Condition Monitoring & Predictive Maintenance for Machine Tools. In-Cloud or On-Premise.

More operator efficiency. More machine performance.
Less machine downtime. Less machine management efforts.

Compatible with SIEMENS / FANUC / MAZAK / HEIDENHAIN / OPC-UA / MT-Connect / MQTT

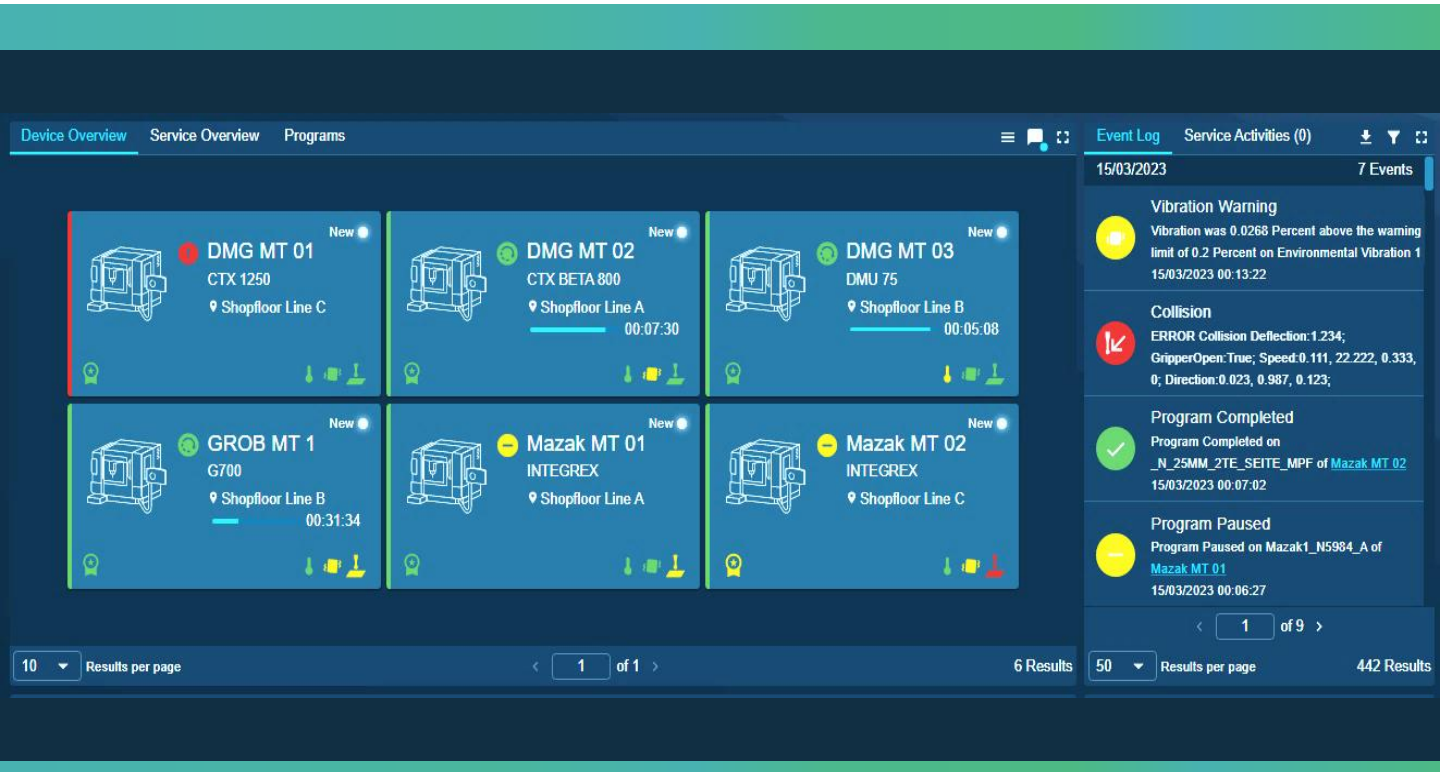
FOR EFFICIENTLY MONITORING MACHINE STATES, EVENTS, CONDITIONS

Less EFFORTS & MORE RELIABILITY for Operating Multiple Machines,
Less Unnoticed ERRORS, BAD STATES & IDLE TIMES.

Problem: For operators, it is time-consuming to keep track of the program progress, machine conditions and errors from multiple machines at possibly different locations.

Solution: APOLLO shows the program progress, operating, environmental and error states at one glance for multiple machines from anywhere. Get error & other notifications.

Value: Less operator efforts through remote monitoring, reduced machine downtime through real-time error messages, less unnoticed idle times and process quality issues due to vibration or temperature.



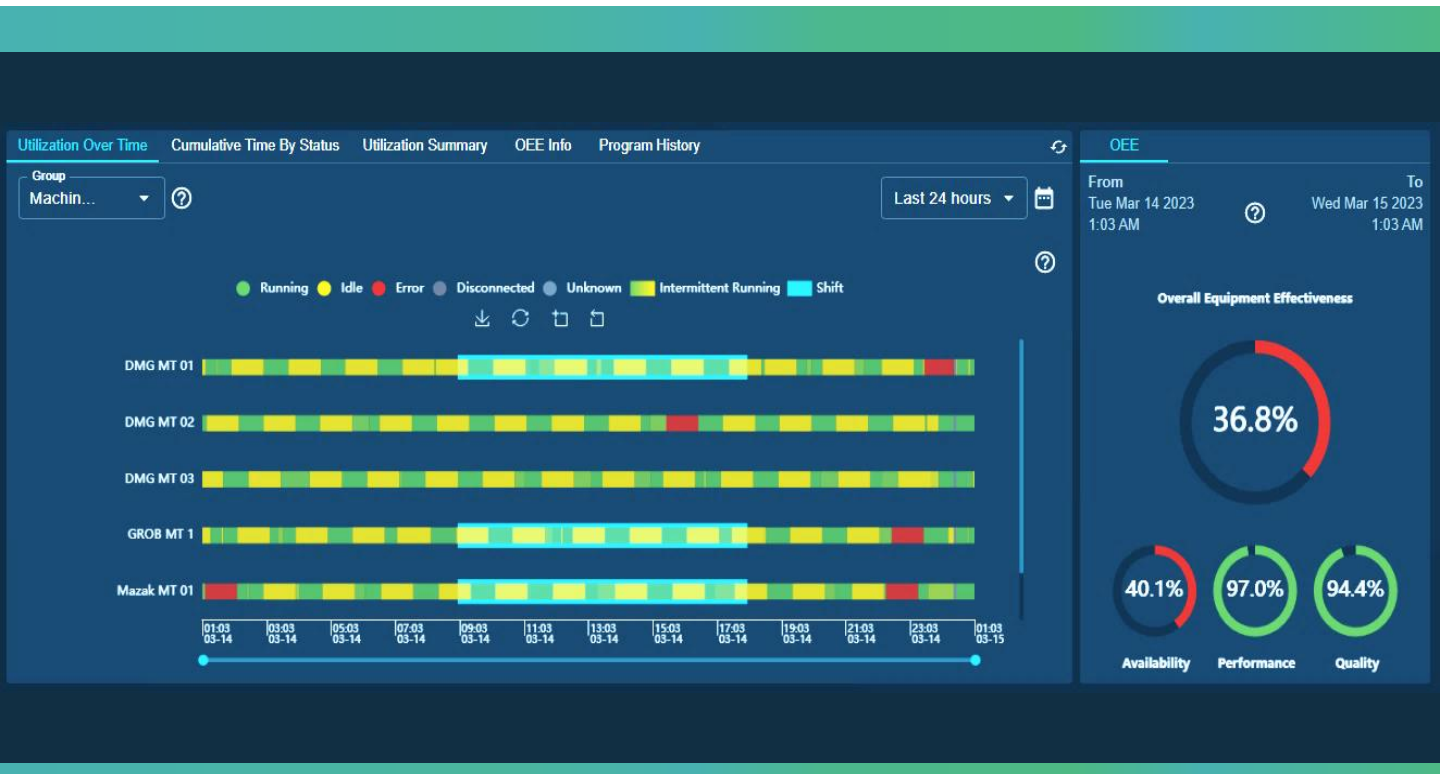
FOR CONTINUOUS OEE EVALUATION & MORE MACHINE PROFITABILITY

Less Hidden IDLE TIMES, ERROR TIMES & PROGRAM INEFFICIENCIES, More AVAILABILITY, PERFORMANCE & QUALITY.

Problem: The effectiveness or profitability of machines is often unclear. Idle times, error times or low execution speeds of certain machines leading to availability, quality or performance issues remain unrecognized.

Solution: Continuous operation monitoring & automatic evaluation of OEE parameters with APOLLO for all or individual machines. Visualization of error, idle times & performance per machine or time range to spot problematic machines or shifts.

Value: Continuous knowledge of the overall and detailed equipment effectiveness of the machinery. Known root causes to improve for more availability, performance & quality. Higher machinery profitability.



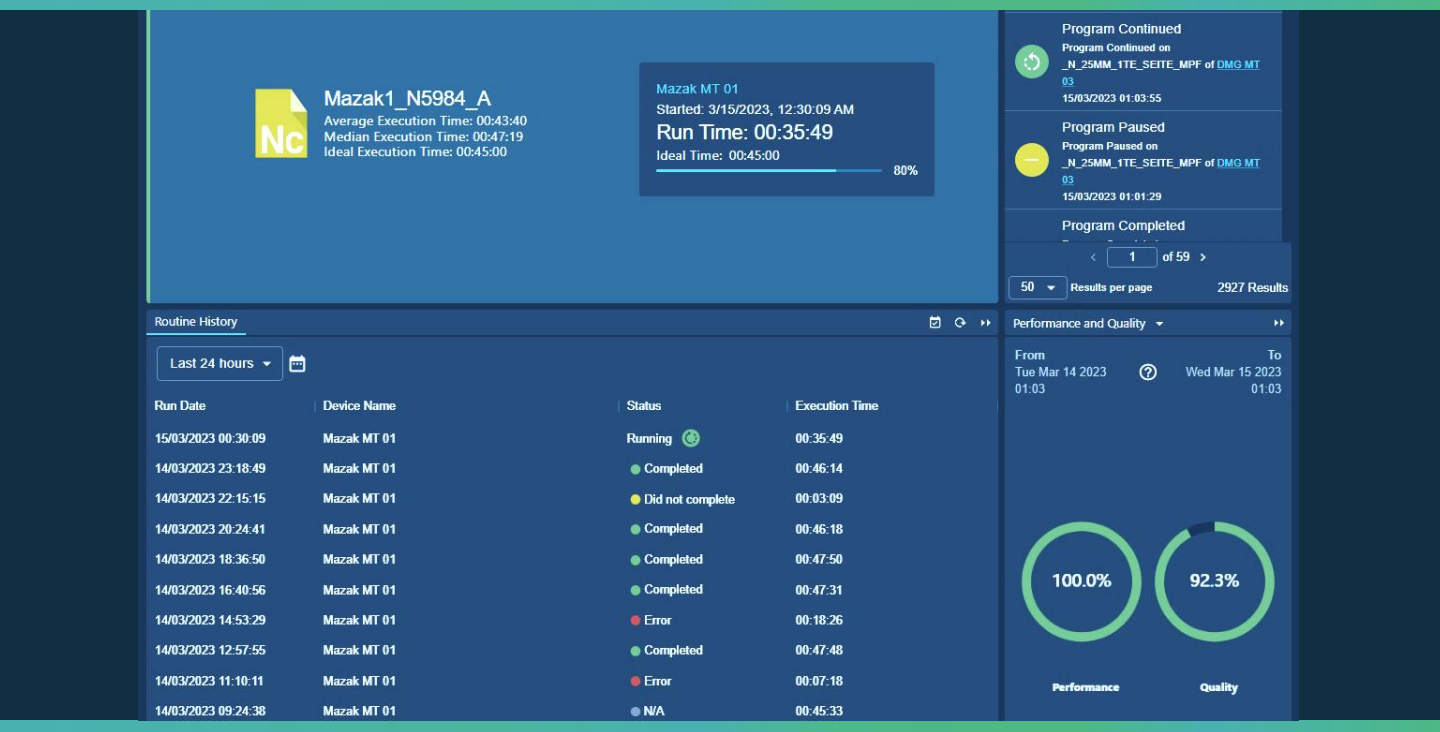
FOR DETAILED PERFORMANCE CONTROL ACROSS PROGRAMS

Less deviations from IDEAL CYCLE TIMES,
Detailed EXECUTION HISTORY per program and machine.

Problem: Performance and quality issues are always related to programs and not only machines. Without a detailed digital overview, it is hard to trace them back to certain programs running on certain machines at certain times to identify root causes.

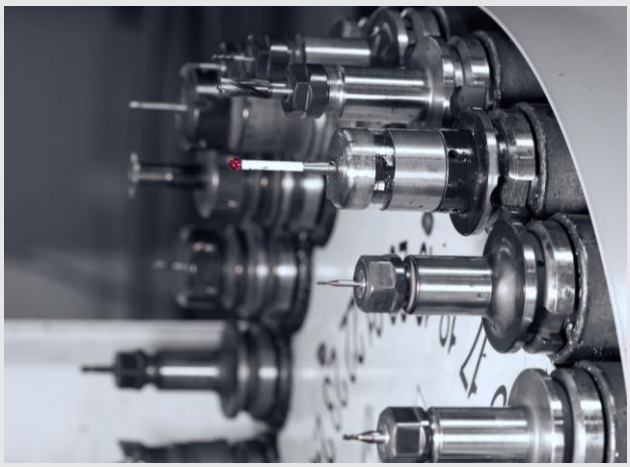
Solution: All programs across all machines are automatically stored in APOLLO including execution time, used tools, critical events and speeds. Cancelled or low-performant routines or routines with critical events, certain tools or certain execution dates can be filtered to investigate root-causes and improve performance or quality.

Value: More performance & quality due to less unrecognized program execution issues.



FOR AN OVERVIEW OVER TOOL USAGE & UTILIZATION

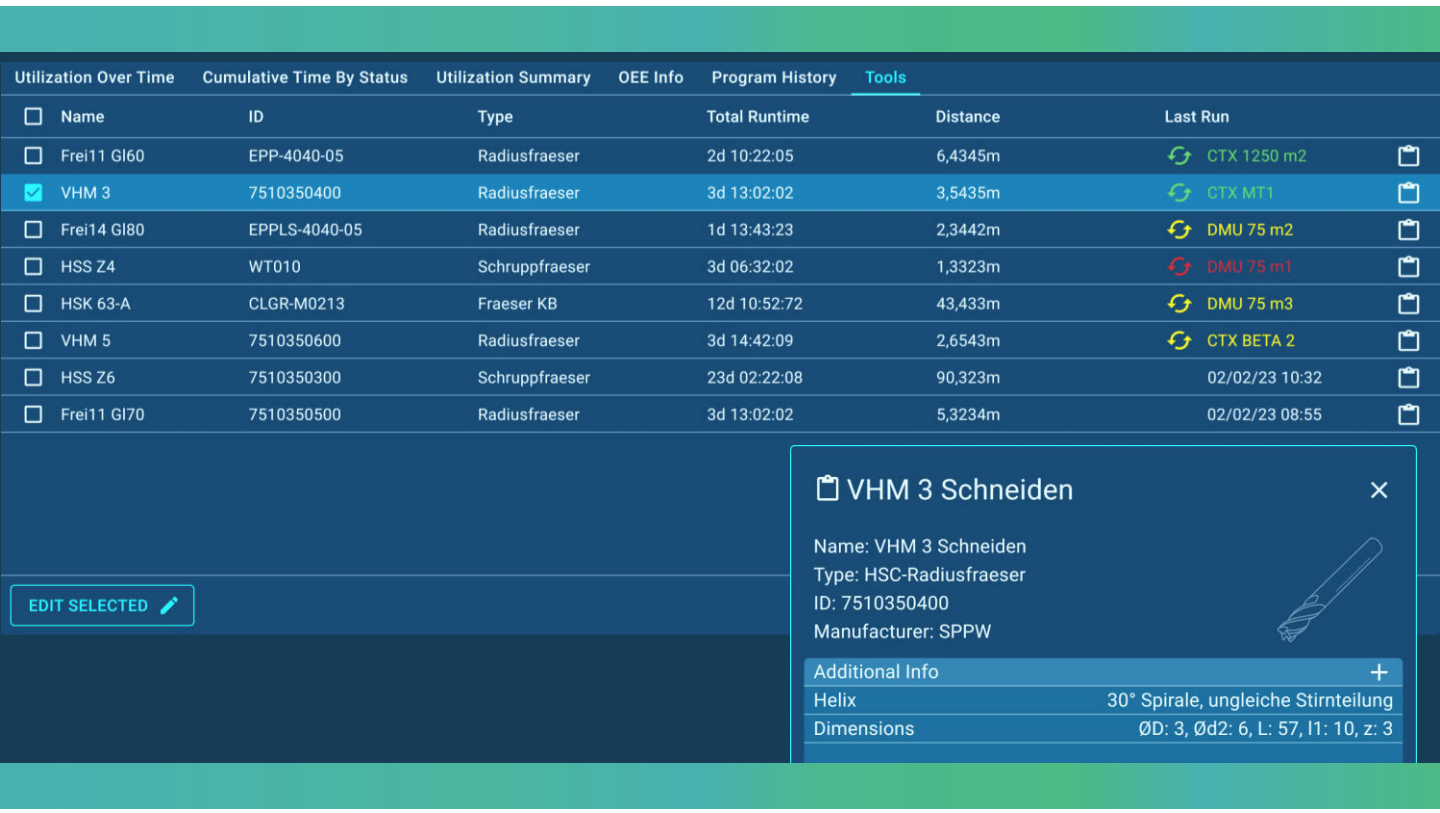
Less TOOL WASTAGE & UNNOTICED LOSS,
Less Downtime & Scrap Due to TOOL BREAKAGES.



Problem: Often, there is no overview over used tools and their utilization across machines. Tools might get lost unnoticed or are replaced too quickly or too late leading to higher costs, lower quality or breakage.

Solution: Automated tracking of all used tools and their utilization across machines with APOLLO. See an overview table of existing tools and their runtime or travelled distances. Get notified when tools exceed defined operation times or distances.

Value: Tools cannot get lost unnoticed. They are replaced timely and in a cost-efficient manner before leading to lower quality, breakage or downtime, respectively.



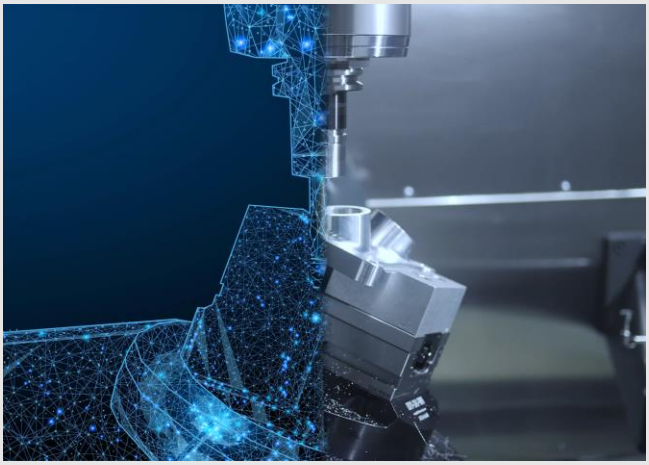
FOR CONTINUOUS PROCESS STABILITY & QUALITY

Less unnoticed RATTLING & CRITICAL ENVIRONMENT CONDITIONS,
Less unnoticed TOOL & COMPONENT WEAR.

Problem: Unnoticed tool wear, non-optimal machine cutting parameters, rattling or environment conditions like vibration or temperature can lead to quality issues.

Solution: Continuous monitoring of in-built or externally applied machine sensors measuring vibrations, noise or temperatures with APOLLO. Get alerts and notifications when warning or critical limits are exceeded.

Value: Less scrap, less quality issues, more processing stability and plannability.



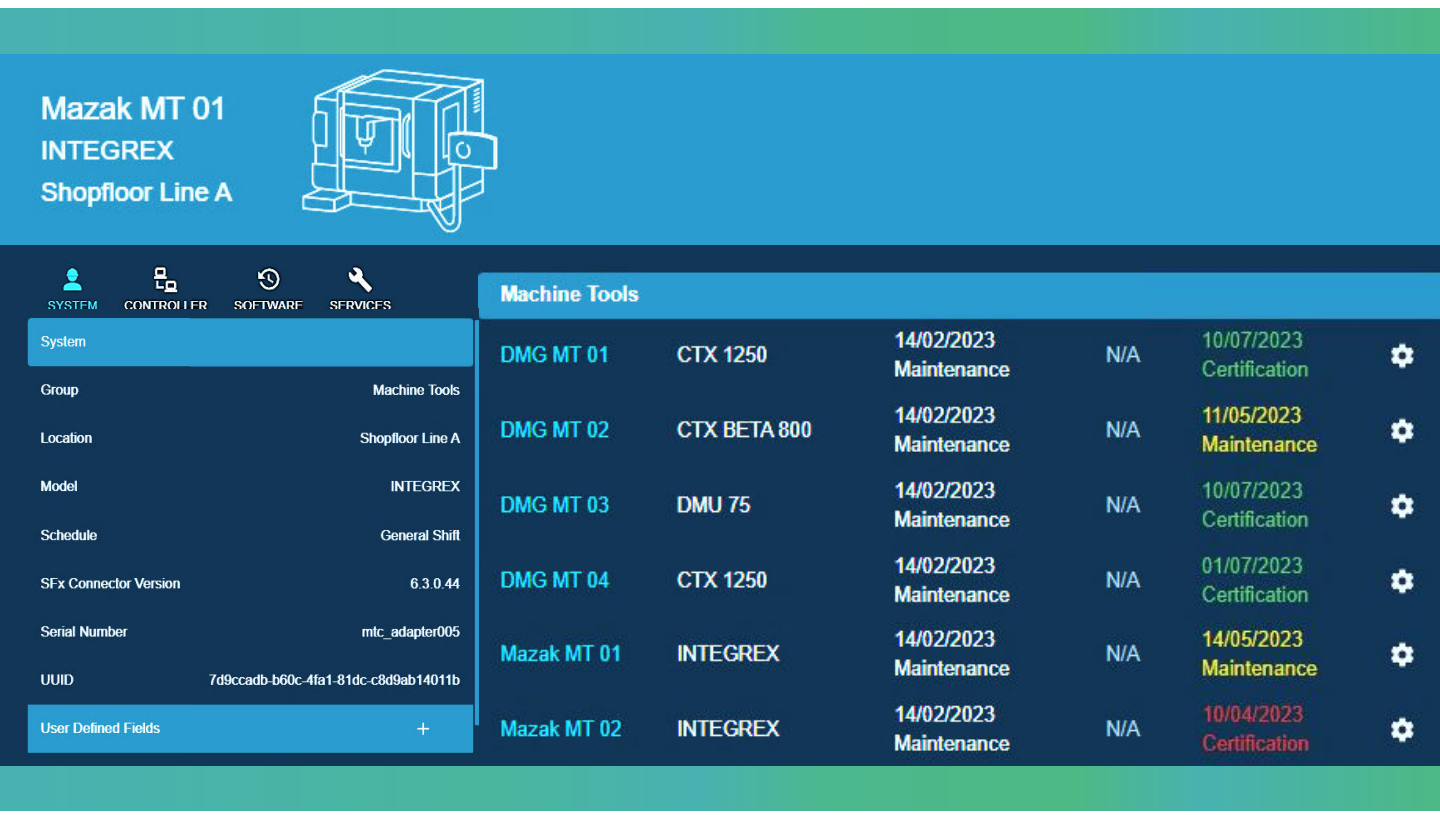
FOR EFFICIENT EQUIPMENT & MAINTENANCE MANAGEMENT

Less effort for EQUIPMENT INFORMATION MANAGEMENT,
Automated MAINTENANCE DOCUMENTATION + REQUESTS.

Problem: Audits must be prepared. Updates of the inventory of the machinery are to be taken. The proper use or maintenance is to be proven to a machine manufacturer for a warranty claim. Necessary service or maintenance of the machinery must be managed and planned. All requires effortful manual documentation and communication.

Solution: Continuously structured and immediate access to all relevant machinery, maintenance, and service history data for all machines and from anywhere. Simple export of relevant data and direct service request from APOLLO.

Value: Significantly reduced manual efforts for audits, equipment, service & maintenance administration. Reliable machinery data.



FOR SIMPLE DOCUMENTATION OF COOLING LUBRICANT PARAMETERS

Less efforts for DOCUMENTATION & ARCHIVING,
Immediate ACCESSIBILITY & READINESS for audits.

Problem: Cooling lubricant parameters like concentration or ph-value are to be measured and documented regularly including personalized confirmations of the individual entries. This as well as the long-term storage and management of the data requires manual efforts and paperwork.

Solution: Cooling lubricant parameter values can be entered in APOLLO including personalized confirmation. The following storage, structuring and management of the data means no efforts anymore. For auto. measuring, sensors can be applied.

Value: Significantly reduced manual efforts for cooling lubricant checks. Reliable stored data with accessibility, e.g., for audits.

Cooling Lubricant Maintenance for A-Fact | CTX MT1

Cooling Lubricant: ALUSOL XT FF
Quantity in Liters: approx. 800

Application Concentration: 7% / 10%
pH: 8,8 / 9,5
Refractometer Factor: 1

Preparation Water: Tap Water
Water Hardness: approx.. 13 dH

Measurement Frequency: Weekly

NEW ENTRY

Measurement Date	Operator	Perceptible Changes	Refractometer Concentration [%]	pH Level	Nitrite [mg/L]	Care Measures	Notes
21.03.23 10:47	Jule Schmidt	empty	✗ 10.2	✗ 9.6	✓ 2	empty	empty
14.03.23 10:22	Sascha Müller	empty	✗ 10.3	✗ 9.9	✓ 2	empty	empty
07.03.23 10:03	Jule Schmidt	empty	✓ 9.0	✓ 9.0	✓ 2	empty	empty
28.02.23 11:42	Jule Schmidt	empty	✓ 9.5	✓ 8.9	✓ 1	empty	empty
21.02.23 10:27	Sascha Müller	empty	✗ 6.5	✗ 9.6	✓ 0	empty	empty
14.02.23 09:54	Sascha Müller	empty	✓ 8.0	✓ 9.2	✓ 0	empty	empty
07.02.23 10:11	Jule Schmidt	empty	✓ 8.0	✓ 9.0	✓ 0	empty	empty
31.01.23 10:50	Jule Schmidt	empty	✓ 9.0	✗ 8.6	✓ 2	empty	empty

FOR COST-OPTIMIZED MAINTENANCE & RELIABILITY AFTER COLLISIONS

No HIDDEN COLLISIONS Causing Processing Quality Problems, Better Evaluation of MAINTENANCE NECESSITY.

Problem: Collisions occur and may go unnoticed, or it is unclear if the collision was critical & the machine requires maintenance.

Solution: Automatic notification by APOLLO in case of collision. Assessment of collision severity in APOLLO via speed / acceleration / force / deflection info from control or sensor.

Value: Minimized risk for quality problems due to unnoticed collisions. No unnecessary maintenance costs due to overestimated collision severity, no process quality risk due to underestimated collision severity.

Which machines can be connected to APOLLO?

With our guaranteed connection within 30 days, we connect any machine to APOLLO. APOLLO offers a variety of existing interfaces with standard protocols or common manufacturers.

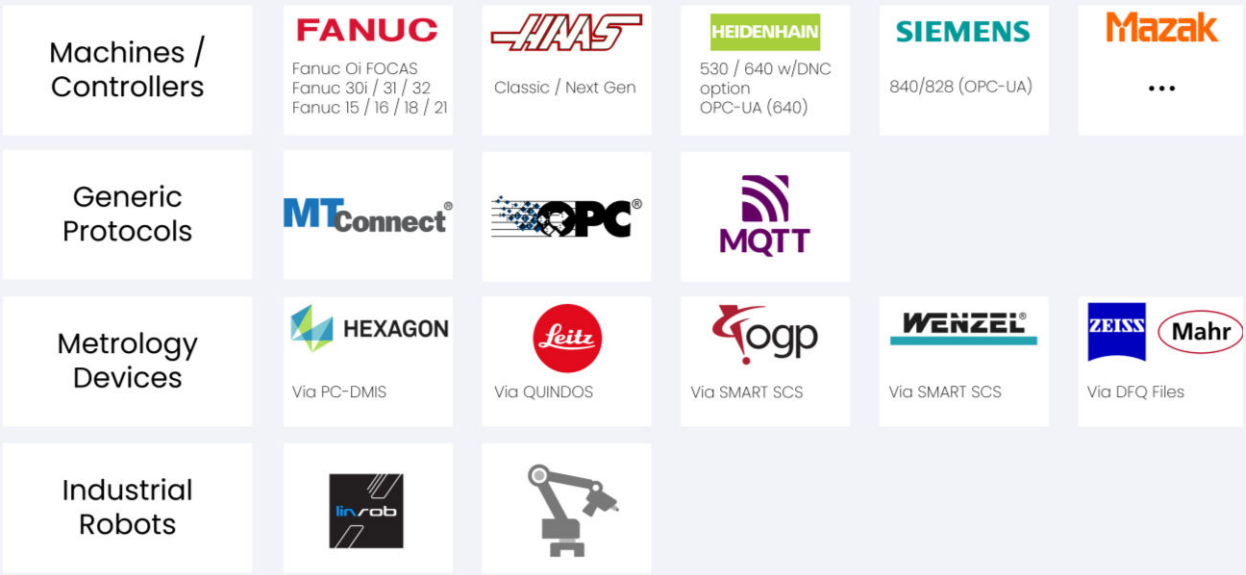


Figure: Existing interfaces with common machine & control manufacturers as well as with standard protocols

How can I test IconPro APOLLO?

We would be happy to provide you with a demo access to our software, where sample machines are included.

In order to test APOLLO for your application, we would be glad to include a pilot machine from your machine park.

Contact us to test the software or discuss it in more detail for your use case. We are happy to take the time for you: info@iconpro.com

IconPro is a leading technical provider of software solutions for predictive quality & predictive maintenance as well as process & energy optimization in production.

IconPro software helps manufacturing companies of all sizes to achieve more efficient and sustainable processes and machines. Our customers produce more competitively with less costs and resource usage.

Originating from the Machine Tool Laboratory of RWTH Aachen University, the largest institute for production research in Europe, we offer in-depth production expertise and software tailored to the shopfloor.

Learn more about IconPro at **iconpro.com** and follow us on **LinkedIn**. Feel free to write to us to **info@iconpro.com**.