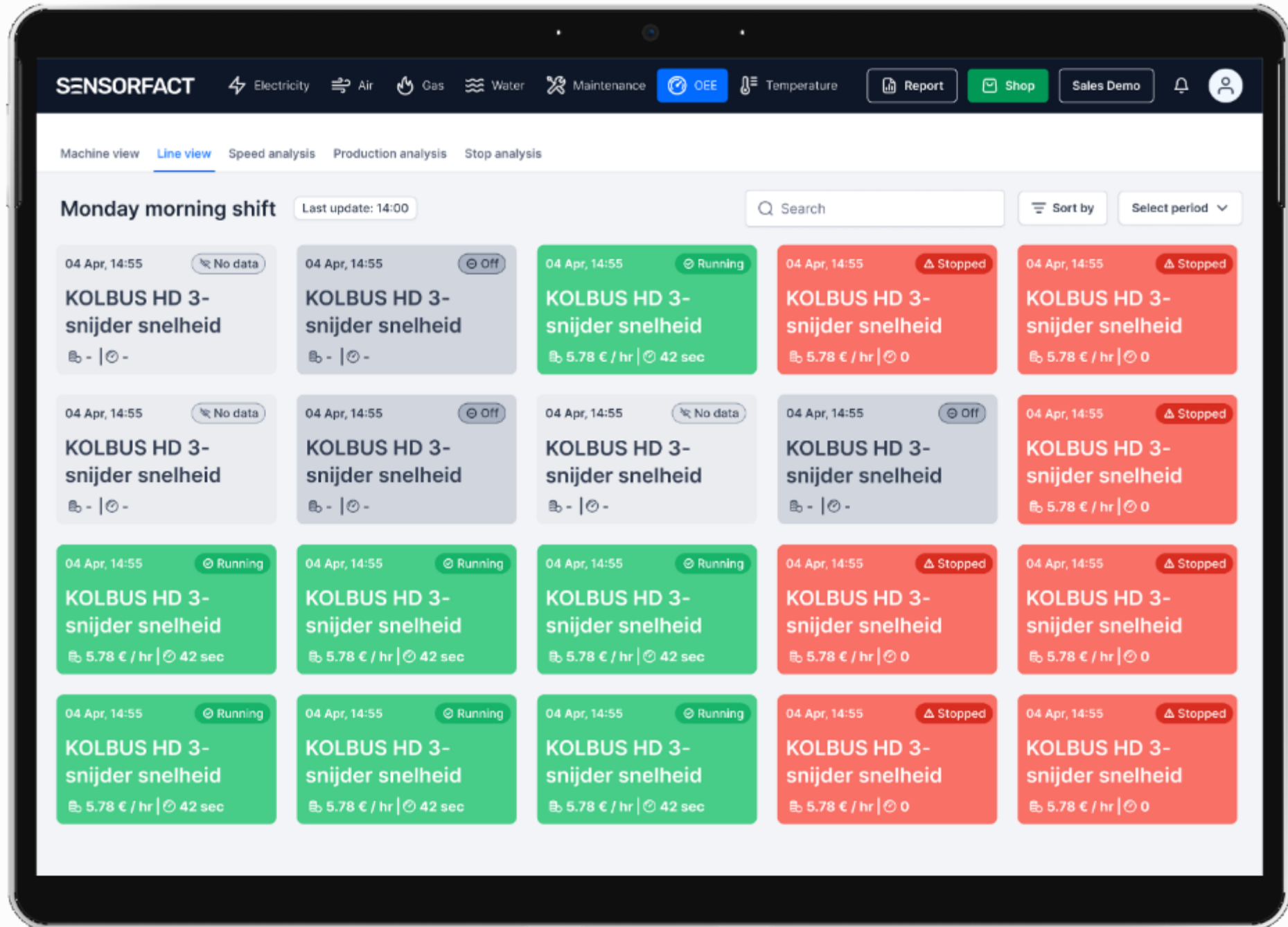


**Can be combined with energy data**  
(for energy/kg & CO2 calculation)

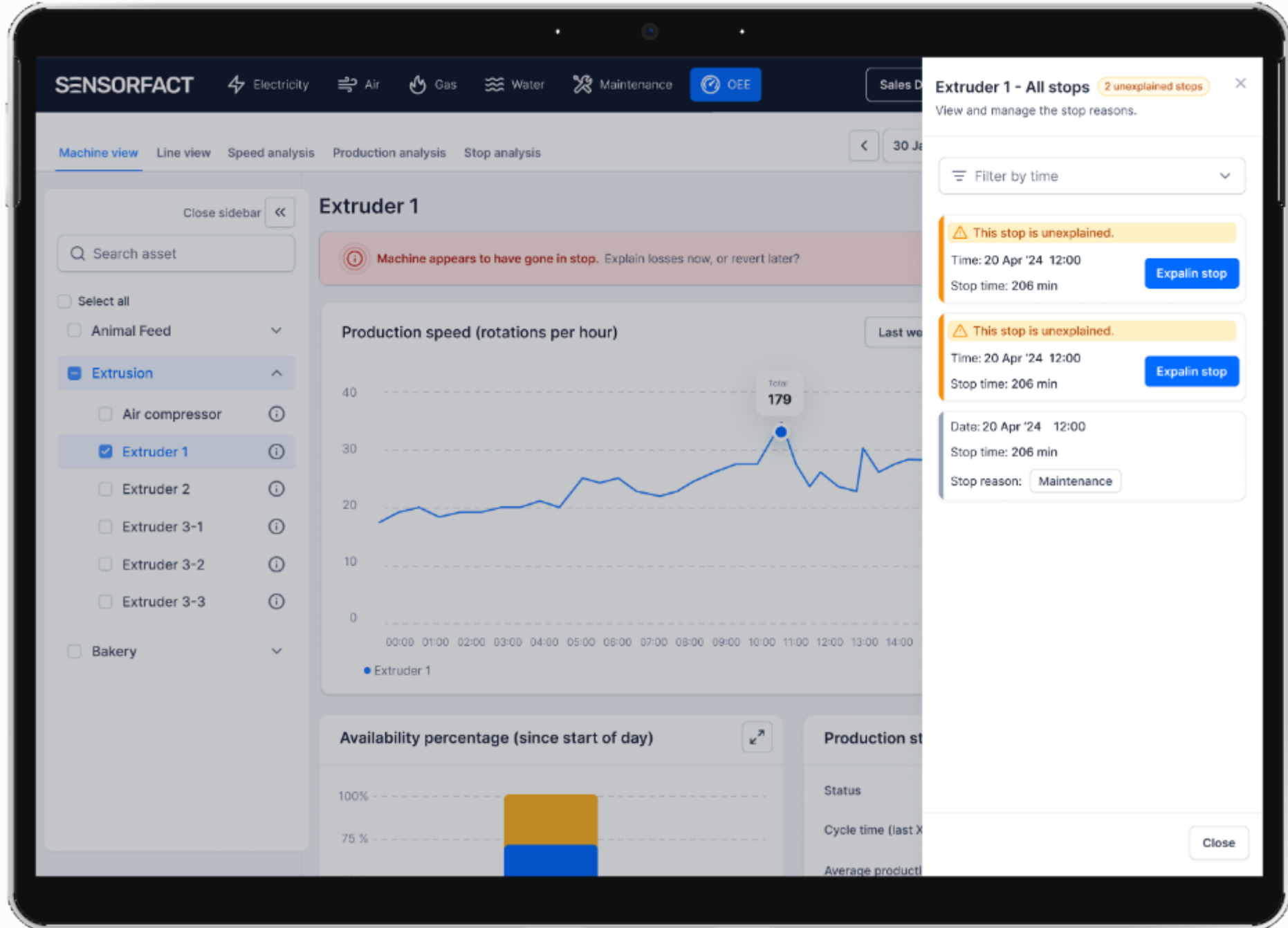
# Real-time insights into availability and performance



# Real-time insight into the status of your production



# Receive stop notifications



# Record stop causes

Machine dashboard - Extruder 1

Status machine ⊖ Stopped

Stop reason

Cutting dies  Downtime  Lack of material

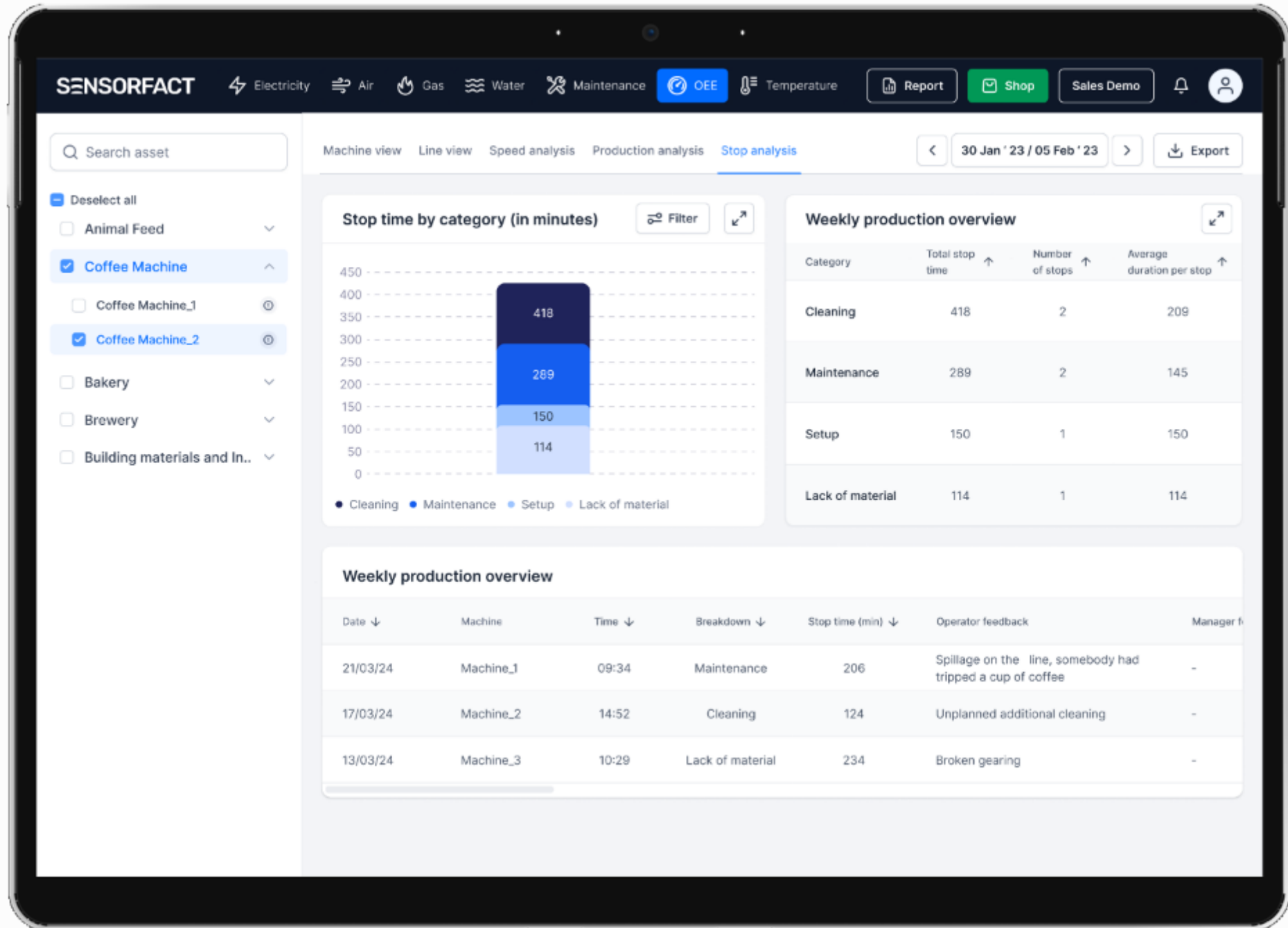
Setup  Cleaning  Other issues

Date  Current stop time

Operator input


Please provide input

# Insights into the most common causes of machine failures






## Optimize your production

- ✔ OEE: Measure speed, production numbers, waste, standstill time and standstill reason.
  - ✔ Translate these insights into concrete next steps to streamline and optimize your production.
  - ✔ Integrate data from alternative systems (such as your ERP) into the analysis.
  - ✔ Integrate PLC data – for example overfill
- 



Integrate with other Sensorfact propositions /  
platform advantages Some examples:

- ✔ Measure environmental impact (Co2) per order/batch/shift/time etc  
Measure energy costs per order/batch/shift/time etc
  - ✔ Impact reducing compressed air with x% on production and OEE
  - ✔ Impact smart conditioning monitoring on OEE – % OEE increase,  
decreasing planned and unplanned stops
- 



**SENSORFACT**

## Contact personen

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06-19092577