![PROGNOST — INTELLIGENCE ON DUTY]

UP! Detect

Vibration monitoring for early failure detection

Compressors for a Lifetime
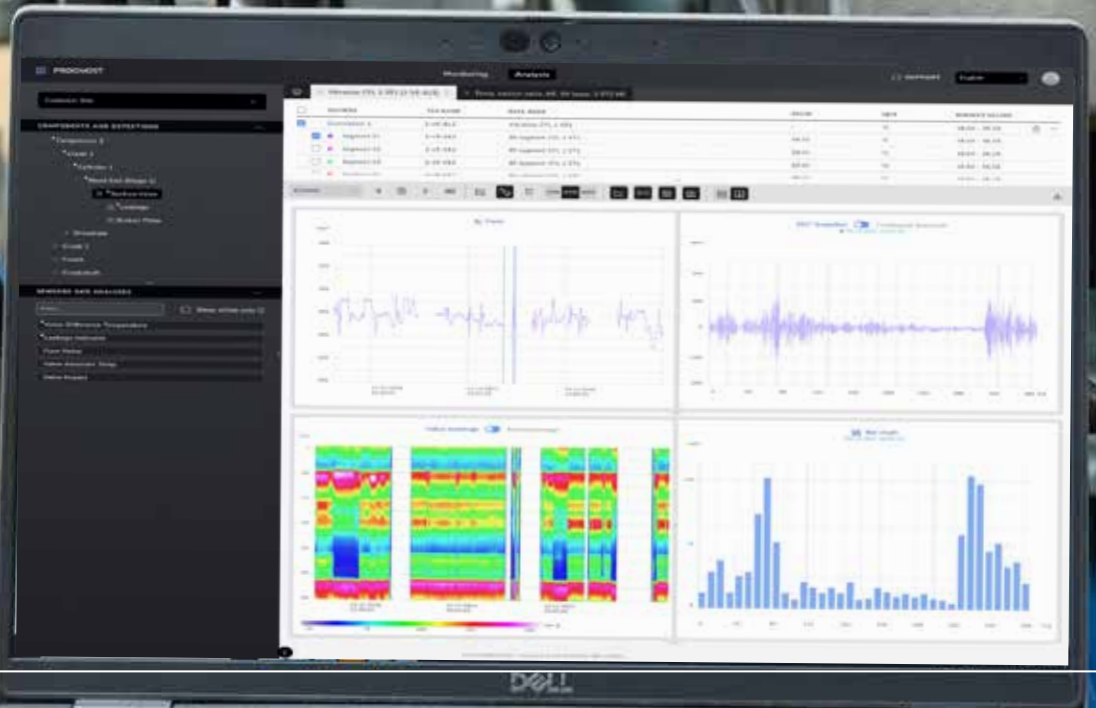
Benefits for our customers
How is UP! Detect supporting the operation of my asset

Enabled remote transparency - Access data anytime, anywhere for continuous machinery monitoring and management. Enjoy a comprehensive fleet overview to track all vessels in real-time. Fleet benchmarking and evaluation help compare performance and identify areas for improvement. Share data with stakeholders for informed collaboration. Enhance decision-making and streamline operations with this holistic approach!

Real-time access to asset performance

Cost and time savings - Extending the Mean Time between Overhauls reduces maintenance frequency, saving time and money. Optimizing maintenance strategies ensures effective resource use and prevents unnecessary expenses. Identifying good and bad performers within the fleet allows for targeted improvements, enhancing overall performance and efficiency. This approach reduces costs and maximizes fleet productivity.

**Extend Mean Time between Overhauls (MTBO)**

Early failure detection - Identifying abnormal behavior early allows for addressing issues before they escalate, minimizing damage, downtime, and repair costs. The system offers automated action recommendations for quick resolution, enhancing reliability and longevity, and boosting operational efficiency.

90% early failure detection rate

Maximized compressor availability - Early failure recognition enables proactive maintenance, reducing unexpected downtime. Quick issue resolution with technical expertise minimizes disruption and maintains optimal performance, ensuring systems run at their best and enhancing productivity.

Better maintenance planning
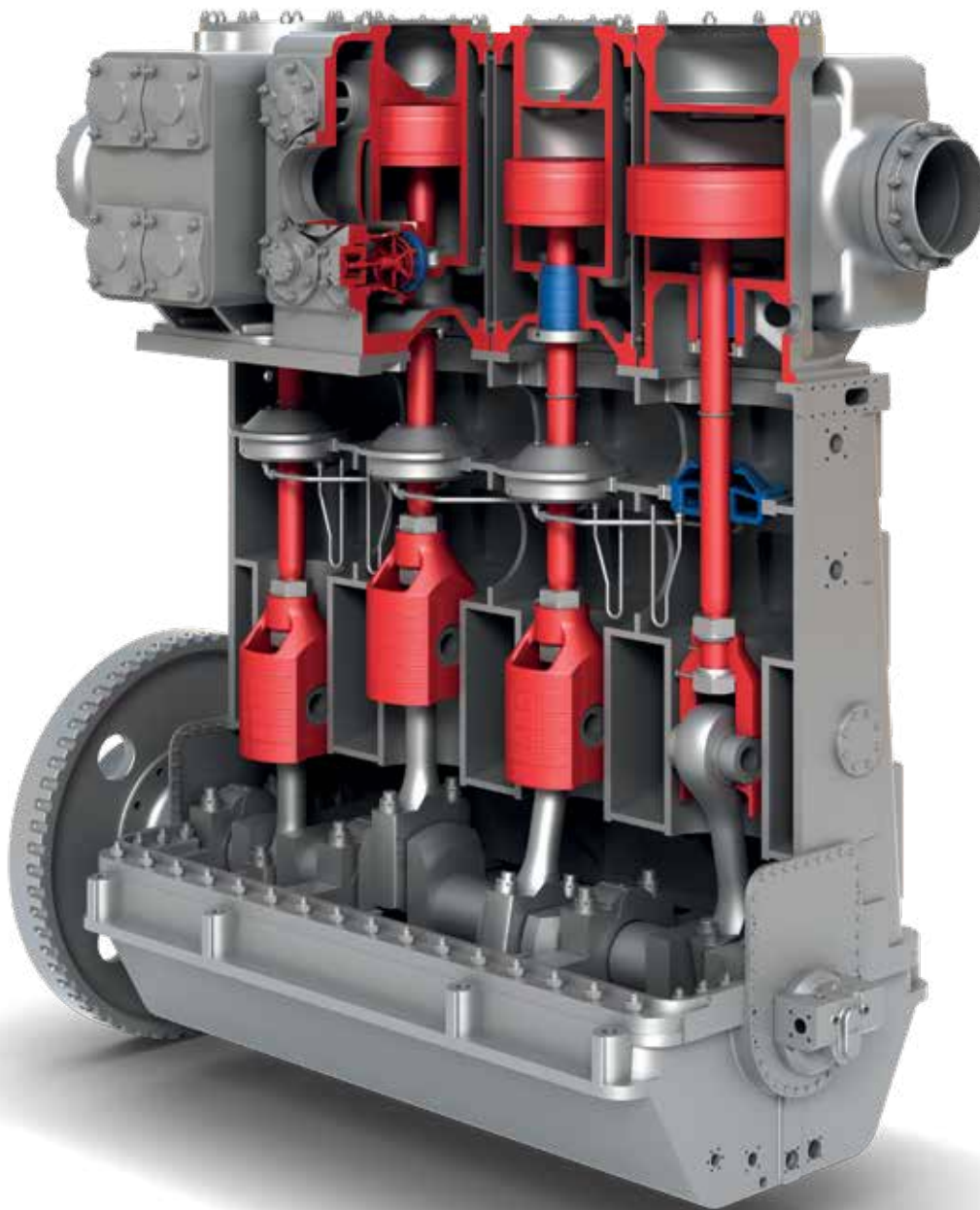
Potential failures detected:

- Loose crosshead-piston rod connection
- Mechanical damages on the covered components
- Clearance in the reciprocating drive train
- Bearing failures
- Valve impacts
- Broken or loose valve plate/cage
- Indication of leakages

up to **90 %**
fault detection on
valves and connections
crankshaft/piston

UP! Detect
Enhance your fleet's performance with advanced vibration monitoring

Unlock the full potential of your fleet with our cutting-edge anomaly detection algorithms. Early identification of potential issues ensures smooth operations and minimizes downtime. By composing and comparing trends across vessels, you gain valuable insights into performance variations.

Key features included:

Our 36-segment analysis with 0-peak, RMS, and heatmap visualizations offers detailed vibration signal insights, pinpointing anomalies precisely. Customize monitoring with automatic and manual threshold settings.
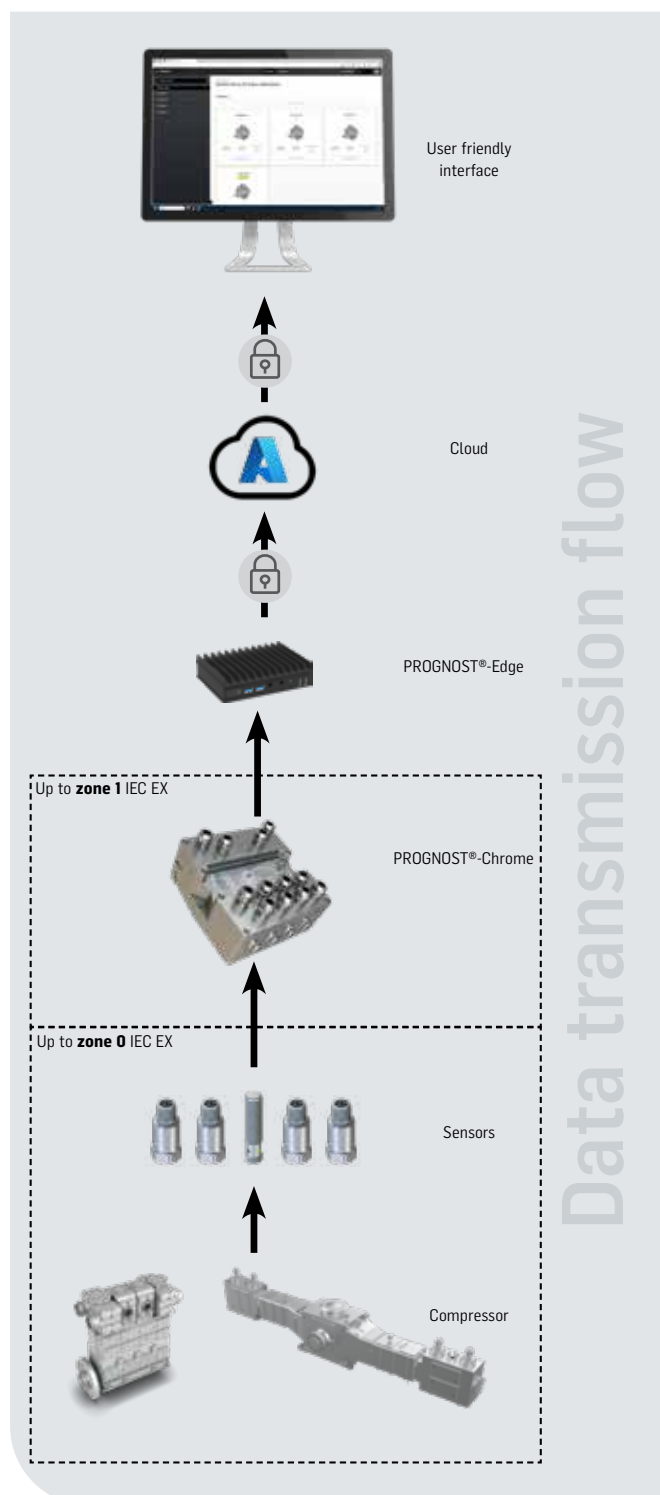
Get raw data snapshots for in-depth fleet analysis. Alarm recommendations ensure quick issue resolution, minimizing damage and optimizing performance.

Our user-friendly interface simplifies data navigation and interpretation, even for non-experts. Real-time email notifications for alarms enable prompt action.

Enhance fleet reliability and efficiency with our advanced monitoring solutions, maintaining optimal performance and preventing costly failures.

Connection and cybersecurity
Stay connected and in control

User friendly interface

Cloud

PROGNOST®-Edge

Up to **zone 1** IEC EX

PROGNOST®-Chrome

Up to **zone 0** IEC EX

Sensors

Compressor

Data transmission flow

To use UP! Detect, a cloud connection is required for continuous data updates, ensuring smooth and efficient operations.

The platform is developed following the IEC 62443-4-1 certified product development lifecycle and is currently undergoing IEC 62443-4-2 certification to meet the highest security standards.

UP! Detect supports only outbound connections and features a specially secured and configured operating system, along with a defense-in-depth design that offers multi-layered security measures.

Cybersecurity and data's safety is a top priority for Burckhardt Compression

- Developed following IEC 62443-4-1
- Encrypted outbound connection to the cloud
- Over-the-air updates: firmware, software and security updates
- Easy to install monitoring unit including sensors for vibration (cylinder, crosshead) and speed
- 11 channels per PROGNOST®-Chrome
- Up to 4 x PROGNOST®-Chrome connectable via 1 x PROGNOST®-Edge to the cloud

PROGNOST visualization
State-of-the-art software with advanced analytics

UP! Detect software is loaded with advanced features for top performance and ease of use. It has algorithms to spot irregularities in data patterns, helping to detect potential issues early. The software also allows operators to compare trends across machines, giving a complete view of performance metrics over time.

One of the standout features is the **36-segment analysis** (0-peak, RMS, and Heatmap), which offers detailed insights into various aspects of the data. Users can set thresholds either automatically or manually, giving them control over the monitoring process. The software also captures **raw data snapshots of vibration signals**, which can be crucial for in-depth analysis.

UP! Detect offers **alarm recommendations** for quick issue resolution, helping operators address problems promptly. The **user-friendly interface** makes it easy to navigate and use the software. Additionally, **email notifications** keep users informed about critical issues, even when they are not actively monitoring.

With these features and much more, UP! Detect stands out as a comprehensive solution for condition monitoring and anomaly detection, helping users maintain optimal performance and prevent potential issues.
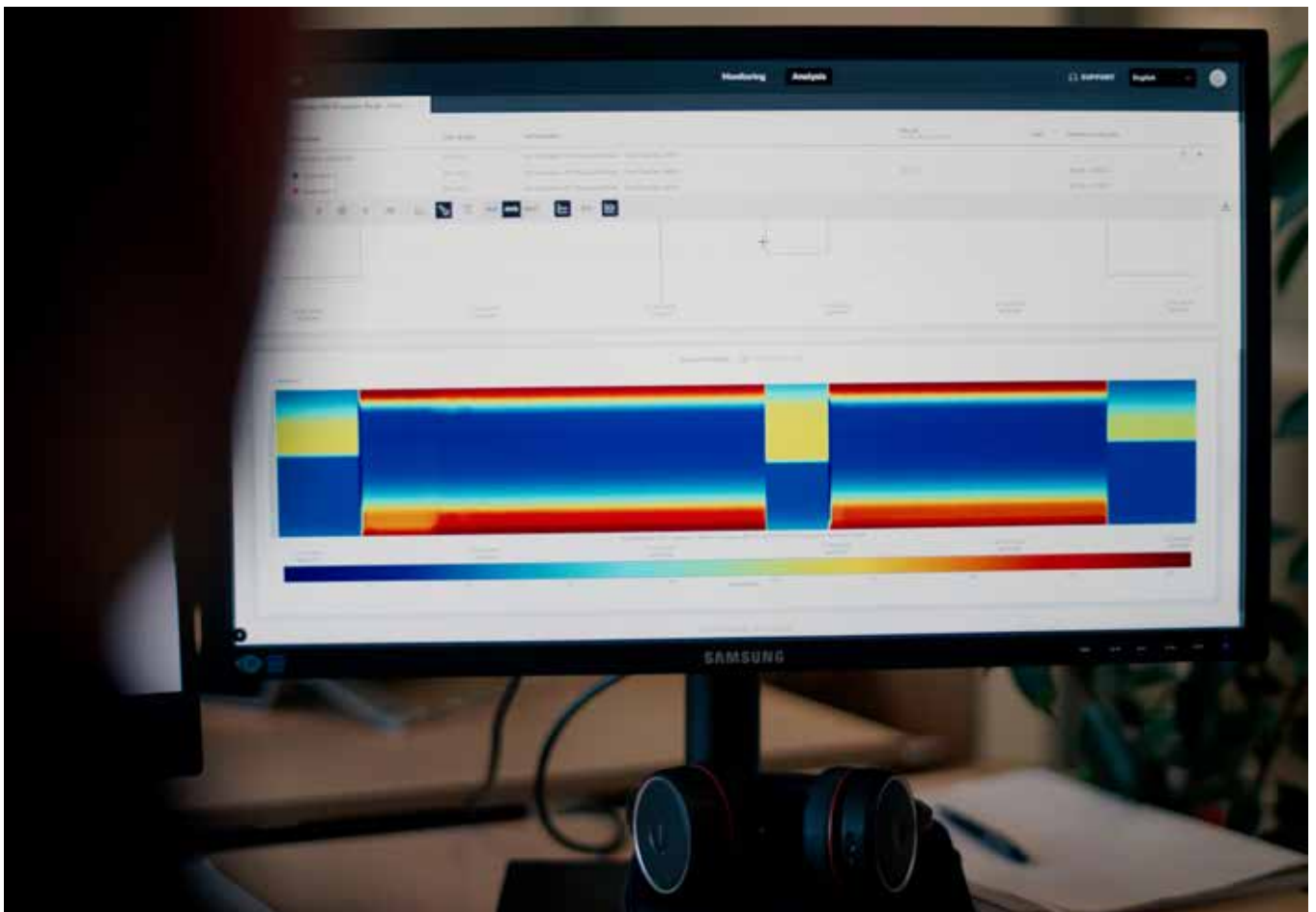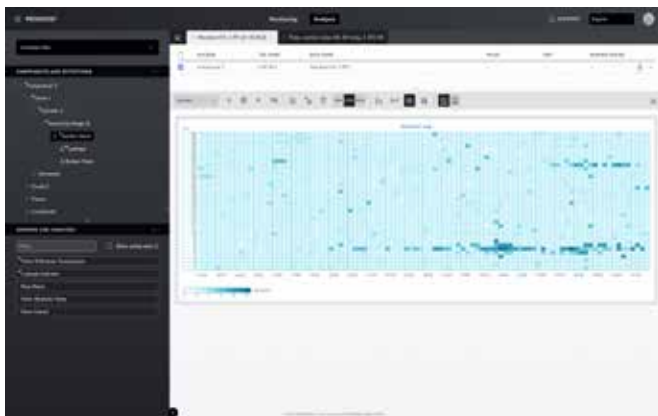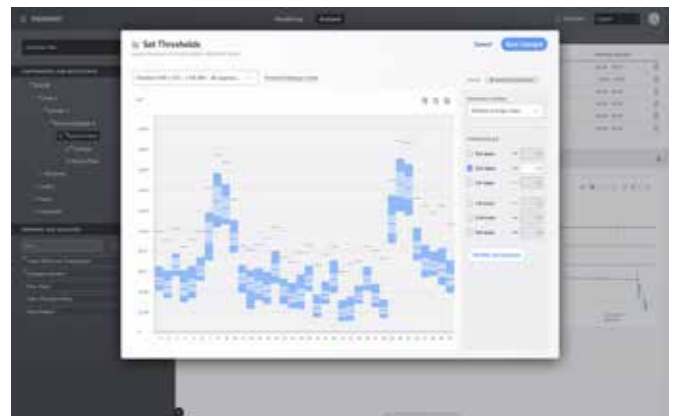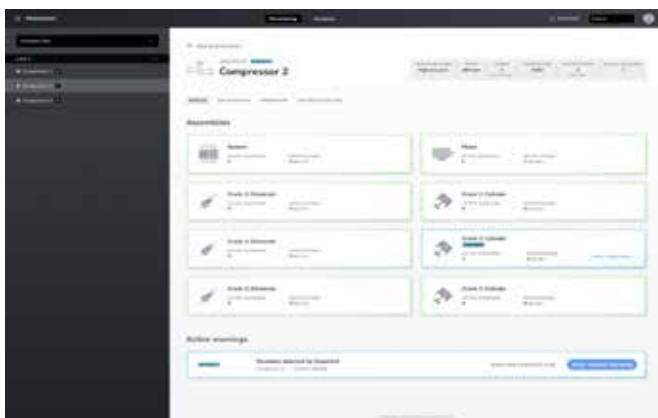
36-Segment Analysis

Action recommendation of an anomaly detection (popup after clicking on an anomaly warning)
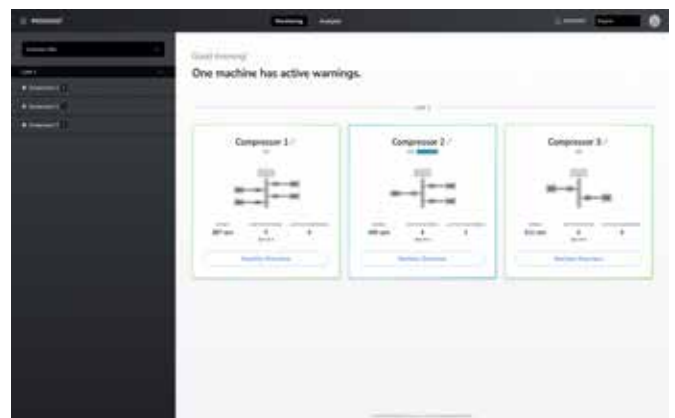

Anomaly detection map in the analysis (display of deviation from good to bad)

Automated Theshold setting

Maschine detail page (after clicking on a machine in the overview with an active anomaly detection on it)

Overview with connected machines

PROGNOST®-Chrome
## Advanced remote IO system for hazardous areas

Designed for hazardous zones (1/21 or 2/22), PROGNOST®-Chrome is a state-of-the-art Remote IO system made for hazardous areas (zones 1/21 or 2/22). It safely connects signals from sensors in very dangerous zones (0/20) to monitoring units in safe areas. It can send up to 11 safe signals using the EtherCAT system, ensuring smooth connections with short cables.

The input module connects up to 11 safe signals directly. The EtherCAT system combines and digitizes these signals, sending the data through a four-wire bus cable to the controller. It processes analog signals from sensors, converts them to digital data, and transmits them using the real-time EtherCAT system.

Technical features:
- Robust housing made of aluminium electroplated
- Ex-Area certified & integrated isolation amplifier
- Fully potted, high vibration resistance, no condensation in the module
- Connected via EtherCAT to PROGNOST®-Edge
- Ambient temperature range -40 °C to +70 °C
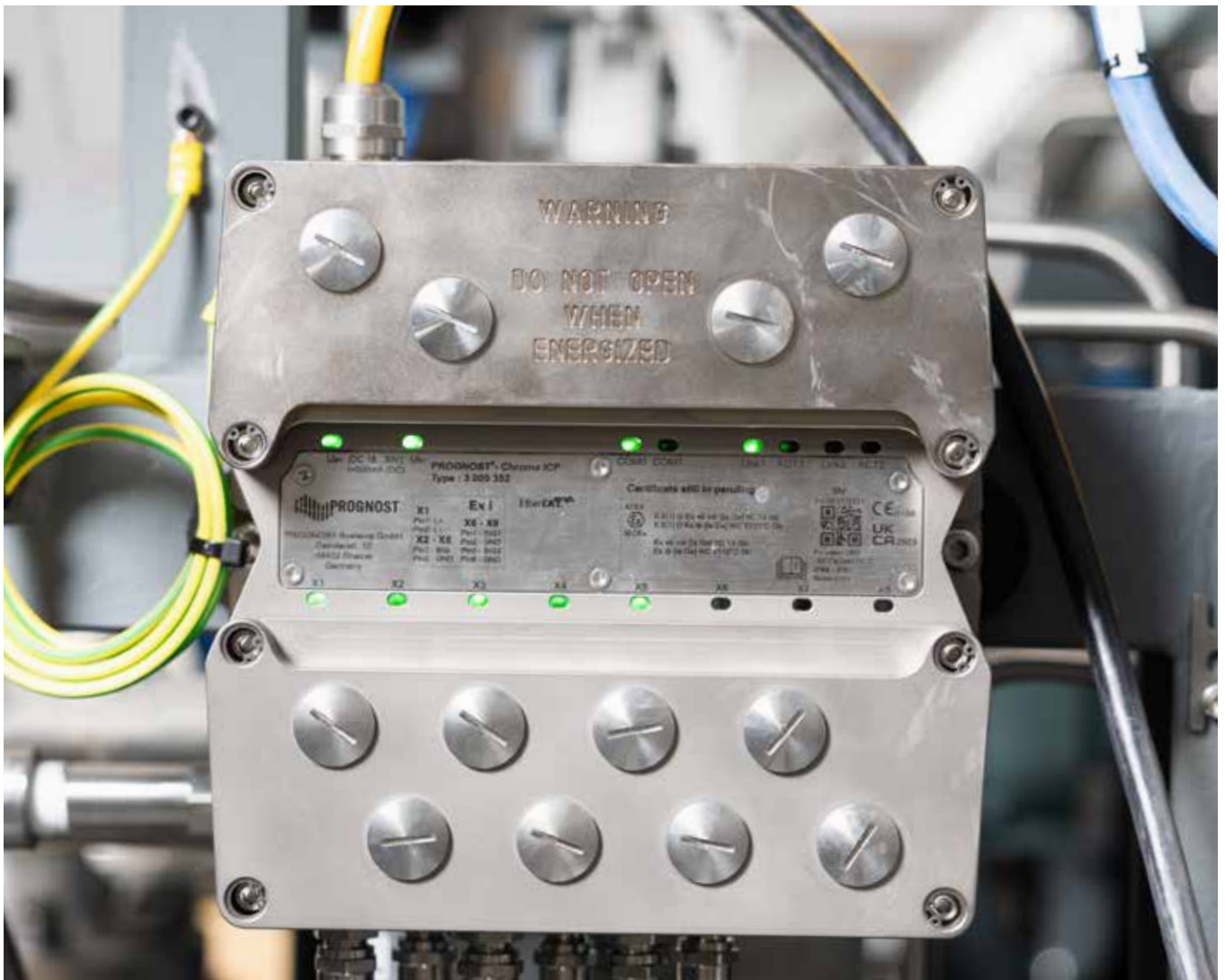
PROGNOST®-Edge
Your link to optimize your compressor

PROGNOST®-Edge is a crucial component of UP! Detect, acting as a real-time data collector for vital compressor information. It transmits this data to the cloud for comprehensive analysis.

With the pre-installed PROGNOST®-Edge, you can connect to the cloud effortlessly, ensuring real-time data access and proactive service. Our dedicated Burckhardt Compression customer support team is here to guide you through a smooth and seamless integration process.

Technical features:
- Housing 300 mm x 400 mm x 210 mm (WxHxD) including PROGNOST®-Edge & optional GSM-modem
- Redundant 24V power supply for PROGNOST®-Chrome, PROGNOST®-Edge & GSM-modem
- Cloud connection via customer network or GSM-modem (SIM-card)
- Collects data from PLC over OPC UA (client) sends data to Azure IoTHub
- TLS encrypted data transfer outgoing only (port 443)
- Ambient temperature range: -20°C .. +50 °C

24/7 Customer Support
Always here for you – our customer support team

Need a helping hand? Our Burckhardt Compression support team is available around the clock, ready to tap into your compressor's real-time data and help resolve any issues swiftly.

Our dedicated hotline is always on standby, providing you with efficient assistance whenever and wherever you need it. By accessing your compressor's real-time data, we ensure quick and effective issue resolution, keeping your operations smooth.

Beyond our hotline, we're excited to offer additional services designed to boost your compressor's uptime and efficiency:

- **24/7 issue management** - We're here to swiftly register your issues and connect you with the right expert.
- **Priority technical support** - Get expert help during local office hours for alarm clarification, data interpretation, and system operation.
- **Proactive technical support** - Maximize compressor uptime with PROGNOST! Our experts quickly resolve alarms.

With UP! Detect, you're equipped for success with continuous support and advanced services.

UP! Solutions
Data and people for your compressor success

Combining leading compressor knowledge and monitoring expertise through Burckhardt Compression, UP! Solutions is setting new levels in asset management optimization.

UP! Solutions are boosting the performance, reliability, and efficiency of your rotating equipment.

By collecting and analyzing operational values such as pressure, position, vibration, or temperature UP! Solutions not only optimize efficiency and maintenance, but also detect anomalies and failures before they escalate.

Enjoy the benefits of maximized uptime and significant cost savings with a range of digital products designed by the industry experts to enable the optimal operation of reciprocating equipment.

Embrace the future of productivity with Burckhardt Compression digital technologies.

PROGNOST
INTELLIGENCE ON DUTY