

From downtime to uptime

Improving Machining Performance

Automated Real-Time Production Process Control & Management

SOLUTION OVERVIEW

MDCplus: Automated Real-Time Production Control

MDCplus is a comprehensive solution for automated, real-time production process control and management, designed to transform manufacturing operations through intelligent data collection and analysis.

Target Industries

✈ Aerospace

⚙ Precision Machining

🚢 Marine

🏠 Home Appliances

🏭 Mining Factories

🚗 Automotive

🔧 Heavy Industry

✂ Turbines & Pistons

🚂 Railway Components

🛢 Refineries

Customers



Röchling



komax

Mencast
PARTNER PERFECT



500+

Projects

26K+

Machines

27

Countries

35+

Partners

8

Years

What Challenges Do We Focus On

1

Production Downtime

Your production **downtime is high**, but you can't figure out the reason because...

 Lack of visibility

2

Data Collection

Data isn't collected properly, gaps and discrepancies are constant, hence...

 Incomplete insights

3

Planning & Control

You **can't plan, predict and control** production effectively without accurate real-time data.

 No predictability



MDCplus Solution: Real-time data collection, automated analysis, and intelligent control to eliminate these challenges

SYSTEM ARCHITECTURE

MDCplus Integration with Enterprise Systems

Planning Systems

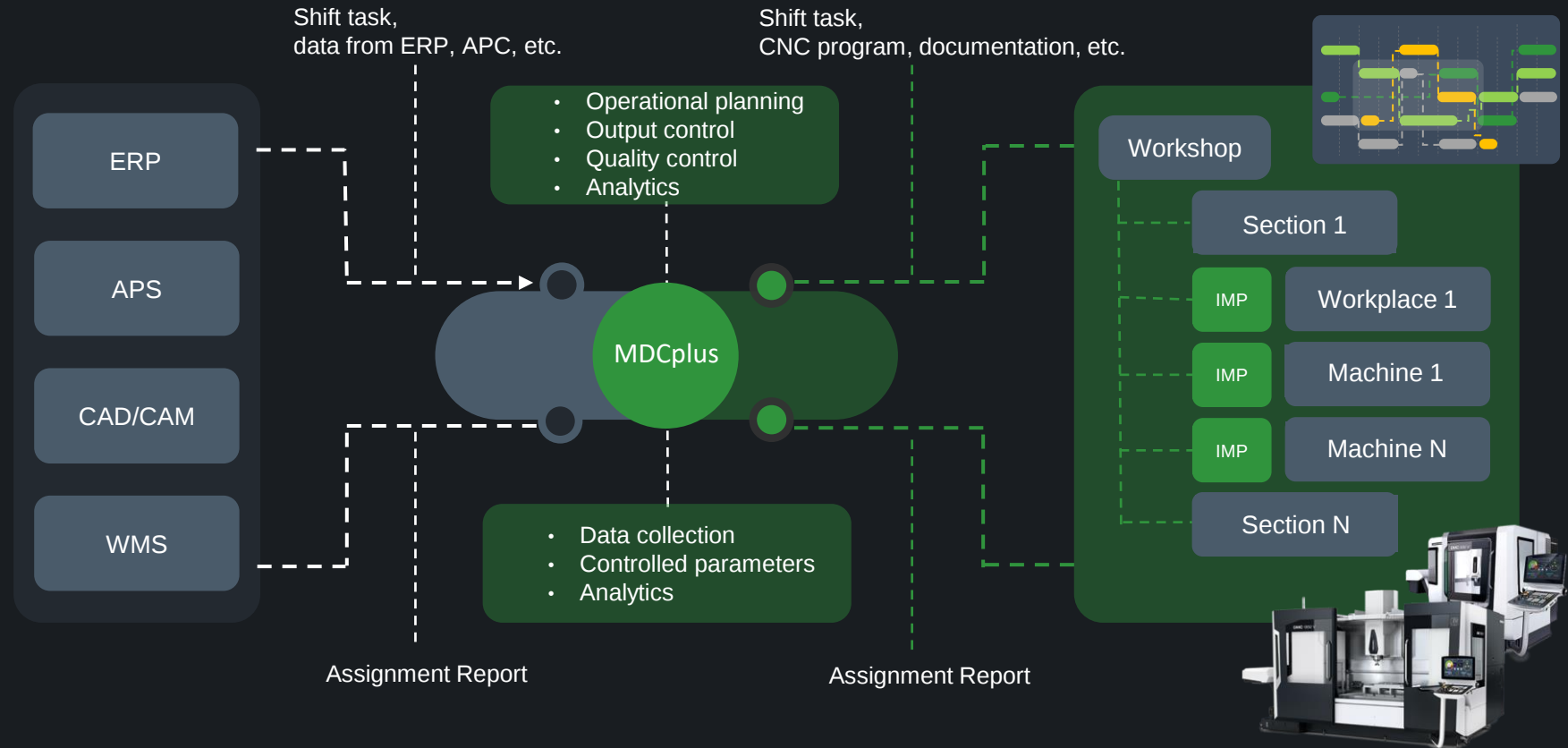
- ✓ Shift task management
- ✓ CNC program & docs
- ✓ Operational planning
- ✓ Output control
- ✓ Quality control
- ✓ Analytics

MDCplus Core

- Data collection
- Controlled parameters
- Analytics

Workshop Level

- Work schedule
- Digital workplace
- Machine control



Integration

Scheduling

CAD/CAM

WMS

CONNECTIVITY

Universal Equipment Connectivity

MDCplus collects data from almost every type of equipment



CNCs



PLCs



Robots

Equipment

- ✓ **CNC machines** (Computer Numerical Control machines)
- ✓ **Production lines**
- ✓ **Injection molding machines** (Thermoplastic injection molding machines)
- ✓ **Welding machines**



Time-Saving

Quick deployment



No Additional Hardware

Use existing infrastructure

Connection protocols

FANUC

SIEMENS

Mazak

 **Allen-Bradley**
by ROCKWELL AUTOMATION

 **MITSUBISHI
ELECTRIC**
Changes for the Better

Schneider
 **Electric**

Bystronic

BECKHOFF

 **DELTA**

  **Haas**
F1 Team
OFFICIAL MACHINE TOOL



Find & Check Your Protocol

OPERATOR INTERFACE

IMP: Individual Monitoring Panel

Web application for operator-machine interaction

Device Flexibility



Tablet

Touch interface



Smartphone

Mobile access

Key Functions

- ✓ Operator registration & authentication
- ✓ Download CNC programs
- ✓ View technical documentation
- ✓ Report downtime reasons
- ✓ Real-time status updates



Connected to Machine

Direct equipment link



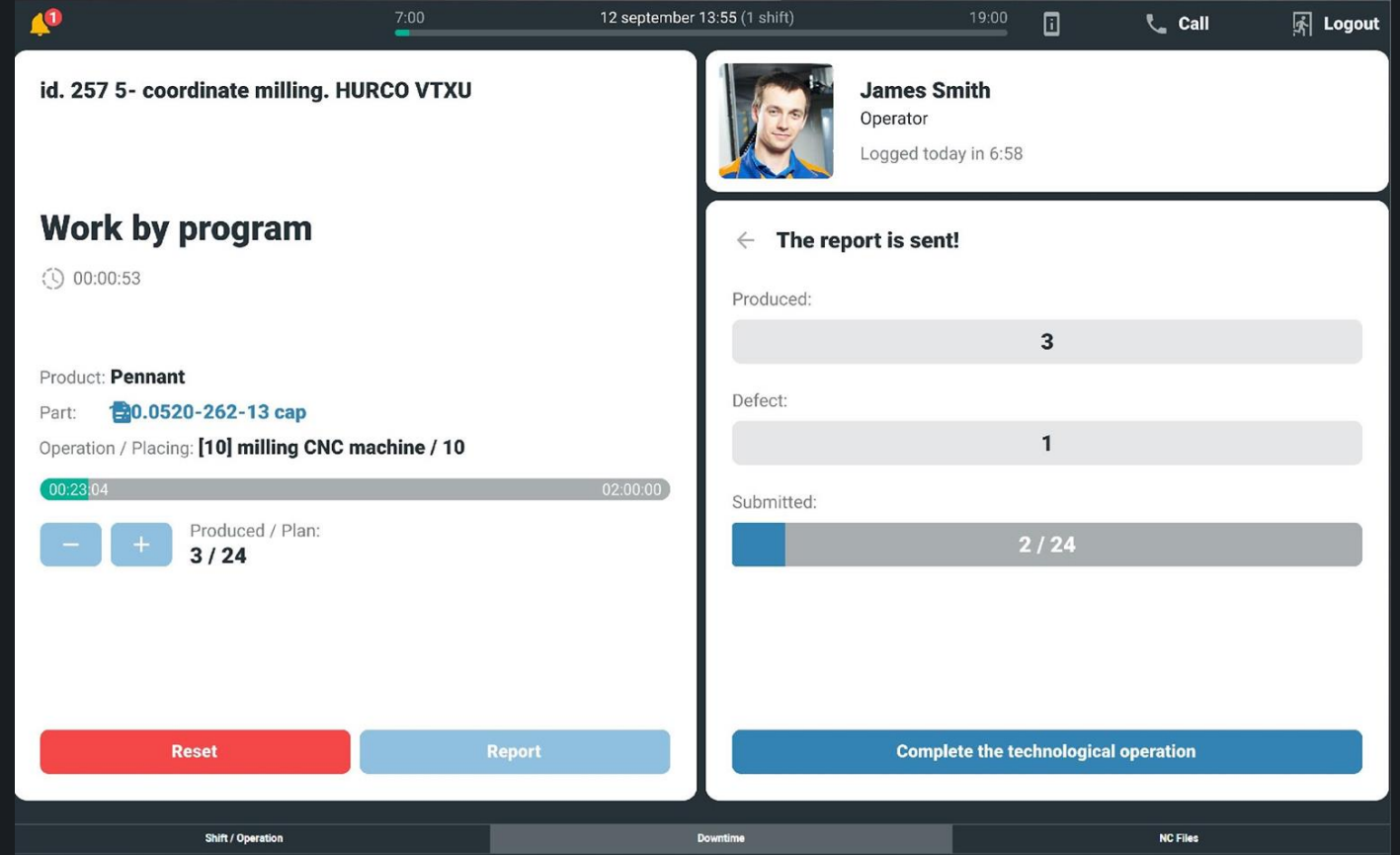
Real-time Sync

Instant data updates



User-Friendly

Intuitive interface



MONITORING

Real-Time Equipment Control



Machine Status & Downtime

Real-time monitoring of machine status with direct link to workforce.
Track downtime reasons instantly.



Emergency Notifications

Automatic alerts to employees about emergencies and critical situations at production facilities.

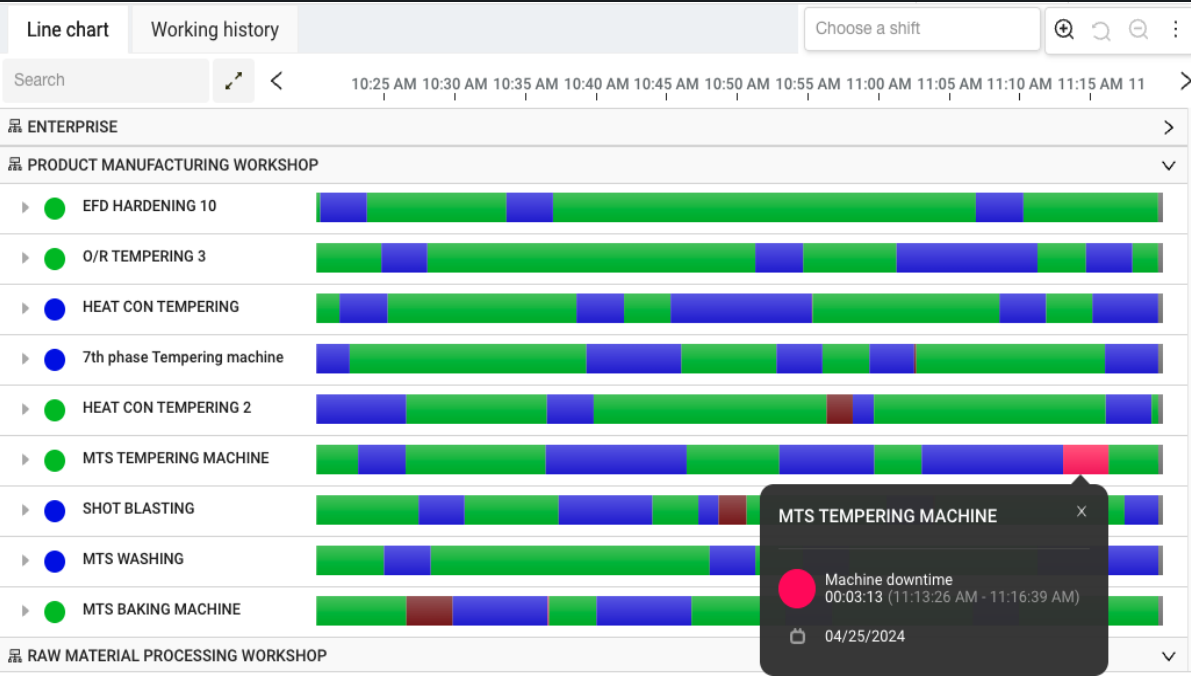


Automatic Downtime Logging

Automatic generation of downtime causes without human intervention, ensuring accurate data.

Equipment Operating History

- Historical trend analysis ✓
- Performance metrics over time ✓
- Maintenance records ✓



Real-Time Metrics

100%

Visibility

<1s

Update Rate

24/7

Monitoring

0

Manual Input

Technological Parameters Monitoring

Notification Channels



Email Alerts

Detailed reports & notifications



SMS Notifications

Instant mobile alerts



In-App Notifications

Dashboard & mobile app alerts

Deviation Analysis

Set customizable thresholds for each parameter. System automatically detects and reports deviations.

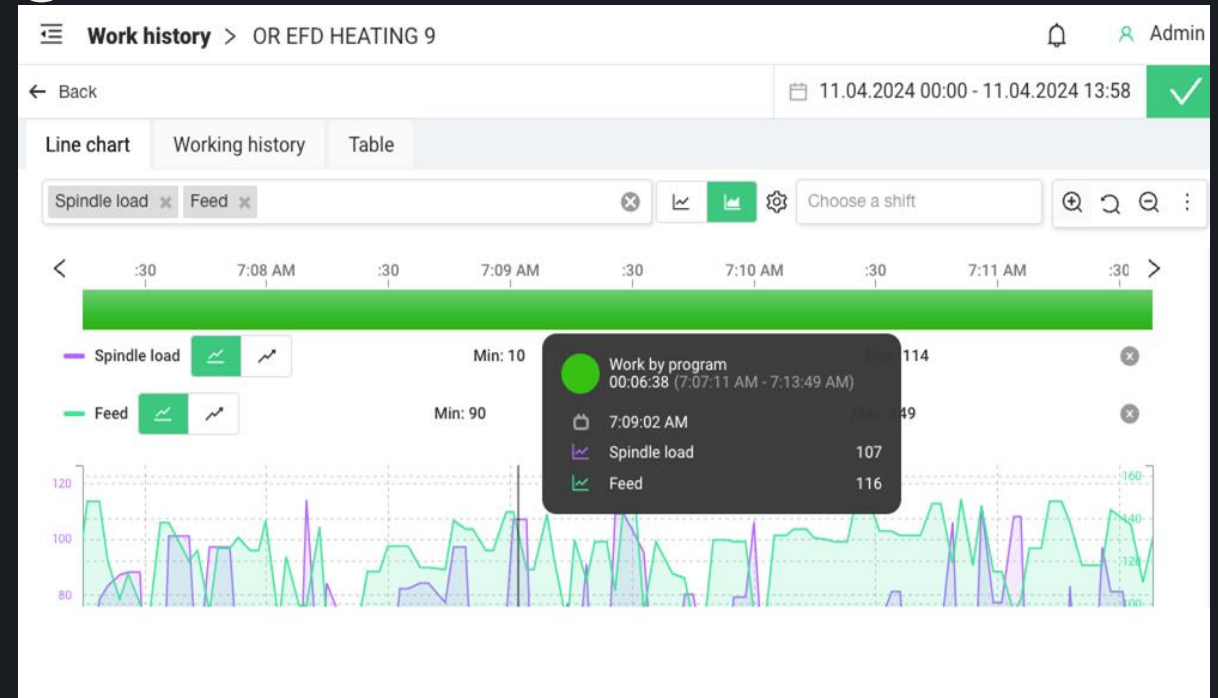


Configurable limits



Proactive Quality Control

Prevent defects before they occur



Controlled Parameters



Feed Rate



JOG Correctors



Temperature



Vibration

NC Program Management



Centralized Storage

Store programs based on relations with products, assemblies and parts according to design composition.



Transfer Control

Complete control over program transfer with verification and logging of all operations.



Automatic Transfer

Automatic program delivery to machines based on production schedule and requirements.



Program Verification

Compare executed programs with originals to ensure accuracy and prevent errors.

Comparison of NC program file with the reference

00341 AXH Air Coolers (AW/EA VP-3012)

09/04/2024 1:59:49 PM

✓ Mismatch

☆ Assign as a reference Comparison method By word Number of matches: 46/51 90%

Download

Reference NC program file		NC program working file	
Expand matching rows...			
6	M01	6	M01
7	T15M6	7	T15M6
8	(DRILL POINT CHECK CYCLE)	8	(DRILL POINT CHECK CYCLE)
9	- / G0G90G54X1 . Y - 1 . A0 .S1500M3	9	+ / G0G90G54X0 . 0Y - 0 . 0A0 .S1500M3
10	/G43H15Z1.0	10	/G43H15Z1.0
11	/G98G81Z-0.01R0.15F28.590	11	/G98G81Z-0.01R0.15F28.590
12	/X16.	12	/X16.
Expand matching rows...			
19	(REG DRILL CYCLE)	19	(REG DRILL CYCLE)
20	T11M6	20	T11M6
21	- G0G90G54X1 . Y - 1 . A0 .0S2221M3	21	+ G0G90G54X0 . 0Y - 0 . 0A0 .0S2221M3

Implementation Analysis

Usage statistics



Performance metrics



Version control



Optimization insights



PERFORMANCE METRICS

Key Performance Indicators

MDCplus Analytics

Online monitoring solution that tracks KPI, OEE, and other critical metrics in real-time.

KPI

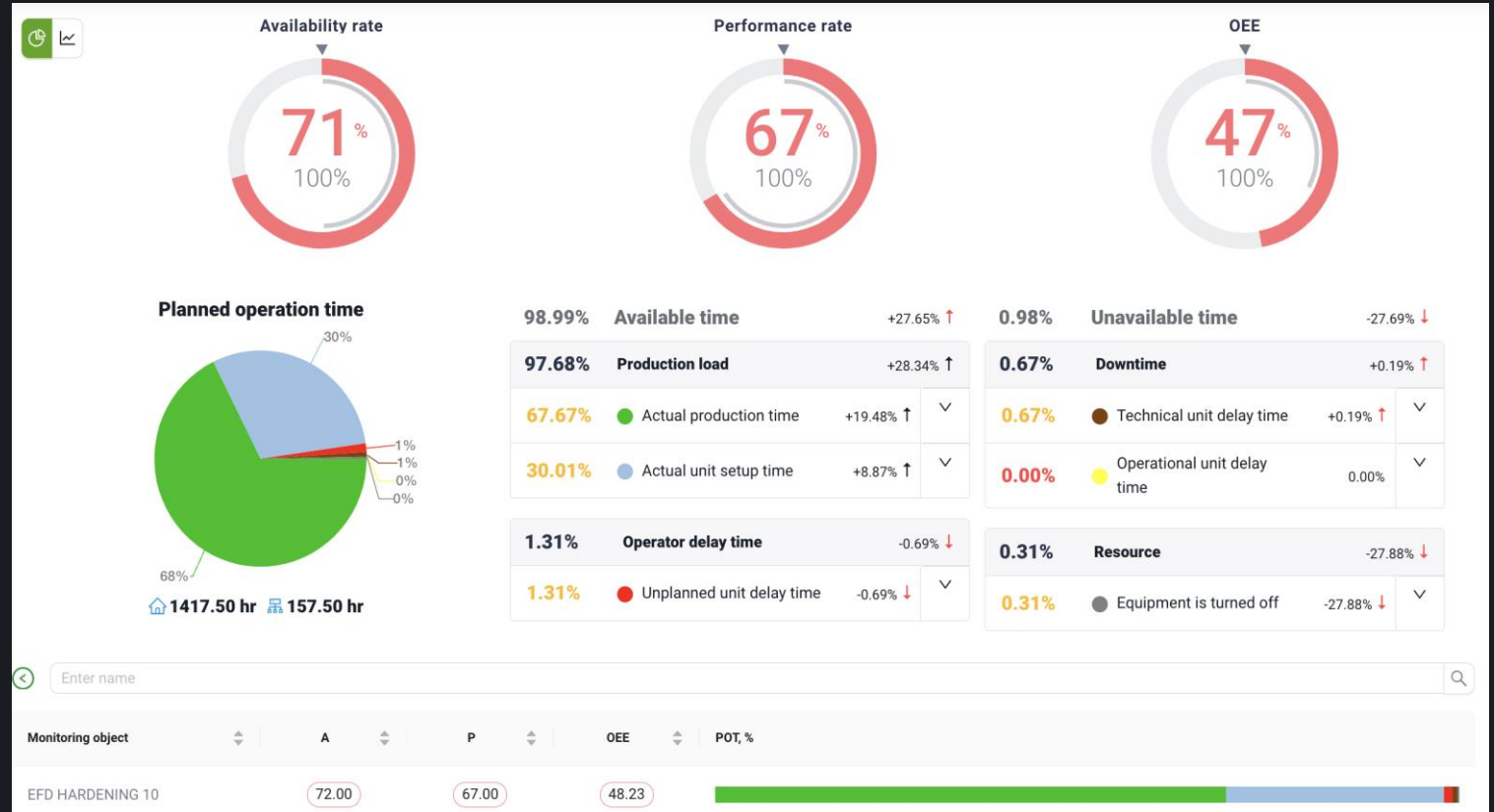
Tracking

OEE

Monitoring

⚡ Real-Time Reaction

React quickly to situations and make required decisions based on live data and automated alerts.



Availability



Performance



Quality



OEE Score

PLANNING

Operative Planning



Task Management

Comprehensive task assignment and tracking system for production operations.



Equipment Load Control

Monitor and optimize equipment utilization across all production resources.



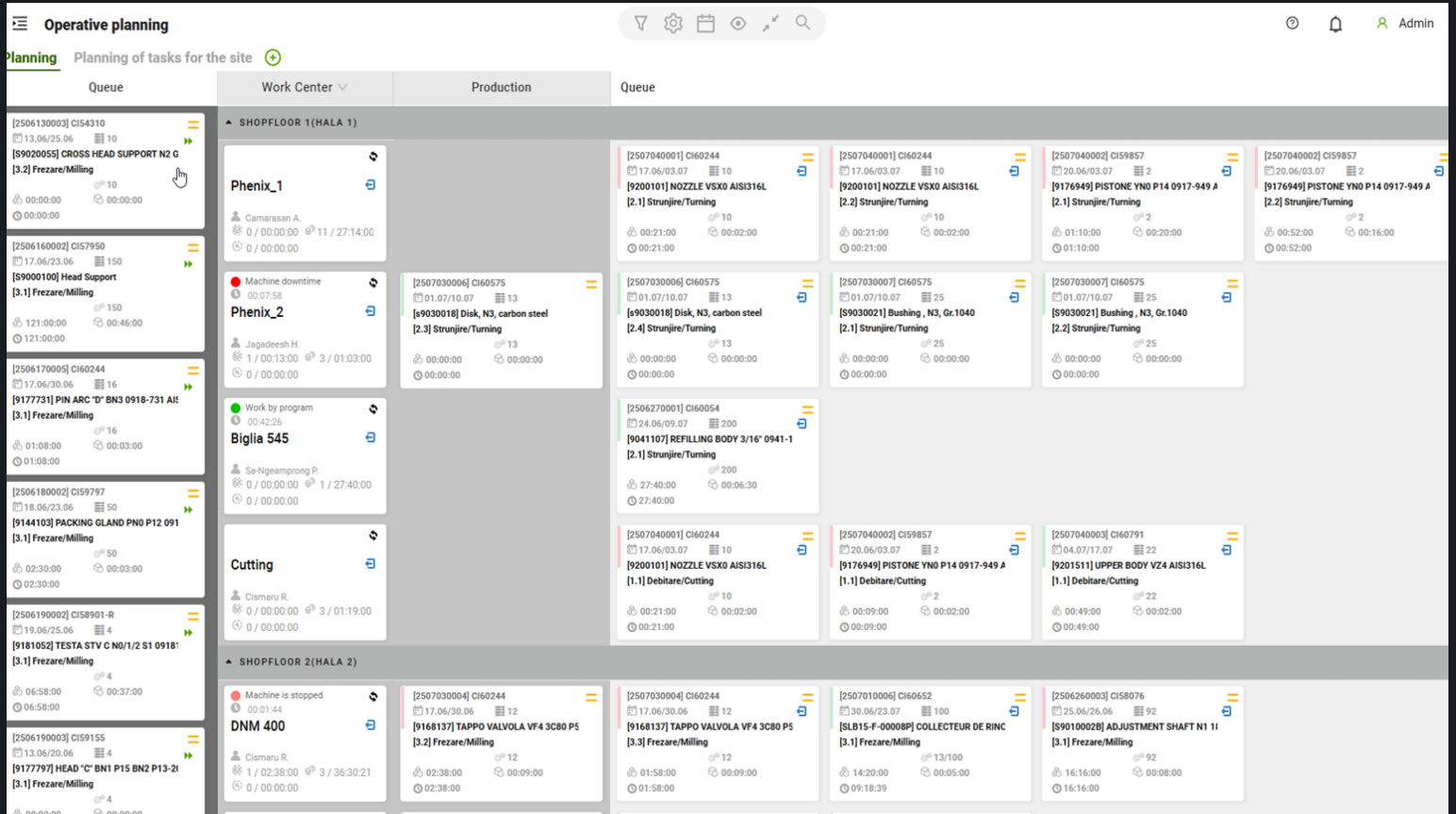
Operational Plan Changes

Flexible planning with real-time adjustments based on production conditions.



Release Date Calculation

Accurate calculation of production release dates based on real-time capacity.



Planning Benefits



On-time delivery



Optimized output



Balanced load



Resource sync

ANALYTICS AND CUSTOMIZATION

Dashboard Editor

Web-based builder – no programming skills required



Drag-and-Drop Builder

Create custom dashboards with intuitive drag-and-drop interface. No coding required.



Custom Dashboards

Build unlimited dashboards tailored to specific roles, departments, or use cases.



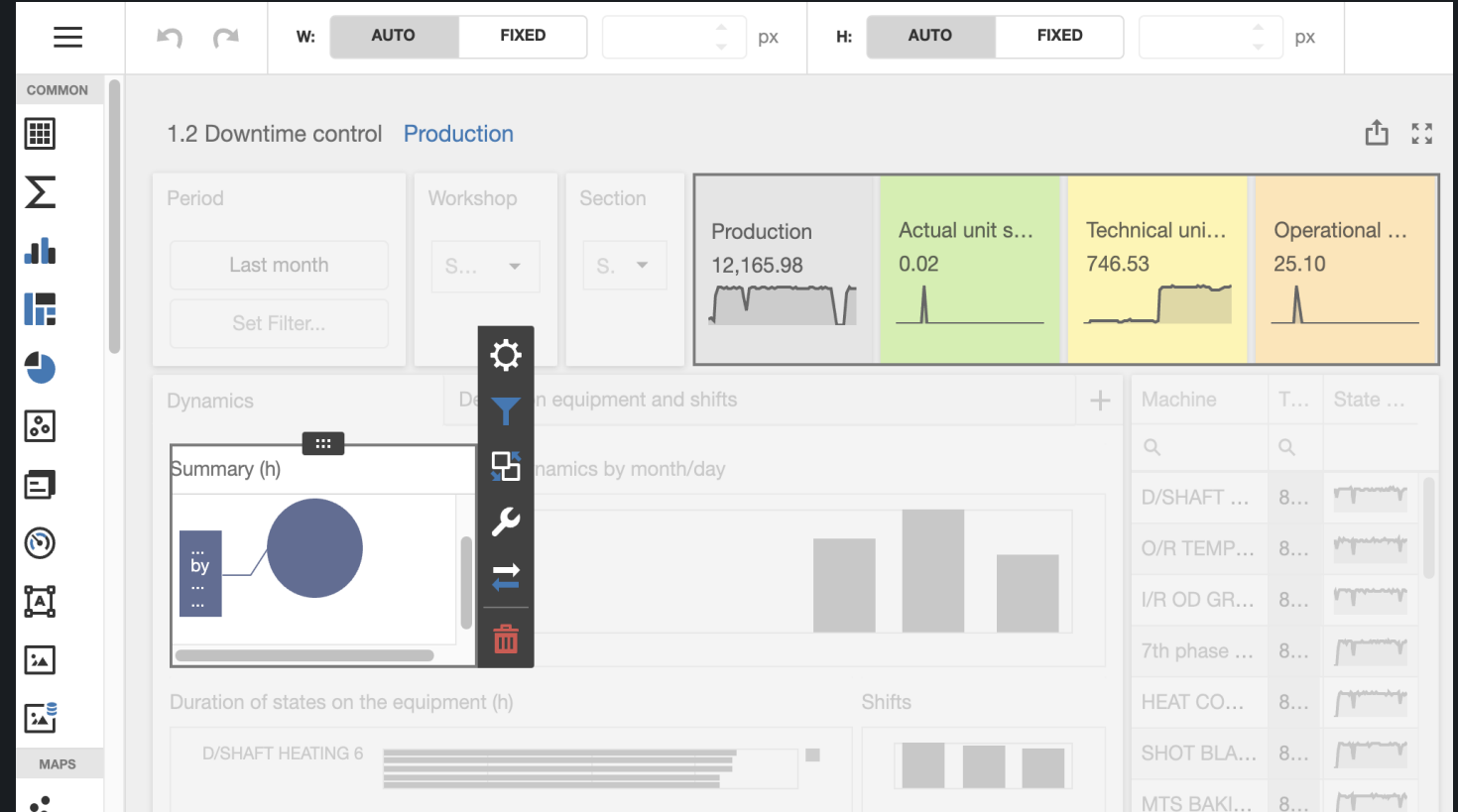
Modify Embedded Analytics

Customize existing analytics and reports to match your specific requirements.



Custom Fields

Create additional fields that don't exist in standard MDCplus for unique tracking needs.



BI Integration

ERP Systems

MES Integration

... And more...

Equipment Load Control Dashboard

Dashboard Purpose

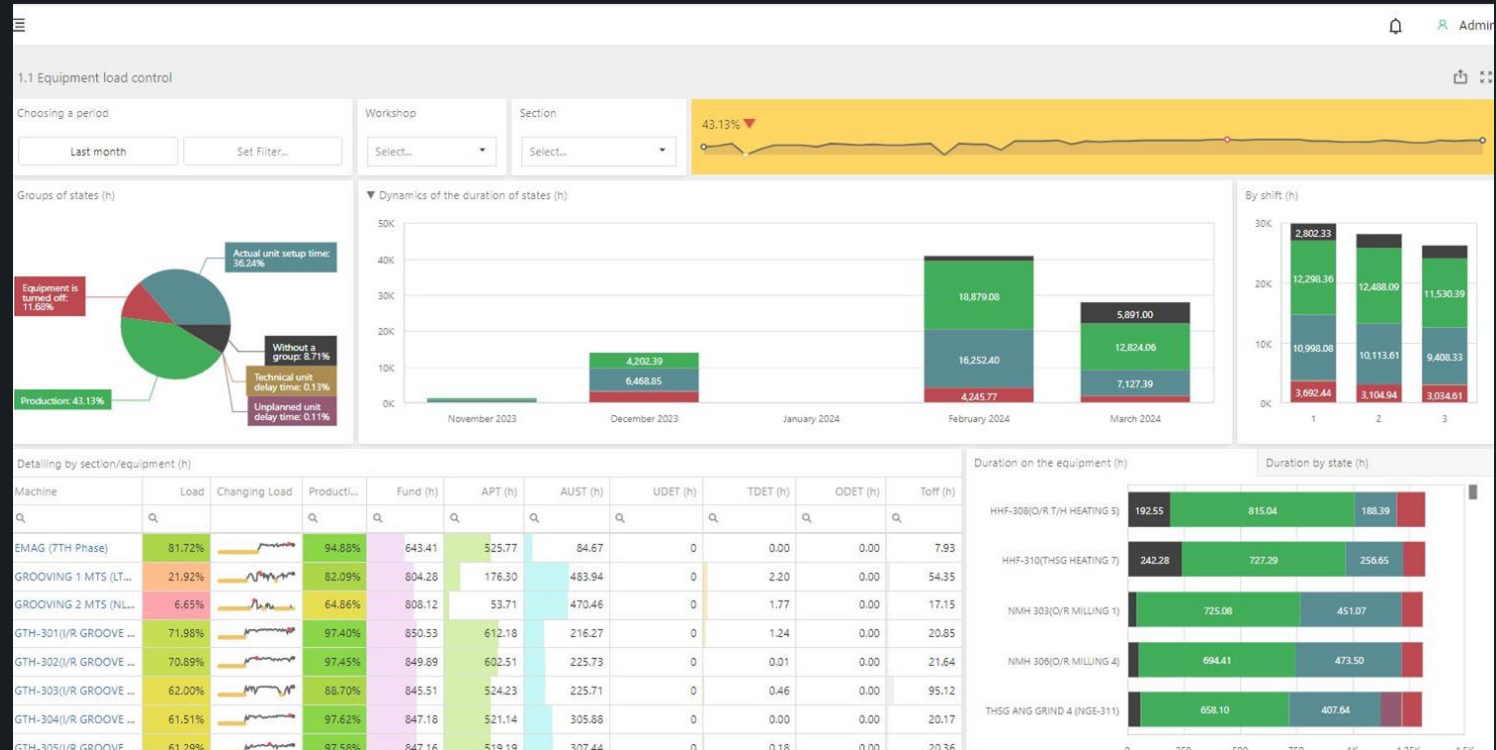
Provides detailed information on production time and serves as a tool for finding problem areas in equipment utilization.

Displayed Information

- ✓ Percentage ratio of analytical state groups
- ✓ Detailing of state groups by days/shifts/machines
- ✓ Dynamics of state changes over time
- ✓ Summary information on state duration

Problem Area Detection

Identify bottlenecks instantly



Custom Real-Time Overview Dashboard

Dashboard Purpose

Custom dashboard created to display real-time summary information on the statuses of all equipment in the enterprise.

Key Features

- Information presented in tabular form
- Equipment divided into groups by customer preference
- Information updated in real-time
- Click on group name to navigate to monitoring page

Real-Time Updates
Live data refresh every second

HYUNDAI
MDCplusWIA

Monitoring panel

30/05/2024 16:42:21

New machine 1 Prog - Feed - State Duration: 0	Too Long short name for New machine 1 Work by program Prog - Feed - State Duration: 196	New machine 2 Machine is stopped Prog - Feed - State Duration: 181	New machine 3 Machine is stopped Prog - Feed - State Duration: 189	New machine 4 Work by program Prog - Feed - State Duration: 167	New machine 5 Machine is stopped Prog - Feed - State Duration: 184	New machine 6 Work by program Prog - Feed - State Duration: 188	New machine 7 Work by program Prog - Feed - State Duration: 376	New machine 8 Work by program Prog - Feed - State Duration: 185	New machine 9 Work by program Prog - Feed - State Duration: 6	New machine 10 Machine is stopped Prog - Feed - State Duration: 380	New machine 11 Work by program Prog - Feed - State Duration: 795	New machine 12 Work by program Prog - Feed - State Duration: 191	New machine 13 Work by program Prog - Feed - State Duration: 371
New machine 14 Machine is stopped Prog - Feed - State Duration: 180	New machine 15 Work by program Prog - Feed - State Duration: 384	New machine 16 Work by program Prog - Feed - State Duration: 175	New machine 17 Work by program Prog - Feed - State Duration: 181	New machine 18 Machine is stopped Prog - Feed - State Duration: 192	New machine 19 Machine is stopped Prog - Feed - State Duration: 5	New machine 20 Work by program Prog - Feed - State Duration: 5	New machine 21 Machine is stopped Prog - Feed - State Duration: 5	New machine 22 Machine is stopped Prog - Feed - State Duration: 5	New machine 23 Machine is stopped Prog - Feed - State Duration: 169	New machine 24 Work by program Prog - Feed - State Duration: 380	New machine 25 Work by program Prog - Feed - State Duration: 1212	New machine 26 Machine is stopped Prog - Feed - State Duration: 376	New machine 27 Work by program Prog - Feed - State Duration: 11
New machine 28 Work by program Prog - Feed - State Duration: 1194	New machine 29 Work by program Prog - Feed - State Duration: 196	New machine 30 Work by program Prog - Feed - State Duration: 162	New machine 31 Work by program Prog - Feed - State Duration: 190	New machine 32 Work by program Prog - Feed - State Duration: 633	New machine 33 Work by program Prog - Feed - State Duration: 381	New machine 34 Machine is stopped Prog - Feed - State Duration: 190	New machine 35 Work by program Prog - Feed - State Duration: 184	New machine 36 Work by program Prog - Feed - State Duration: 183	New machine 37 Work by program Prog - Feed - State Duration: 371	New machine 38 Machine is stopped Prog - Feed - State Duration: 4	New machine 39 Work by program Prog - Feed - State Duration: 1014	New machine 40 Work by program Prog - Feed - State Duration: 188	New machine 41 Machine is stopped Prog - Feed - State Duration: 367
New machine 42 Work by program Prog - Feed - State Duration: 794	New machine 43 Machine is stopped Prog - Feed - State Duration: 158	New machine 44 Machine is stopped Prog - Feed - State Duration: 185	New machine 45 Machine downtime Prog - Feed - State Duration: 28	New machine 46 Work by program Prog - Feed - State Duration: 7	New machine 47 Work by program Prog - Feed - State Duration: 640	New machine 48 Work by program Prog - Feed - State Duration: 4	New machine 49 Machine is stopped Prog - Feed - State Duration: 11	New machine 50 Work by program Prog - Feed - State Duration: 1967	New machine 51 Work by program Prog - Feed - State Duration: 627	New machine 52 Work by program Prog - Feed - State Duration: 625	New machine 53 Work by program Prog - Feed - State Duration: 370	New machine 54 Machine is stopped Prog - Feed - State Duration: 187	New machine 55 Machine is stopped Prog - Feed - State Duration: 384
New machine 56 Work by program Prog - Feed - State Duration: 358	New machine 57 Machine is stopped Prog - Feed - State Duration: 199	New machine 58 Work by program Prog - Feed - State Duration: 190	New machine 59 Work by program Prog - Feed - State Duration: 181	New machine 60 Work by program Prog - Feed - State Duration: 180	New machine 61 Work by program Prog - Feed - State Duration: 378	New machine 62 Work by program Prog - Feed - State Duration: 188	New machine 63 Work by program Prog - Feed - State Duration: 621	New machine 64 Work by program Prog - Feed - State Duration: 399	New machine 65 Work by program Prog - Feed - State Duration: 12	New machine 66 Machine is stopped Prog - Feed - State Duration: 184	New machine 67 Work by program Prog - Feed - State Duration: 183	New machine 68 Work by program Prog - Feed - State Duration: 183	New machine 69 Work by program Prog - Feed - State Duration: 391
New machine 70 Machine is stopped Prog - Feed - State Duration: 370	New machine 71 Machine is stopped Prog - Feed - State Duration: 182	New machine 72 Machine is stopped Prog - Feed - State Duration: 191	New machine 73 Work by program Prog - Feed - State Duration: 1265	New machine 74 Work by program Prog - Feed - State Duration: 1967	New machine 75 Machine is stopped Prog - Feed - State Duration: 22	FAUCET OIL Prog - Feed - State Duration: 0	DRIFT HEATING 9 Work by program Prog - Feed - State Duration: 760	DRIFT HEATING 10 Work by program Prog - Feed - State Duration: 188	DRIFT HEATING 11 Work by program Prog - Feed - State Duration: 5	DRIFT HEATING 12 Machine is stopped Prog - Feed - State Duration: 8	DRIFT HEATING 13 Work by program Prog - Feed - State Duration: 187	DRIFT HEATING 14 Work by program Prog - Feed - State Duration: 189	HEAT CON TEMPERING Work by program Prog - Feed - State Duration: 1820
TEMPERING MACHINE 4 Work by program Prog - Feed - State Duration: 11	7th phase Tempering... Work by program Prog - Feed - State Duration: 376	HEAT CON TEMPERING 2 Work by program Prog - Feed - State Duration: 7	MTS TEMPERING MACHINE Machine is stopped Prog - Feed - State Duration: 384	DRIFT GRINDING (TIC) MC 4 Machine is stopped Prog - Feed - State Duration: 7	SHOT BLASTING Work by program Prog - Feed - State Duration: 9	MTS WASHING Machine is stopped Prog - Feed - State Duration: 7	MTS BAKING MACHINE Work by program Prog - Feed - State Duration: 185						

Predictive Maintenance

Vibration Monitoring

Continuous monitoring of vibration levels to detect anomalies before they lead to equipment failure.

⚠️ Accident Prevention

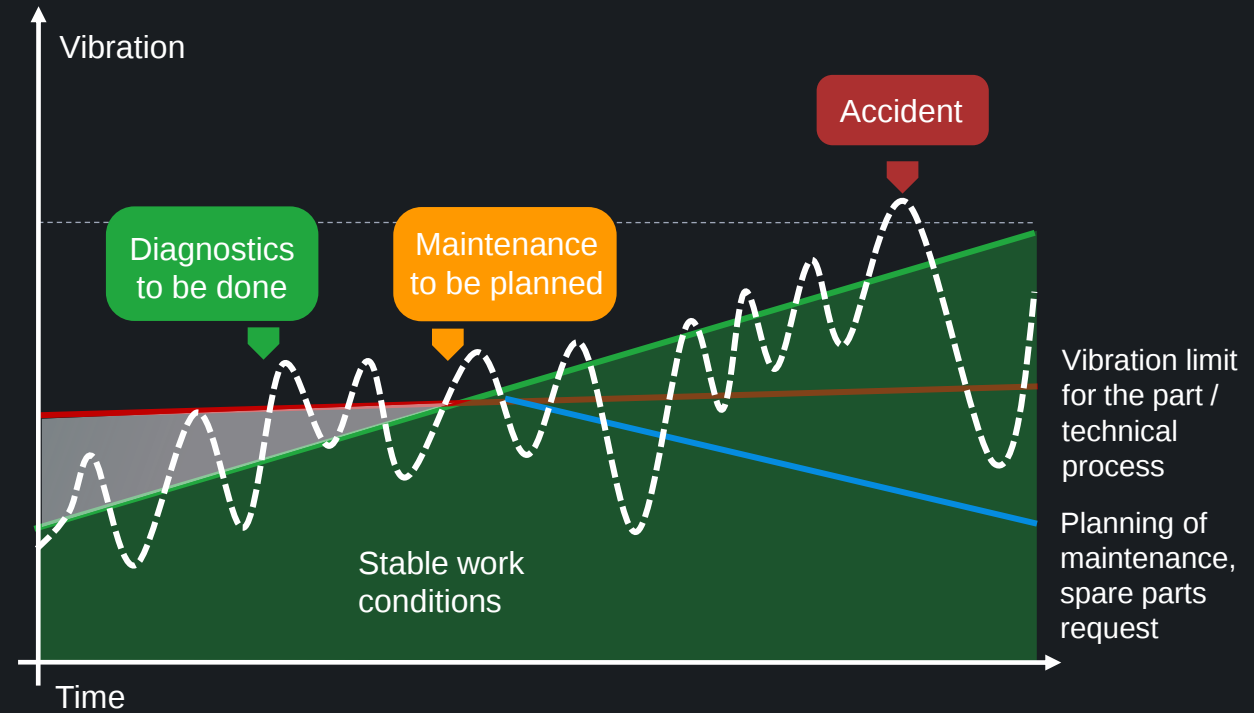
Early warning system prevents unexpected breakdowns and production interruptions.

🔧 Diagnostics

Automated diagnostics identify maintenance needs before critical thresholds are reached.

📅 Maintenance Planning

Plan maintenance activities and spare parts requests based on actual equipment condition.



Maintenance Workflow



Stable



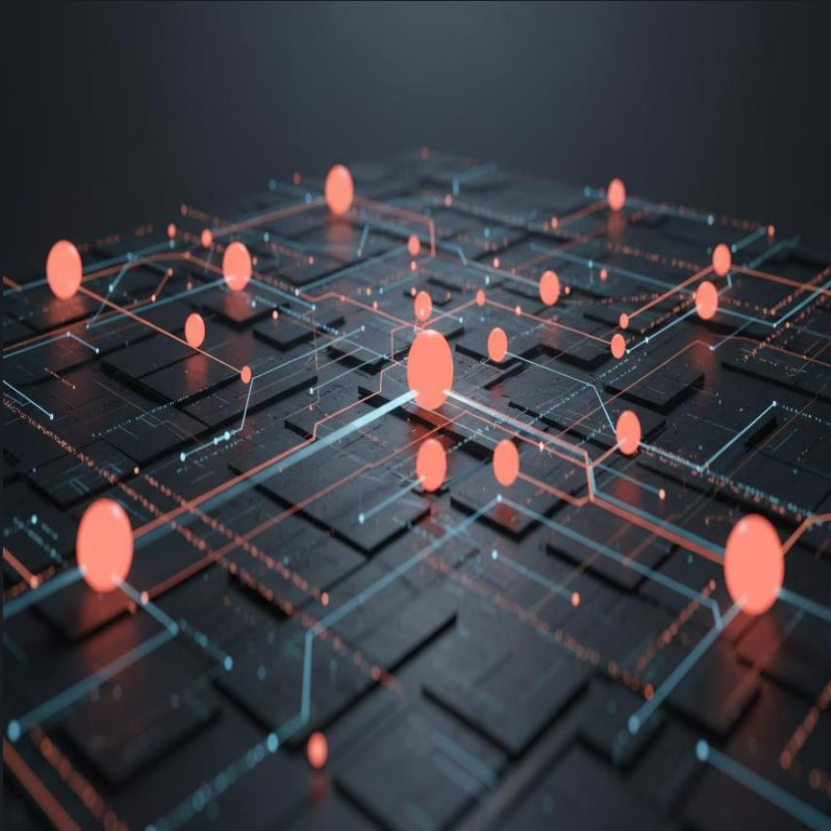
Monitor



Plan

AI Features

Based on collected data, our system enables creation of various AI agents



AI-Powered Insights

Transform data into action



Operational Efficiency AI

AI agents analyze production patterns and recommend optimizations to improve overall equipment effectiveness and throughput.



Equipment Maintenance AI

Predictive maintenance algorithms forecast equipment failures and optimize maintenance schedules to minimize downtime.



Digital Advisory

Intelligent advisory system provides actionable recommendations to operators and managers based on real-time data analysis.

INDUSTRY 4.0 AWAITS

Don't Miss Out on Industry 4.0!

Transform your manufacturing with MDCplus



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