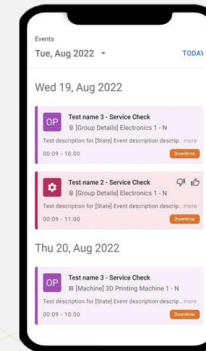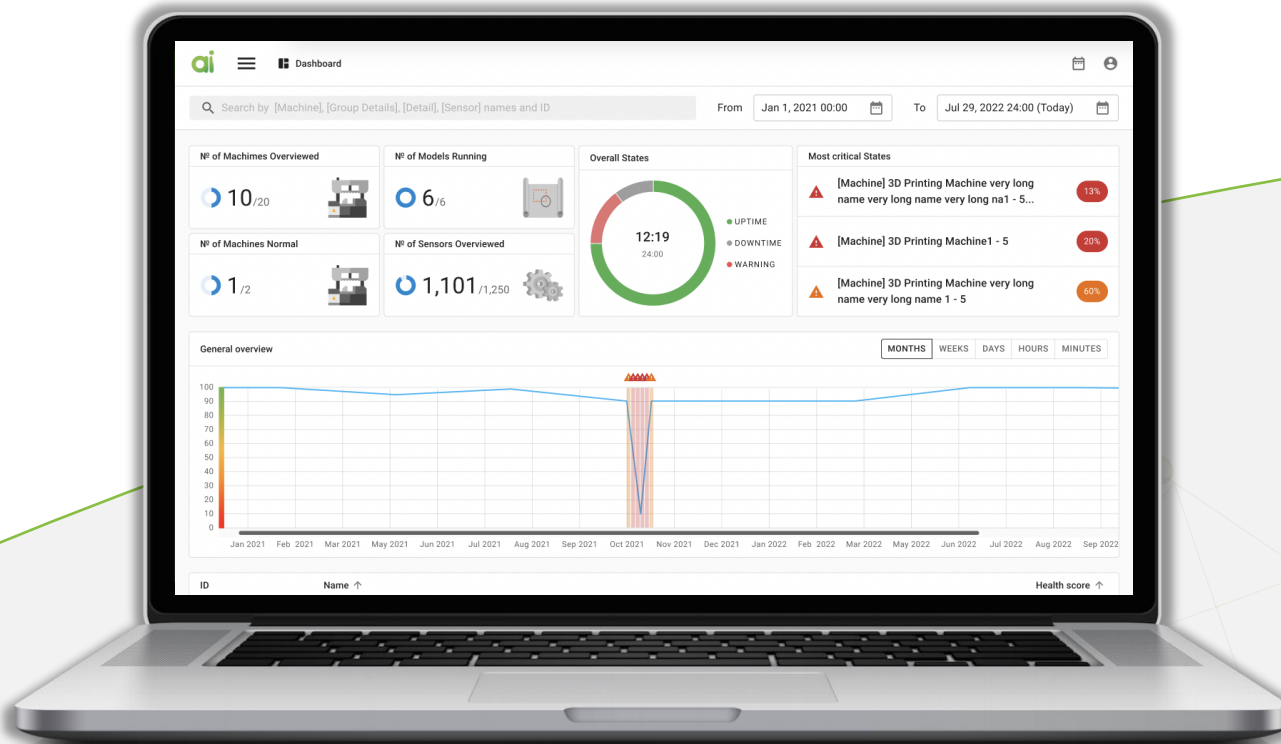# ai-omatic solutions
company & offering

ai OMATIC SOLUTIONS

Predictive maintenance solution for your business

Who we are

📍 Founded 2020 in Hamburg

👥 Team members: 22

🚀 Emerged out of the Airbus environment

💬 Trusted by renowned customers / partners
such as Nitto, Canyon, Rehau & Siemens

🏅 Winner of several startup awards
eg. Start-Up Camp Schleswig Holstein

The global problem we need to solve

High costs of unplanned machine downtime

On average only ≈ **60 % machine availability**

≈ **3.3 million man-hours lost** per year due to unexpected downtime
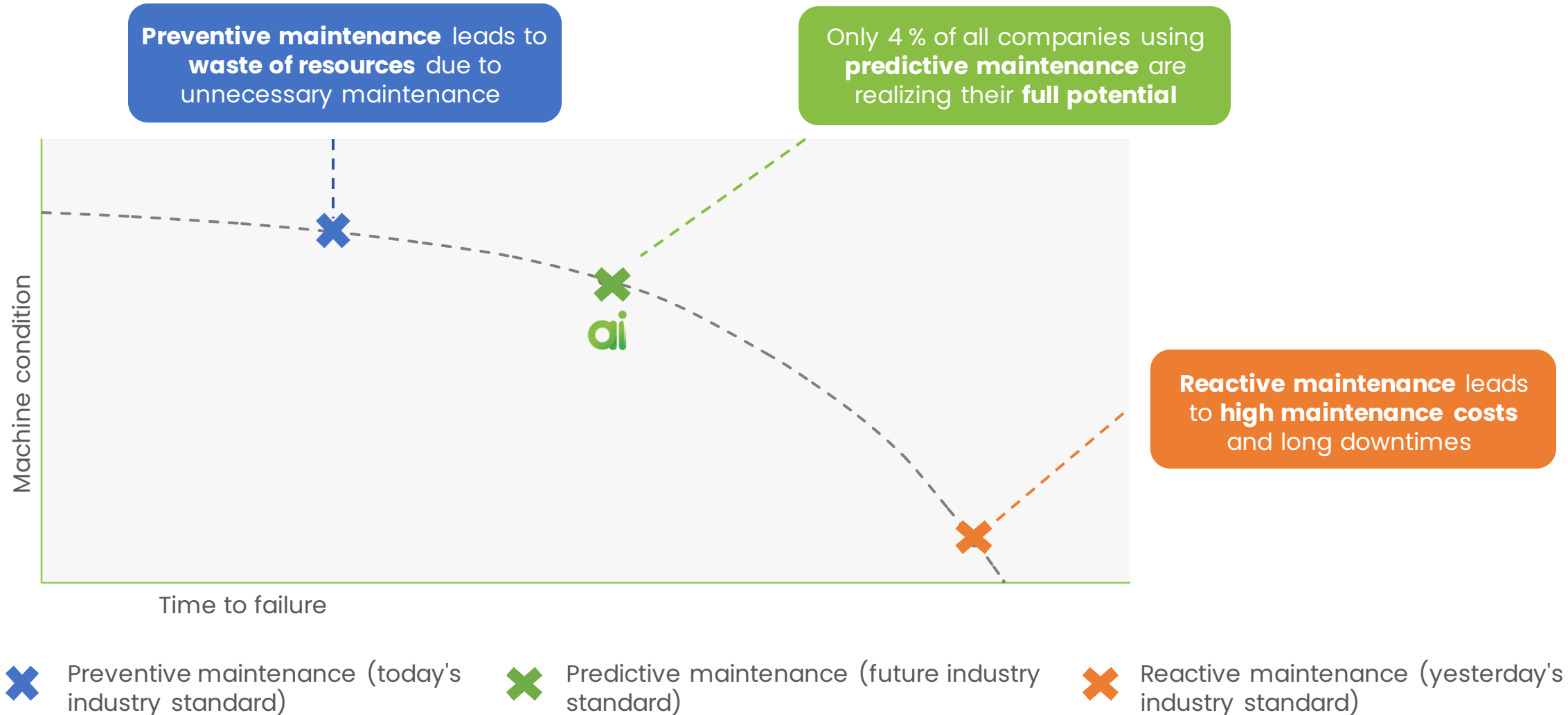
One downtime costs ≈ **380,000 €**

Global industry loses **852 billion € / year** due to unplanned machine downtime

Source: The true costs of downtime Report

The solution we offer

How to avoid machine downtimes through predictive maintenance

Preventive maintenance leads to **waste of resources** due to unnecessary maintenance

Only 4 % of all companies using **predictive maintenance** are realizing their **full potential**

Reactive maintenance leads to **high maintenance costs** and long downtimes

ai

Machine condition

Time to failure

✕ Preventive maintenance (today's industry standard)

✕ Predictive maintenance (future industry standard)

✕ Reactive maintenance (yesterday's industry standard)

The solution we offer

Your advantages with our maintenance assistant

Use of the unlimited processing capacity of AI **without any prior knowledge**

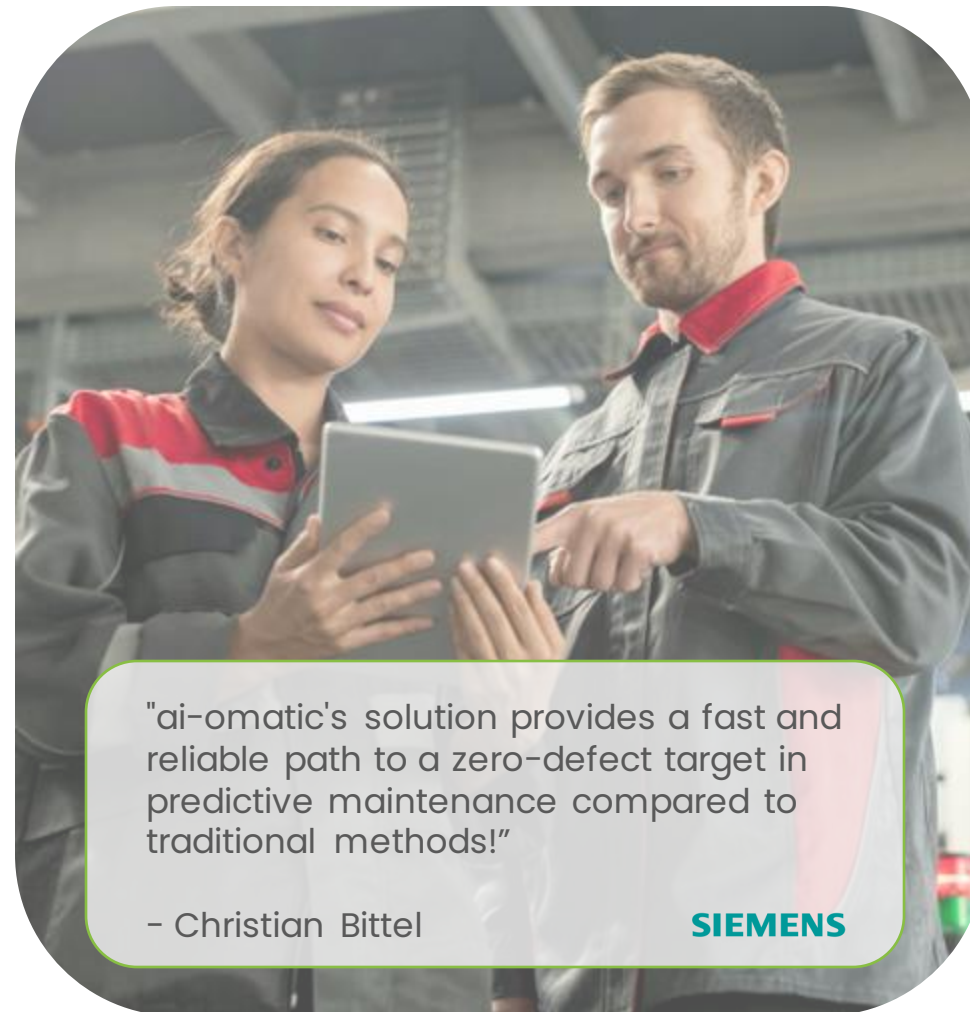Dashboard shows **easily interpretable insights** into the machine condition at any time

Less root cause analysis and therefore **reduction of maintenance time**

Machine downtime can be **decreased by 20%** through predictive maintenance [1]

Reduced Maintenance **costs** by up to **17%** [2] thanks to a switch to predictive maintenance
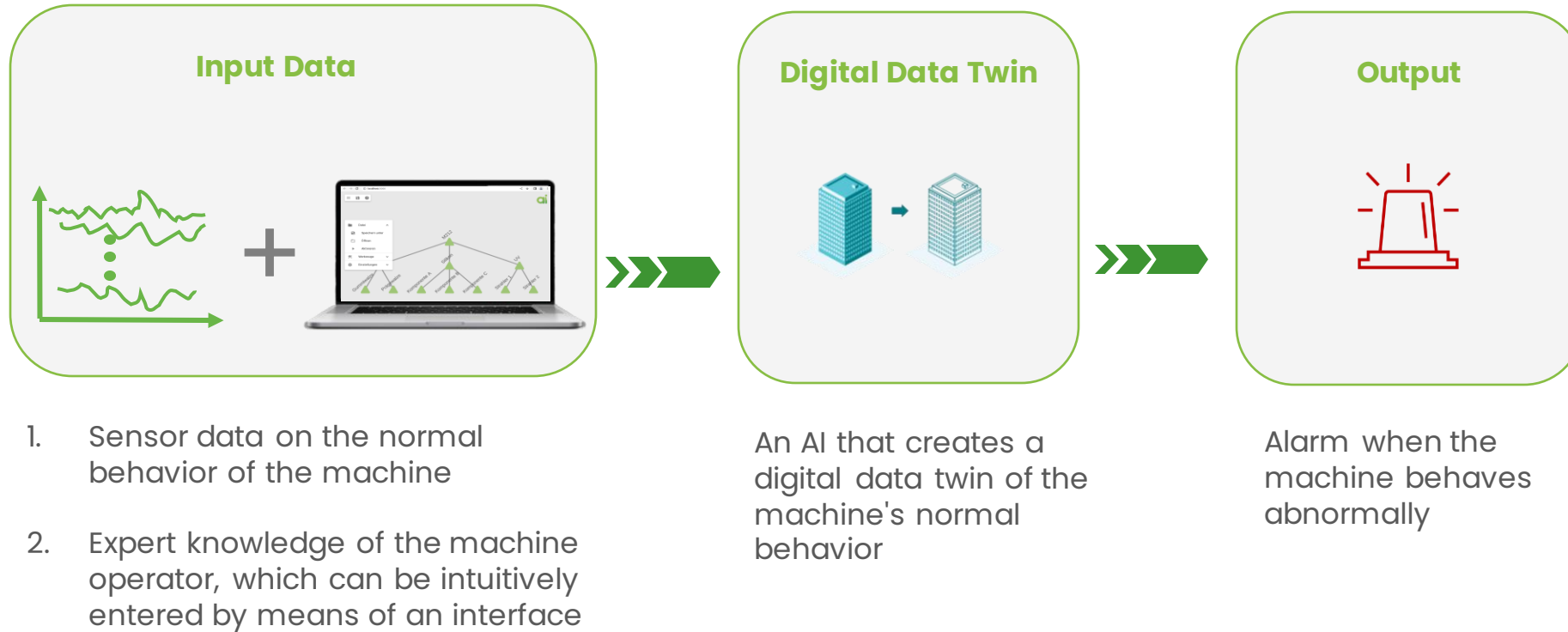
"ai-omatic's solution provides a fast and reliable path to a zero-defect target in predictive maintenance compared to traditional methods!"

- Christian Bittel

SIEMENS

[1] Zoetalentsolutions (2023): Reducing downtime with predictive maintenance
[2] Duscheck, Frank (2021): Chancen und Herausforderungen von Predictive Maintenance in der Industrie

The ai-omatic method

Our way from sensor data to predictive maintenance

Input Data

Digital Data Twin

Output

1. Sensor data on the normal behavior of the machine

2. Expert knowledge of the machine operator, which can be intuitively entered by means of an interface

An AI that creates a digital data twin of the machine's normal behavior

Alarm when the machine behaves abnormally

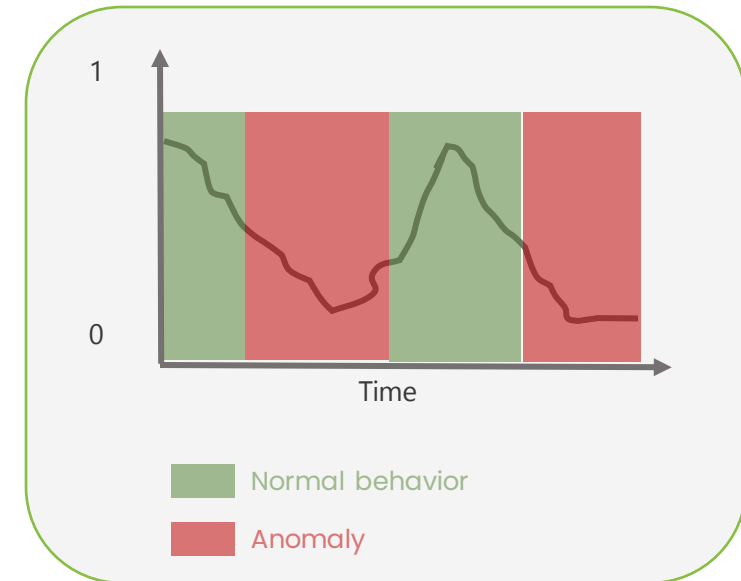**Through our proprietary neural network, machine failures can be avoided!**

The ai-omatic method

Influential factors: How to precisely discern the machine's current activity

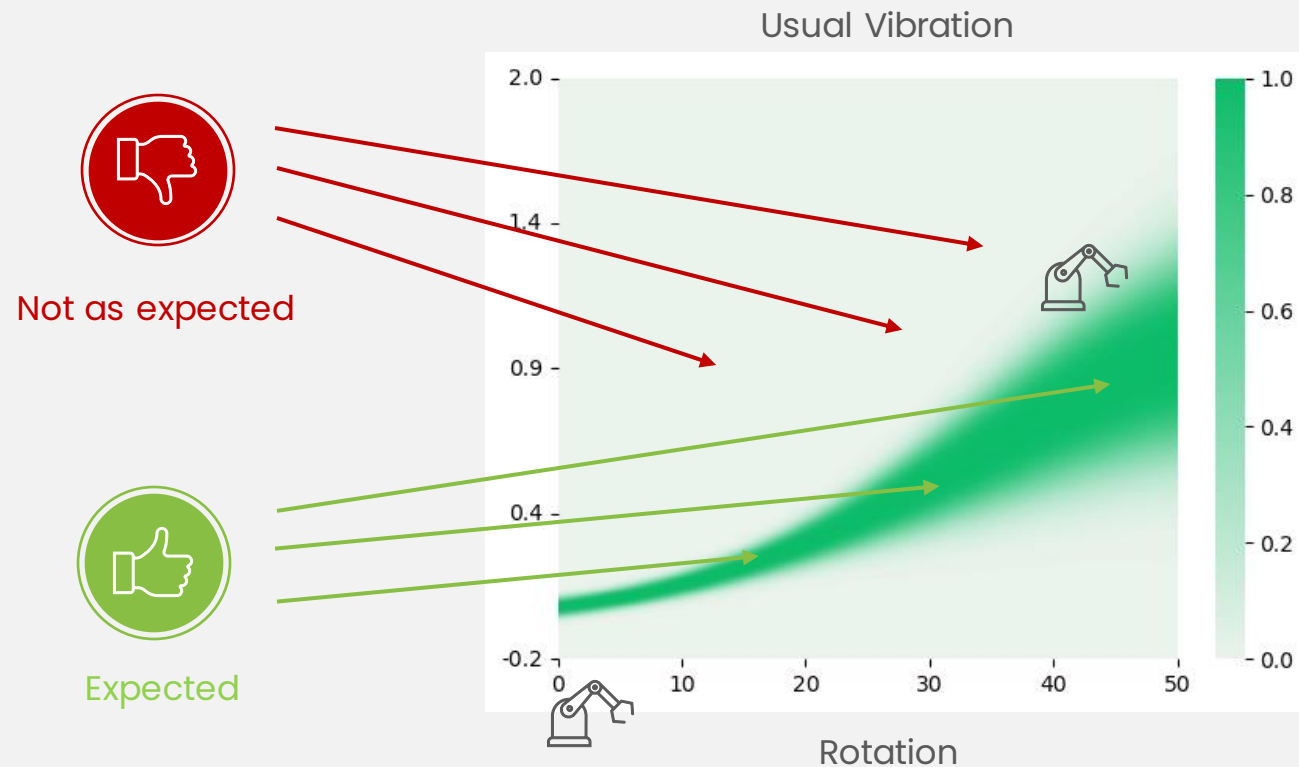Input expert knowledge to define what type of data the model should expect
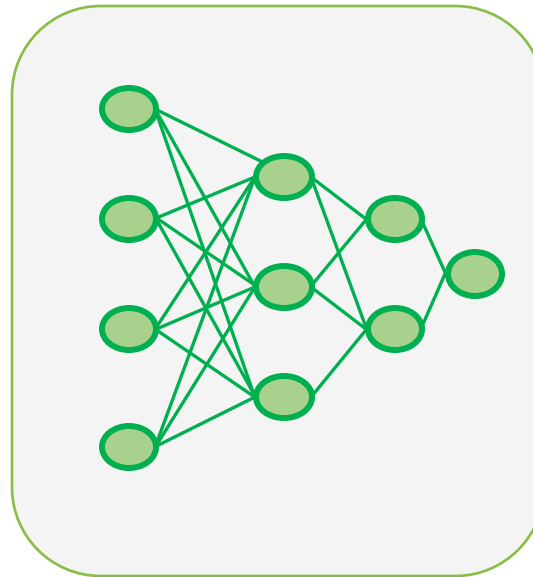
Unique ai model analyses machine data in real time and determines the health condition

Realtime Health Score prediction

The ai-omatic method

What is a good Health Score = What is expected behaviour?

Not as expected

Expected

Usual Vibration

Rotation

Simple 1:1 relation!

BUT: The true magic unfolds if it learns in a higher-dimensional space!

The ai-omatic method

Advantages of our approach

Our approach leverages the engineer's expertise in the causal dependency structure between machine variables

+

Combines this with the possibilities of machine learning

=

Result: Higher model accuracy and better explainable results, which increases the acceptance of the approach by engineers

Overview of our dashboard

Live monitoring & early detection of abnormal machine behaviour

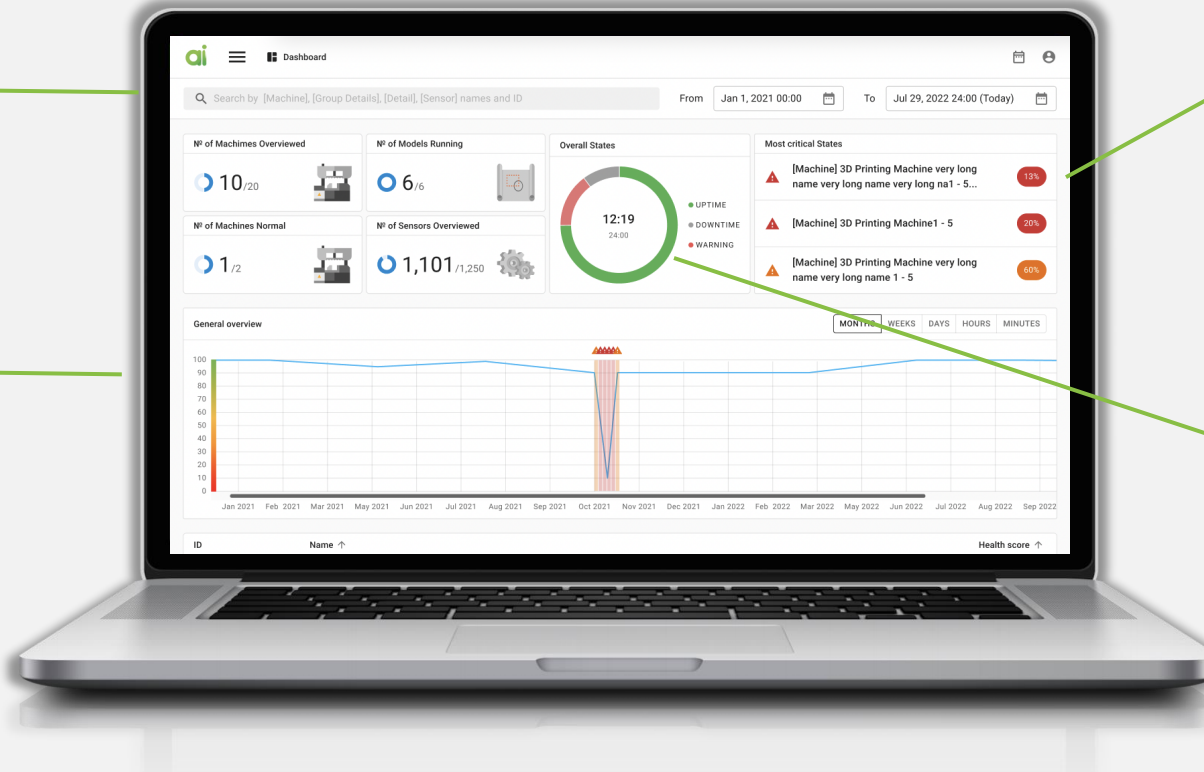Easy to read dashboard with the **display of the health status** of the machine

Identification of the **causes of failure** (explainable AI)

Detection and **warning of abnormal behaviour** of the machine

Uncomplicated live monitoring of machine states

Overview of our dashboard

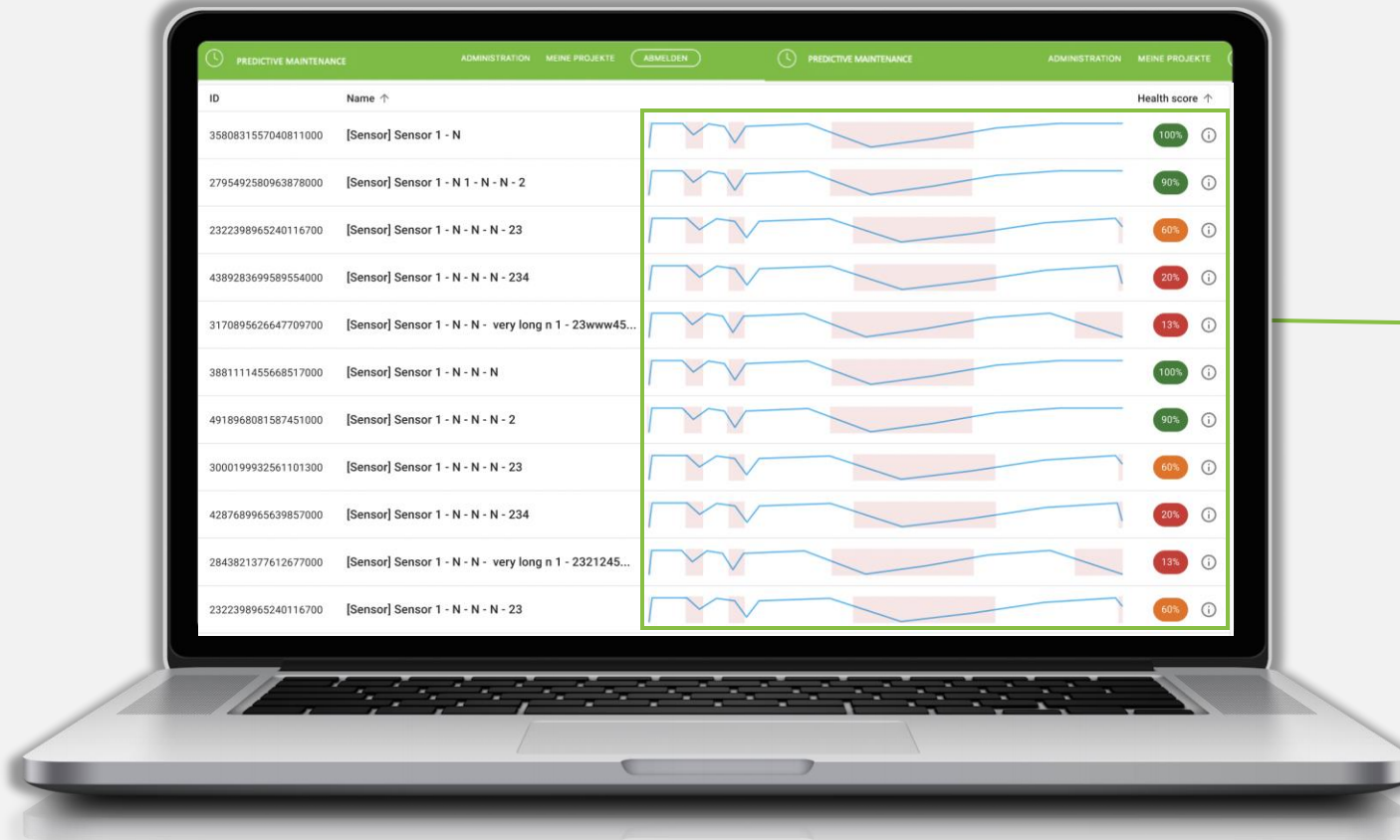KPIs and information on machines

Past events

Selected sensors

Overall machine health
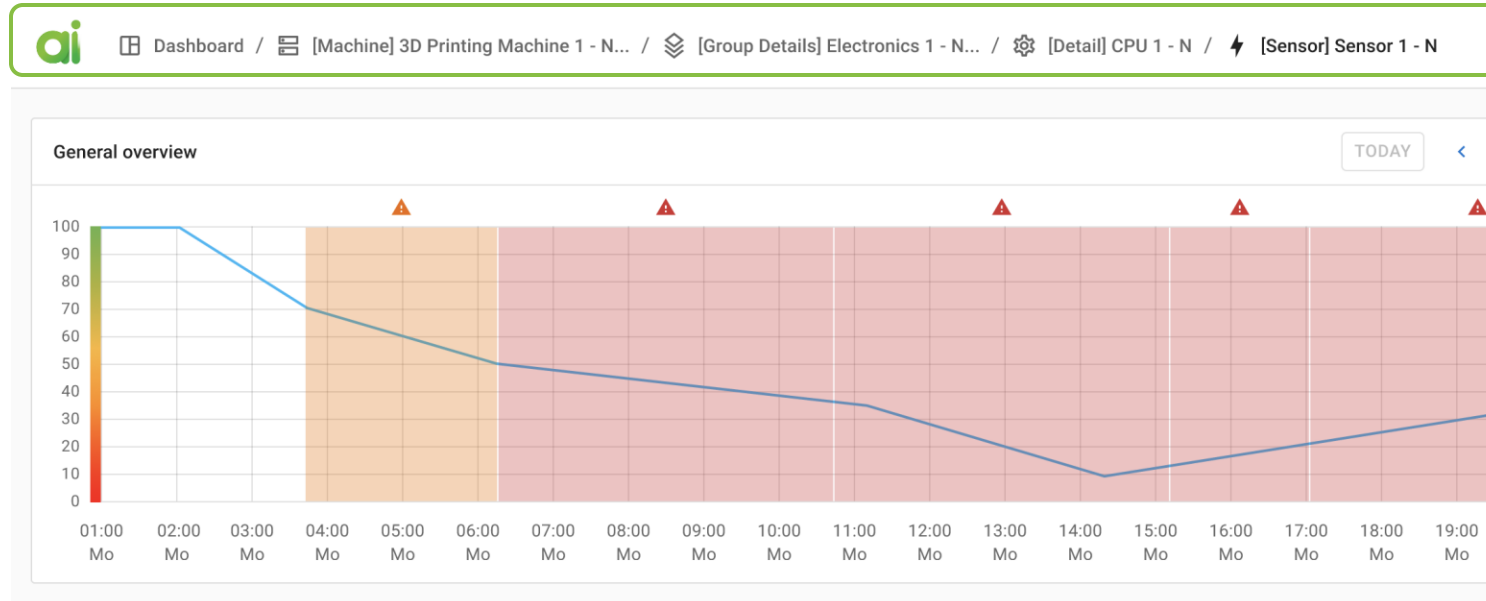
Overview of our dashboard

Machine monitoring: All important parameters at a glance

Overview of individual sensors and overall state of the machine - enables targeted focus on sensors with a low AI index.

Overview of our dashboard

Hierarchical structure enables precise problem understanding & targeted maintenance

Cause identification in case of deterioration of the health score by "diving" into the inner levels of the machine

1st Level: Machine (overall health of the machine)
2nd Level: Groups (e.g. embossing plant, silicone plant & UV plant)
3rd Level: Detail view of smaller groups
4th Level: Sensors (e.g. temperature)

Overview of our dashboard

Records & alerts: Early detection of abnormal machine behaviour & timely intervention
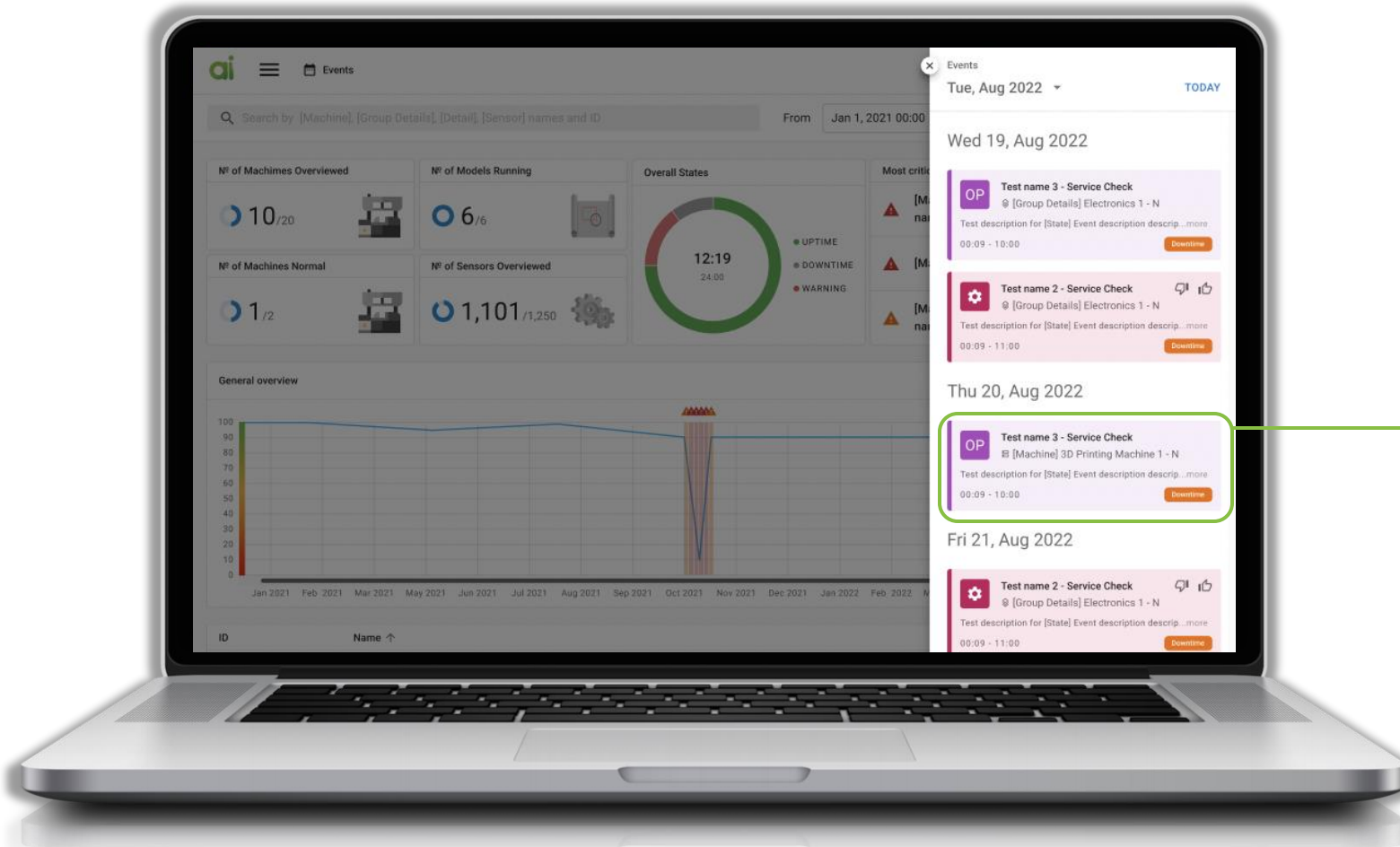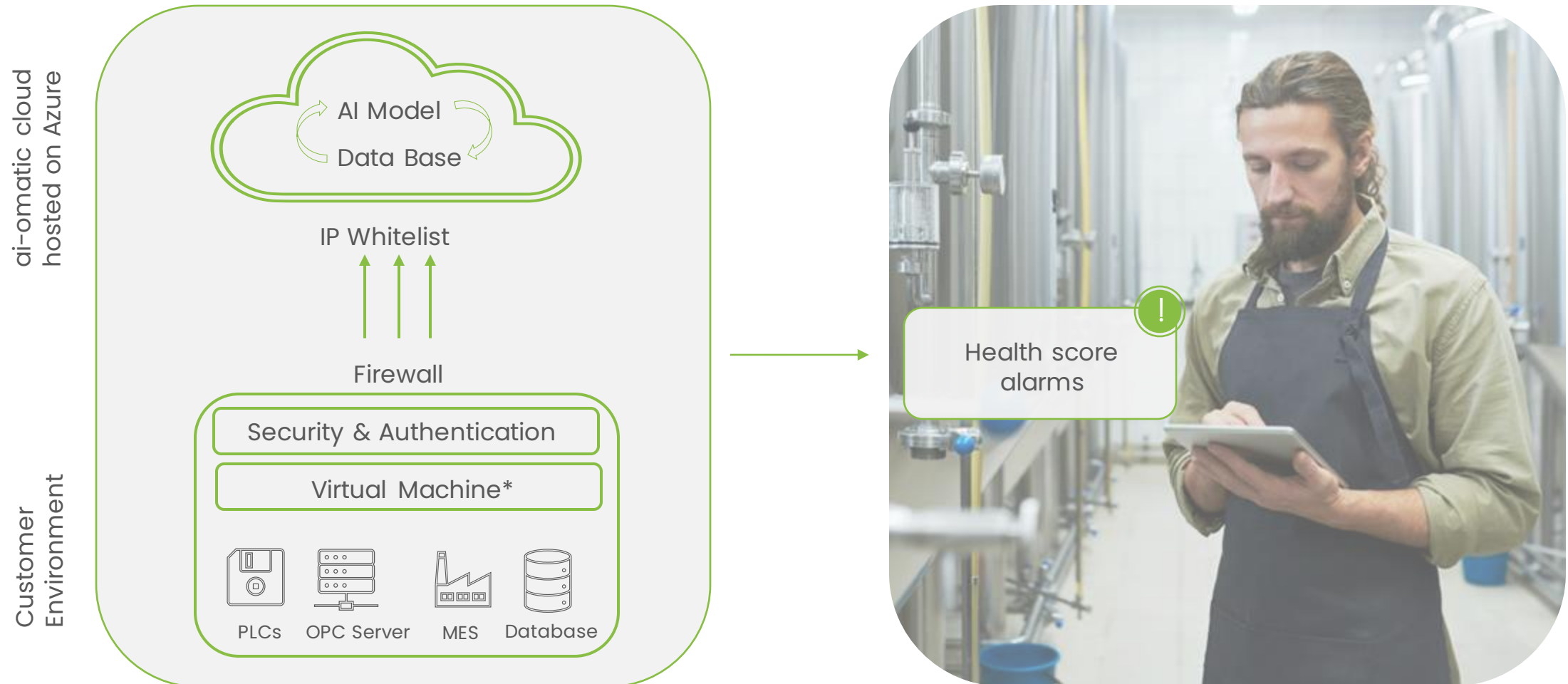

Records of faults can be individually flagged, and customers can add and edit messages on their own.

False alarms can be corrected afterwards, making the algorithm smarter and more accurate.

Technical infrastructure

Our software doesn't require additional hardware & can be installed in any IT infrastructure

ai-omatic cloud hosted on Azure

AI Model

Data Base

IP Whitelist

Firewall

Customer Environment

Security & Authentication

Virtual Machine*

PLCs   OPC Server   MES   Database

Health score alarms

*for ai-omatic data connection client

Customer Requirements

Necessary requirements for a successful start with our maintenance assistant

Providing the connection to a live machine data source (preferable OPC-UA)

4 different options

1 When running the ai-omatic data connection client on a virtual machine in your it-infrastructure: In this case, a Linux VM and a VPN connection is required.

2 Siemens Industrial Edge Device (Hardware)

3 Avibia IoT Gateway (Hardware)

4 Custom Azure Connection via your middleware

Consent to use the Azure Cloud

Our success story with Nitto

Nitto

👍 Proof of concept based on historical data

👍 Switch to live operation due to good results

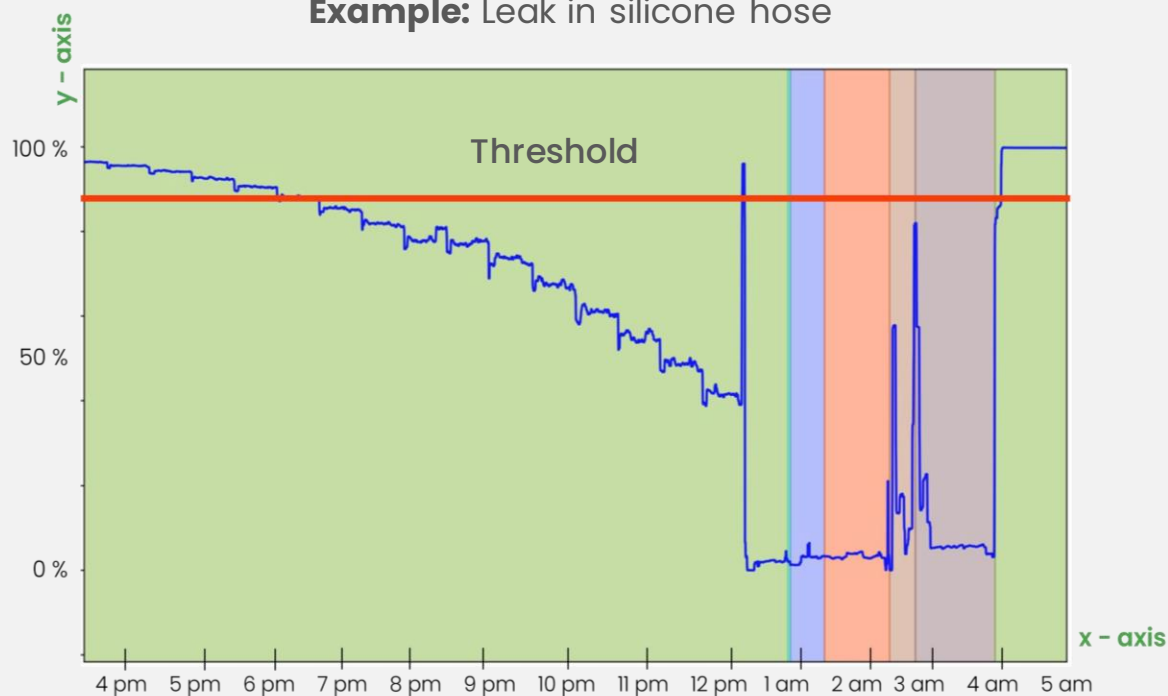👍 Huge cost savings with prediction of bearing damage in live operation

Our success story with Nitto

Our algorithm detects the abnormal data behavior 8 hours before it becomes a problem

Blue Line:
Prediction model

Y-Axis:
Probability, that the machine runs normally
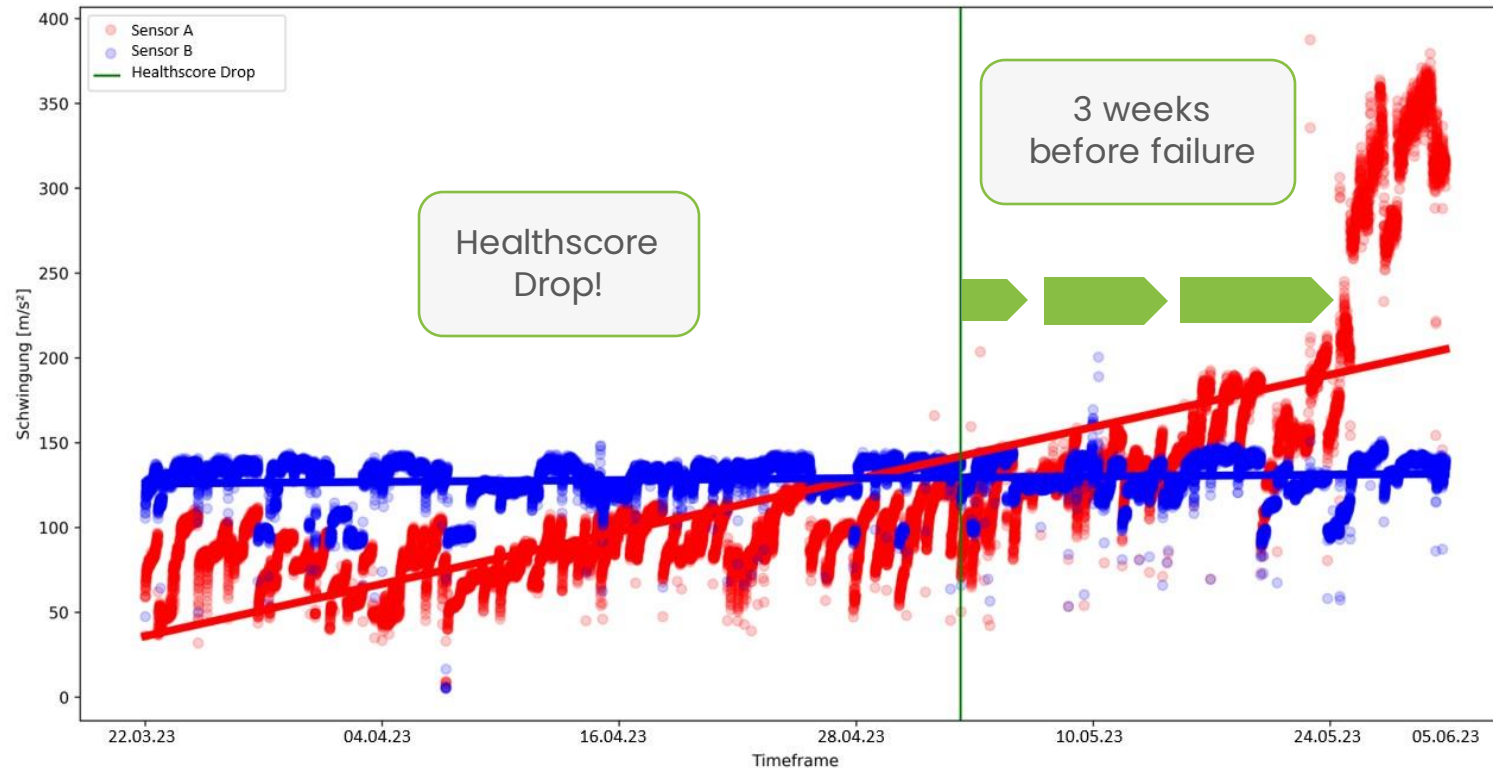
Example: Leak in silicone hose

Around 4 p.m., eight hours before the machine fails, the probability of the machine behaving normally decreases
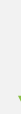
The algorithm recognizes that the machine is no longer in a normal state!

Our success story with Nitto

Prediction of bearing damage in live operation

3 weeks before failure

Healthscore Drop!

! Very strong trend line with steadily increasing vibration!

👍 Within the first 3 months, our maintenance assistant was able to predict bearing damage in live operation. Nitto was therefore able to intervene before the failure occurred.

Our USPs

What sets us apart from other providers

👍 First technological **solution** that can **simulate human thinking:** Consideration of contextual factors & dynamic thresholds

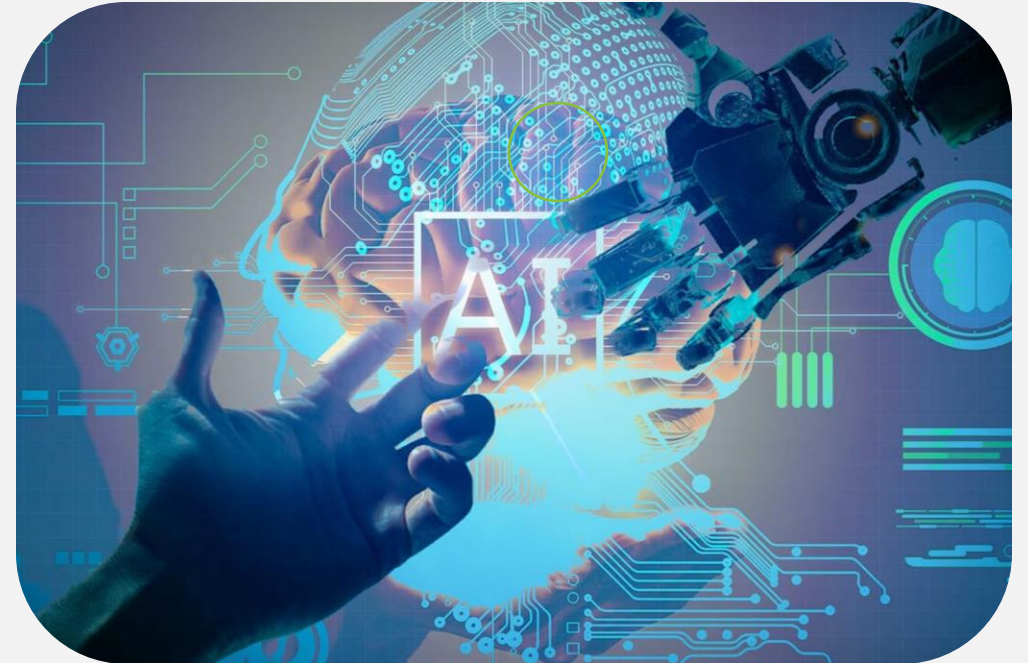👍 Quickly scalable algorithm that **can be applied to any machine**

👍 **Highly reliable prediction** thanks to unique combination of statistics and neural networks

👍 **No need for labeled data** / large amounts of data

👍 **Ready for immediate use** (short installation time)

Our Journey from sensor data to predictive maintenance

Data provision

The live data is transmitted and stored using OPC-UA. The data should be regular.

Training Phase

The model learns how the individual parameters are related (based on the data of all expected machine states).

Prediction Phase

The data will be assessed in real time for validity and compared to the data from the learning phase.
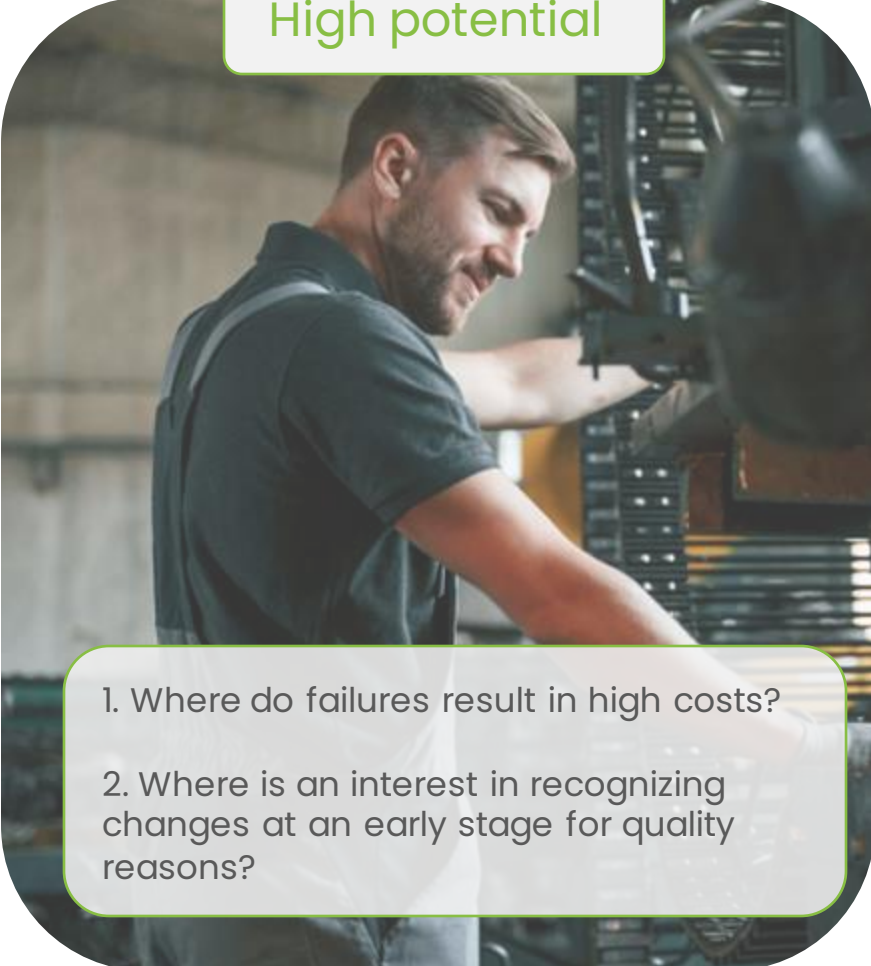
Result

A dashboard displays machine health on a scale of 0 to 100. Alarms indicate abnormal machine behavior.

Our Journey from sensor data to predictive maintenance

How do you benefit the most from our software?

High potential

1. Where do failures result in high costs?

2. Where is an interest in recognizing changes at an early stage for quality reasons?

+

Simple prerequisites

1. Measurement and process variables are already monitored

2. You can imagine that the data allows conclusions about the system health

Our Pricing

First project

Duration: 6 months

All-inclusive package
(Software, Hardware,
Workshops)

Prerequisite:
Upon consultation

Price:
Approx. 25K – 30K

Live monitoring

Duration: ongoing

Email & Phone Support
(answer within 24h)

Cloud Solution

Business Model: One
license for one machine

Price per license:
From 399€ monthly

Product for analyzing machine data from the PLC using OPC-UA with the aim of anomaly detection, cause identification and failure prediction

Partner & customer

Success stories that speak for themselves

Are you interested in revolutionizing the industry with us?

Contact us for more information about this business opportunity.

ai OMATIC SOLUTIONS

TRANSPARENT. RELIABLE. EFFICIENT.

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