MATICS

Real-time Operational Intelligence for Manufacturing

Join our vision

Matics created a unique **real-time** operational intelligent solution for agile management of the production floor.

Facilitating moving factories to new proactive real-time working environment, for significant enhancement in productivity, profitability and sustainability

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Manufacturing production floor main challenges

Productivity

- Low Machine utilization
- Slow production rate
- High reject
- Machine Utilization

Sustainability

- Energy consumption
- Material consumption
- Material waste
- Material recycling

Profitability

- Machine and mold performance
- Employees cost

- Adapting real-time technologies so all stakeholders can see and solve problems when it is still matte

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The Problem :

> Even the best manufacturing plants are only at 45% of their theoretical output”

ABB CTO

The Solution :

Adapting real-time technologies so that they can see and solve problems in real-time

shorten the latency between event and corrective action

1 Event to Visibility → 2 Visibility to Analysis → 3 Analysis to Action → 4 Action to Results

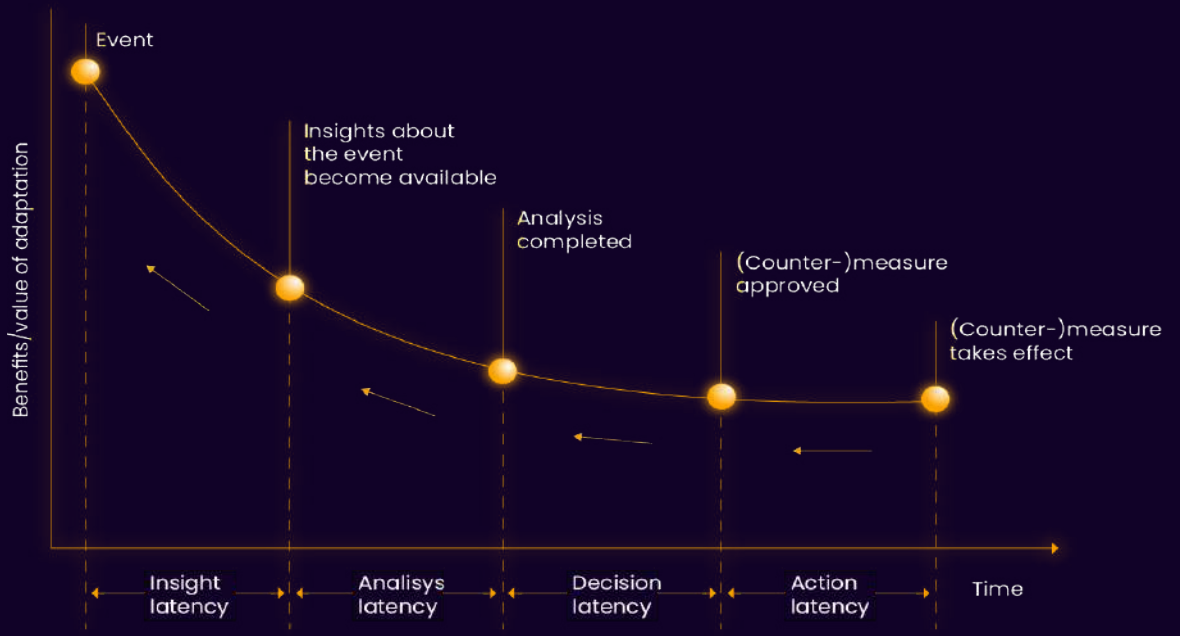


Figure 2: Corporate adaptation processes (source: based on Hackathon 2002: Muehlen/Shapiro 2010)

Matics' Leading RtOI system

From data acquisition and analytics to factory process automation

Leveraging new computing paradigms Matics created a unique real-time operational intelligent solution for agile management of the production floor

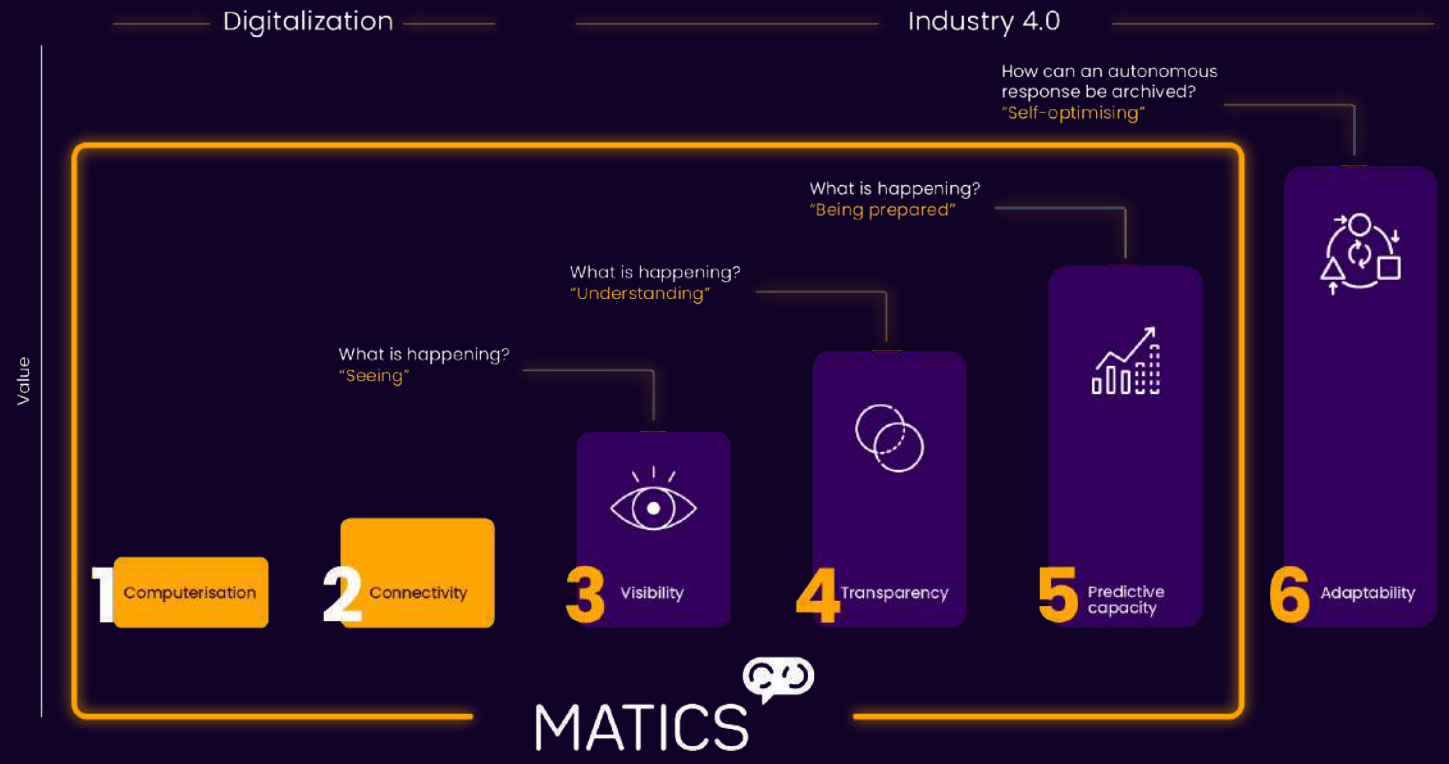
IoT technologies

Cloud computing

Analytics, Prediction

Work Management tools

Delivered on
Mobile, tablet and Web



The goal of the Industry 4.0 transformation is to create a learning, agile company capable of continuously adapting to changing conditions – Acatech STUDIE

With Fast Implementation

- Is implemented fast and remotely
- Comes at an affordable pricing (SaaS delivery with add-ons)
- Is a very scalable solutions
- Pervasive through all aspects of production floor
- Nonintrusive

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Mission critical for leading factories around the world

The Matics real-time manufacturing analytics implementation was a plug & play. The key was to be consistent, to teach our people how to use the platform and to help them realize it was in their best interest to use it

Zohar Elimelech
Chief Information Officer, Tirat Zvi

Matics made it possible to collect data in real time, gain crucial predictive insights and reduce time-to market per product by 25%

Ping Chen
Information System Manager, Tetro

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Agility is enabled by continuously aggregating data to produce information, extracts knowledge and provide real-time insights to support and automate resolutions

The Foundations of transformation

- ✓ Connectivity
- ✓ Visibility
- ✓ Continues Analysis and Insights
- ✓ Collaboration and communication
- ✓ Notifications and Information
- ✓ Procedures and Tasks
- ✓ Automation

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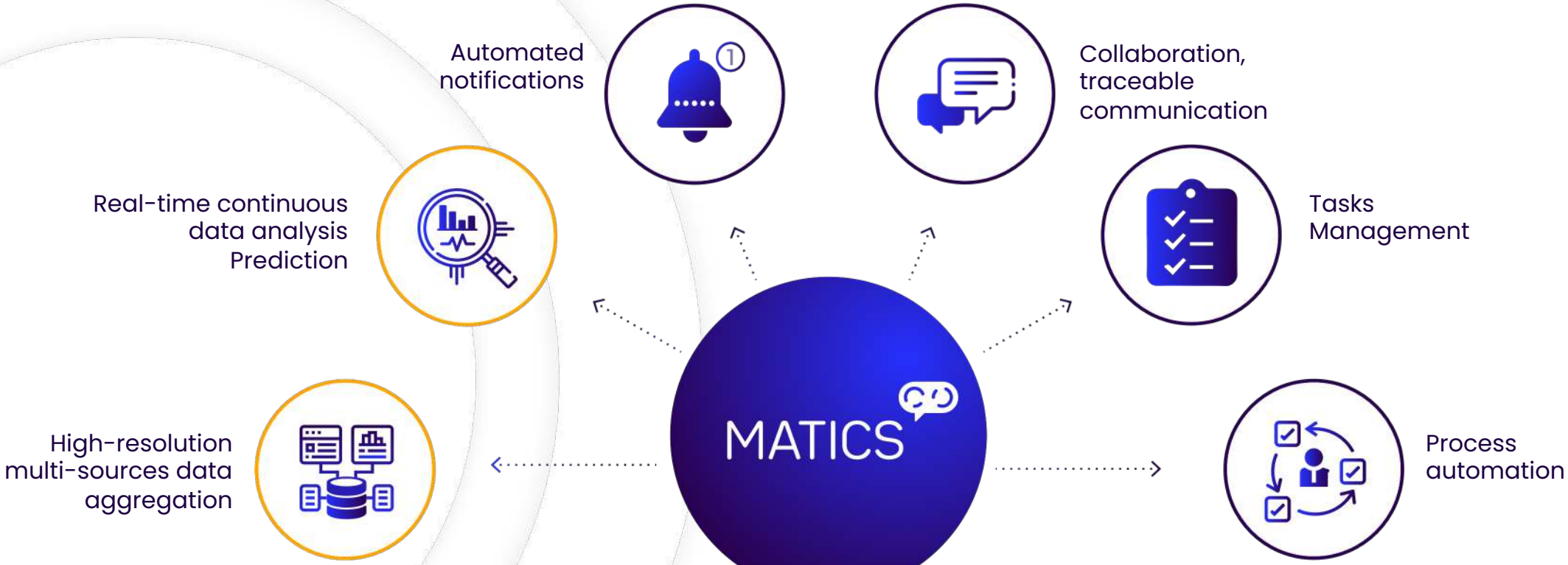
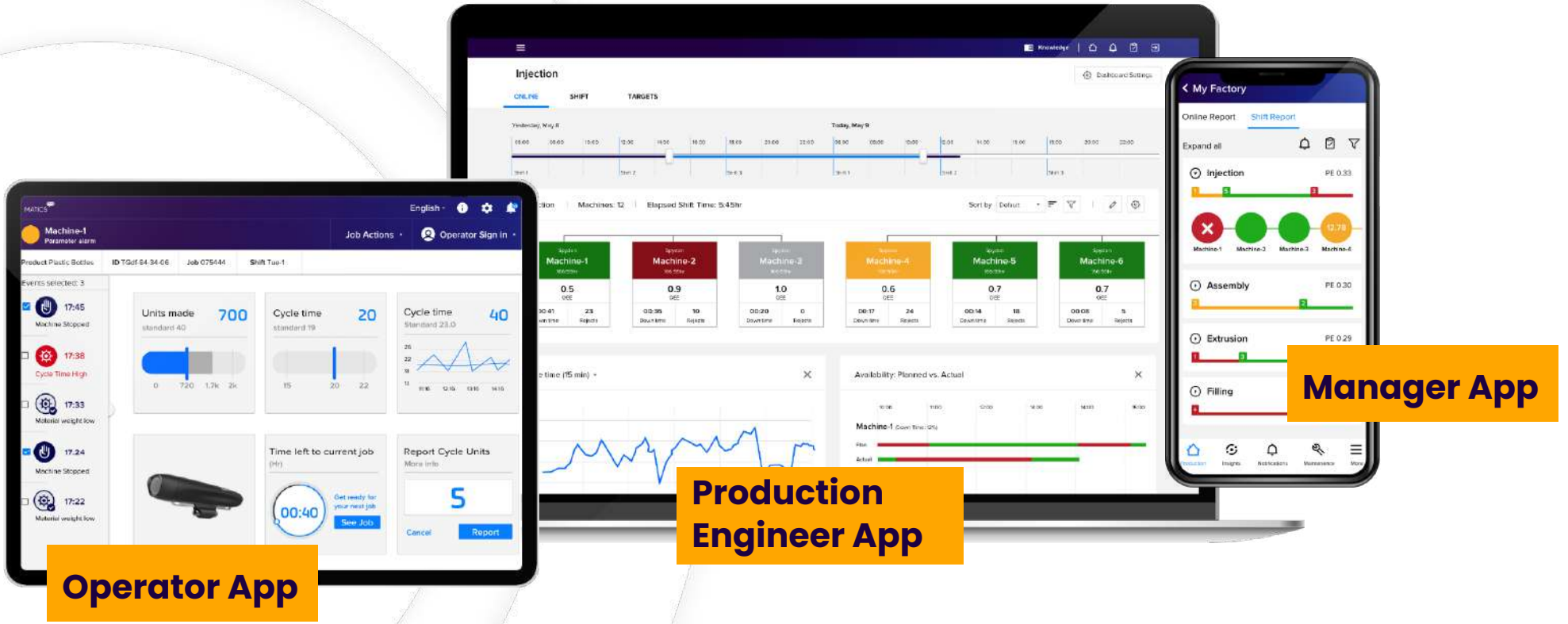
RTOI Combine Analytics with Work management tools



Transforming vast amounts of **operational data into actionable information**

User-tailored application for All Stakeholders

Smart connected application facilitates collaboration across groups.



With Matics work management tools, teams can act, collaborate, manage projects, centralize communication and reach new productivity peaks.

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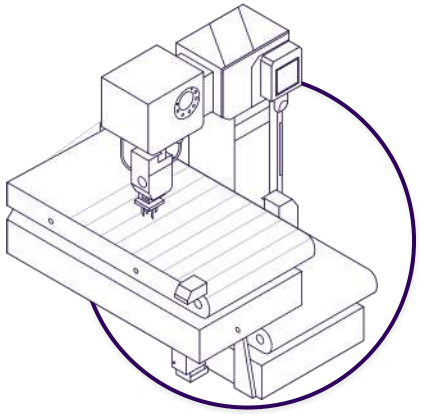
Multi Source Production-Floor Data-Aggregation Platform

a clear overall picture only emerges once different pieces of information are combined.

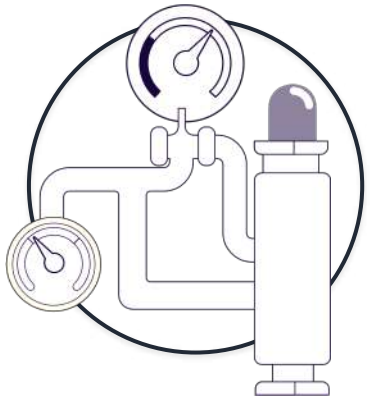


Machines

New Machines
Legacy Machines

Sensors

Dosing system
Cooling system
Energy meter



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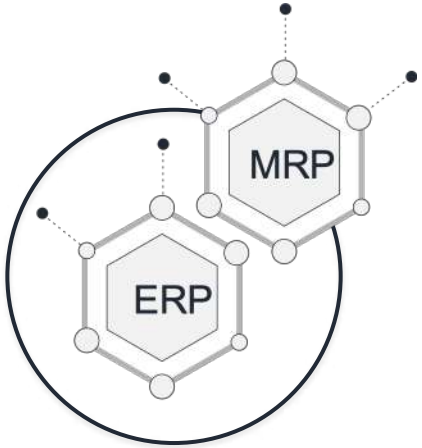
People

Managers
Operator
QC
Planner
Technicians

Information system

Production context from ERP , MRP , External Files
MES system



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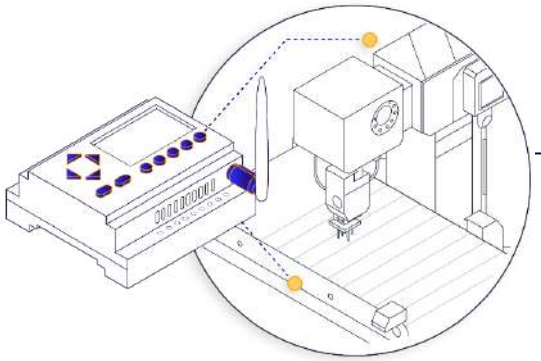
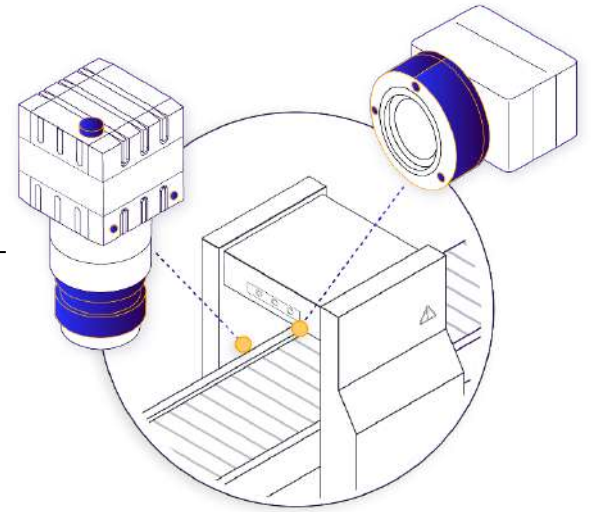
Rich set of data collection methods from Machines

Non intrusive , Easy SetUp, Wireless Connectivity



External PLCS

Machine vision



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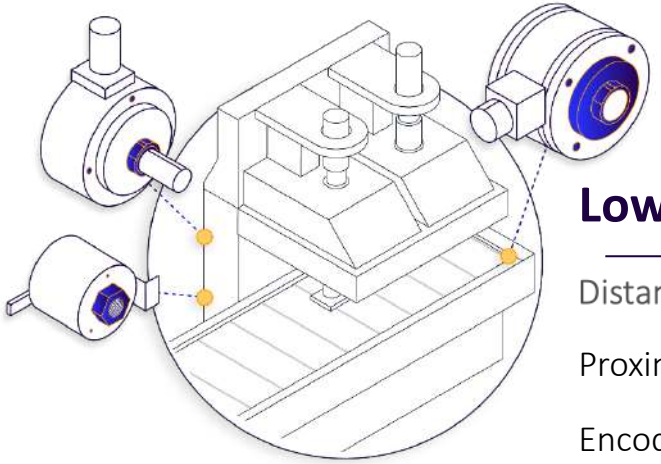


Low-touch IIoT

Distance

Proximity

Encoders

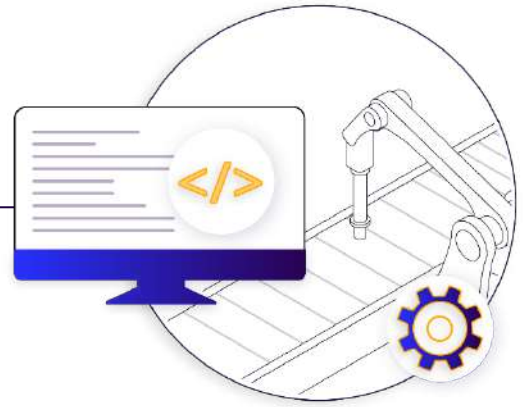
Industrial Protocols

OPC UA

MTConnect

IOLink

ModBus and etc



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People - Production-Floor Data-Aggregation Platform

Integrating user-driven data from Matics smart applications

QC Manager

Inline Test

Lab Test

Technician

Messages
Fix report
Photos

Planner

Plans
Messages
Tasks

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Operator

Stop reasons,
reject reasons,
Messages, Photos,
Task execution,
Job comments,
Inline inspection test

Manager

KPI Monitoring

Messages

Tasks

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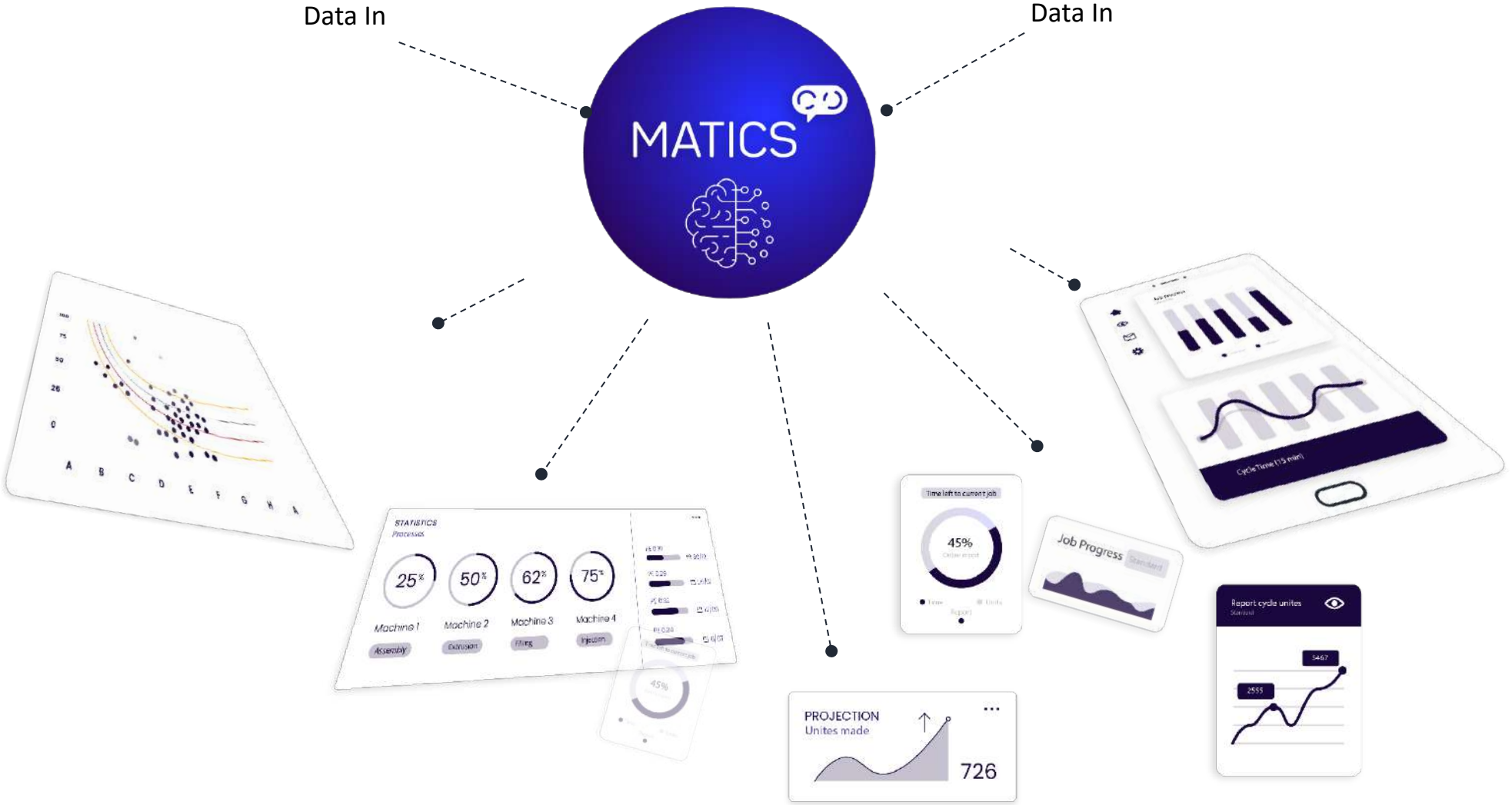
Real- time Deep analysis Engine

Extracts knowledge and provide real-time insights to support and automate resolutions



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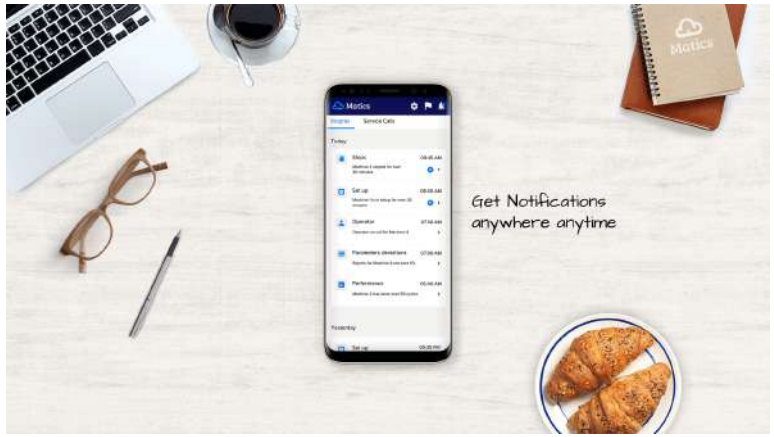
Matics - Work Management Tool

Structured communication



- ✓ Machine-based communication channel
- ✓ a non-hierarchical communication channel
- ✓ Traceable Communication between stockholders
- ✓ Every message is automatically tagged

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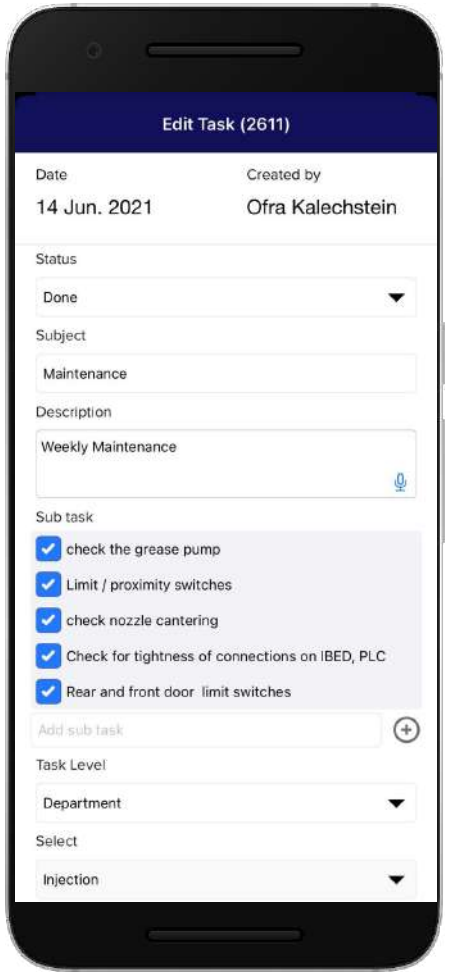
Transform production issue into actionable task

- ✓ Transform any issue to actionable tasks
- ✓ Track all tasks from beginning to end via shared Kanban
- ✓ Always see where your team stands against milestone
- ✓ Capture your knowledge with **routines**
- ✓ Automatic trigger routines based on pre-set production events



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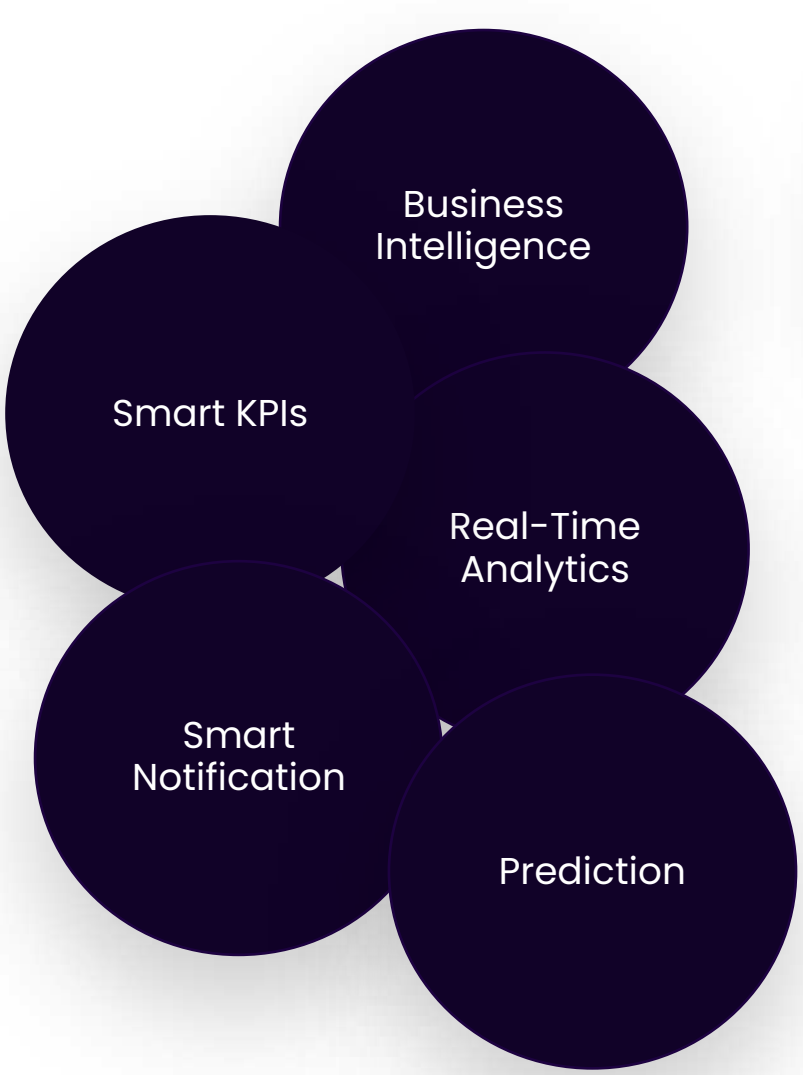
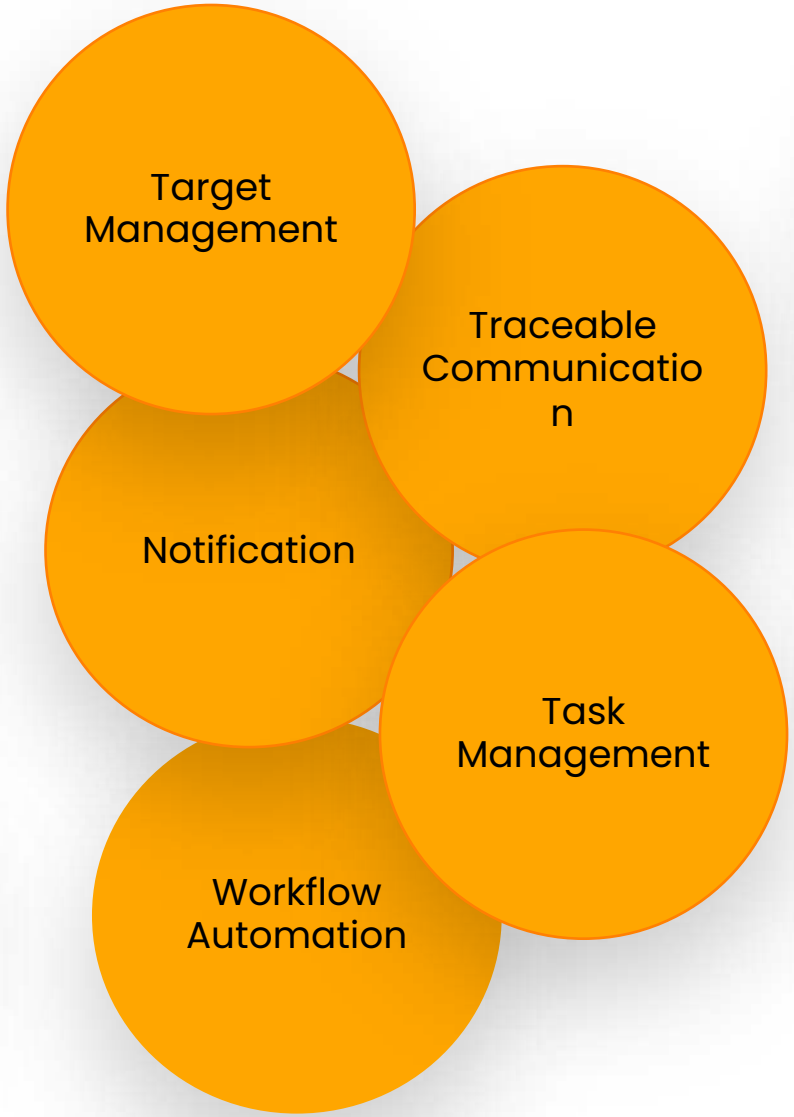
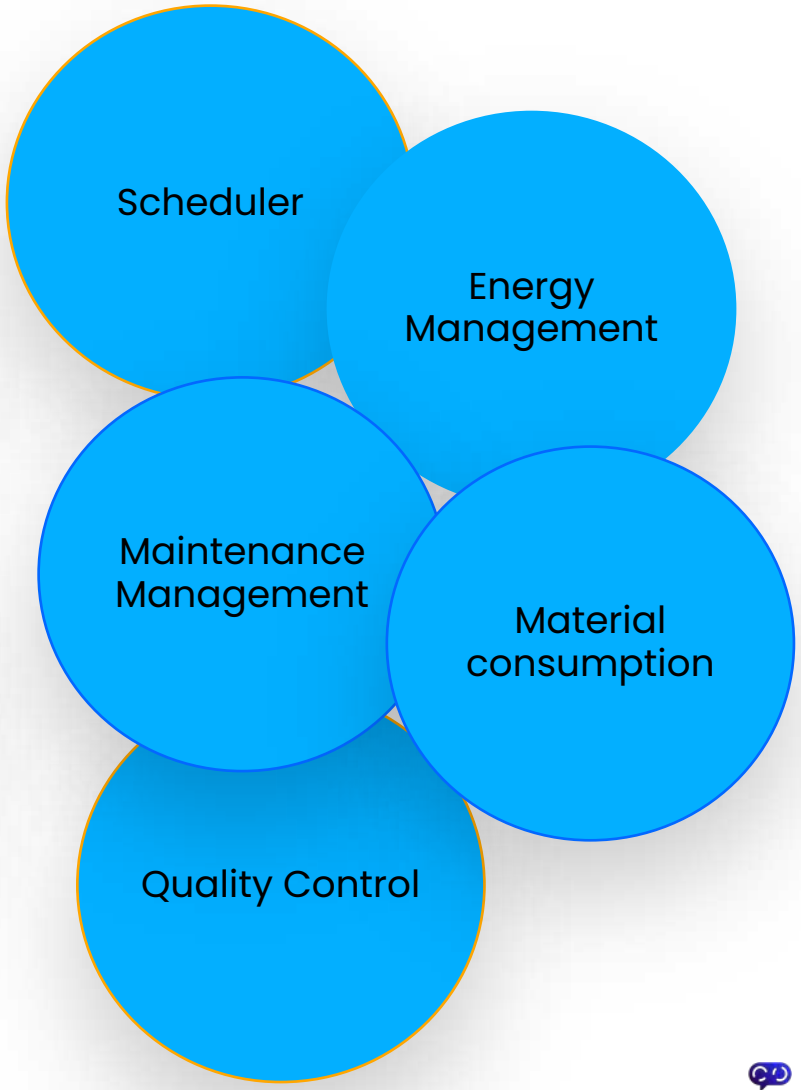
Analytics and Work Management Tools







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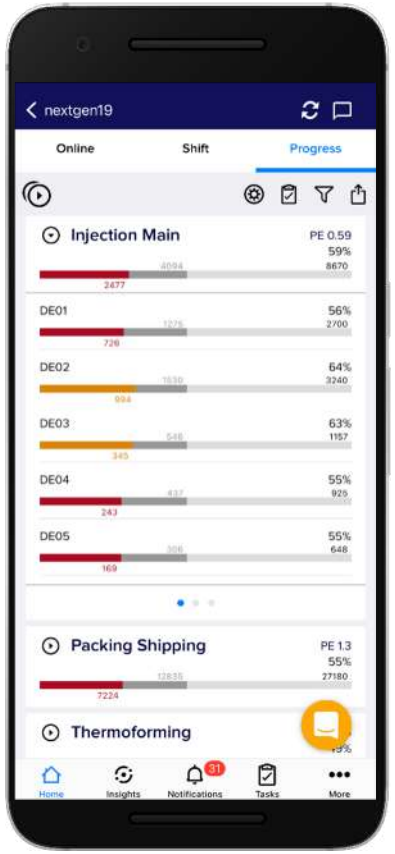
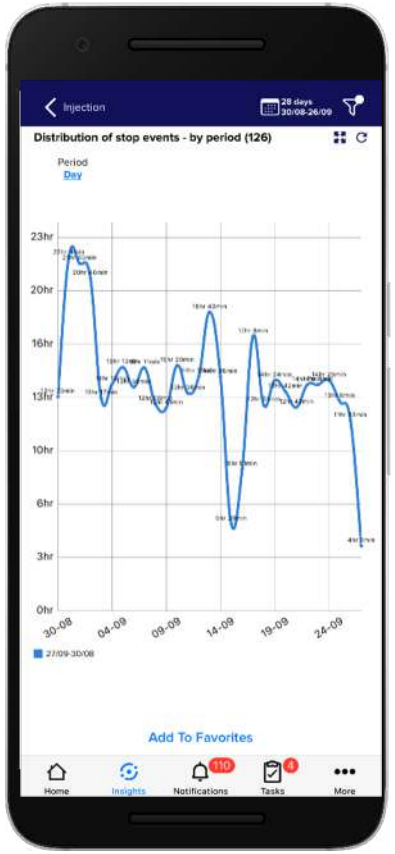
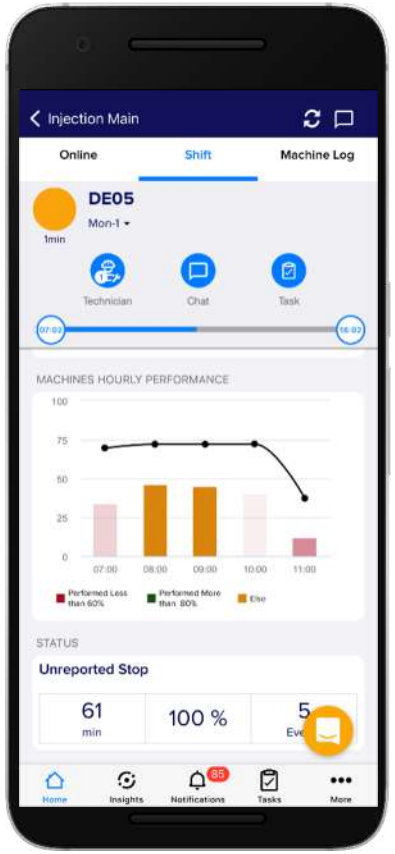
Total visibility 24/7







from Any-where at Any-time

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Manage your shift in real-time

Aggregated Machines Performance

Machine Performance – Table View

Machine Name	Performance	Good Units	Theoretical Units	PE	Availability - PE	Production time	Downtime	Number Of Setups	Setup duration	Cycle Time Efficiency	% Reported Events (amount)
DE01	59.31%	1,424	2,401	58.74%	68.66%	333	152	-	-	85.55%	0%
DE02	63.92%	1,860	2,910	63.90%	72.16%	350	135	-	-	88.54%	0%
DE03	60.43%	628	1,039	60.43%	74.02%	359	126	-	-	81.64%	0%
DE04	51.58%	428	829	51.49%	64.05%	310	174	-	-	80.40%	0%
DE05	54.41%	316	580	54.46%	74.38%	360	124	-	-	73.22%	0%

Availability - PE Per Hour - By Machine

	DE01	DE02	DE03	DE04	DE05
27-09-2021 07:00	0%	100%	100%	0%	100%
27-09-2021 06:00	75%	71.67%	66.67%	53.33%	78.33%
27-09-2021 05:00	63.33%	70%	68.33%	65%	66.67%
27-09-2021 04:00	56.67%	66.67%	76.67%	63.33%	80%
27-09-2021 03:00	83.33%	81.67%	81.67%	78.33%	76.67%
27-09-2021 02:00	58.33%	68.33%	71.67%	55%	75%
27-09-2021 01:00	73.33%	73.33%	68.33%	61.67%	73.33%
27-09-2021 00:00	76.67%	66.67%	71.67%	71.67%	71.67%
26-09-2021 23:00	68.33%	73.33%	80%	60%	80%
Total	68.37%	73.05%	73.94%	61.61%	73.44%

Units Per Hour - By Machine

	DE01	DE02	DE03	DE04	DE05
27-09-2021 07:00	0	20	6	0	4
27-09-2021 06:00	196	228	69	43	42
27-09-2021 05:00	166	220	66	52	32
27-09-2021 04:00	136	206	84	54	38
27-09-2021 03:00	221	262	88	73	42
27-09-2021 02:00	163	218	75	42	41
27-09-2021 01:00	175	238	73	47	41
27-09-2021 00:00	211	212	71	64	38
26-09-2021 23:00	36	110	41	4	11
Total	1,320	1,746	583	379	291

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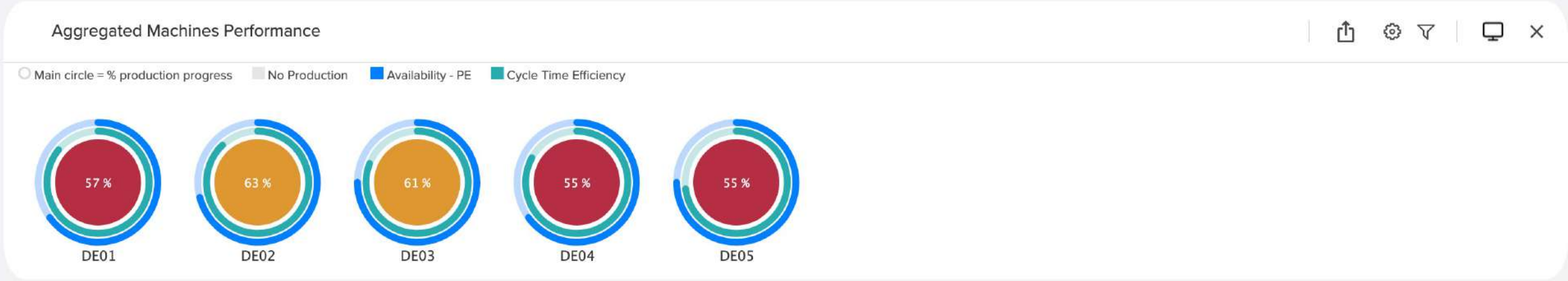
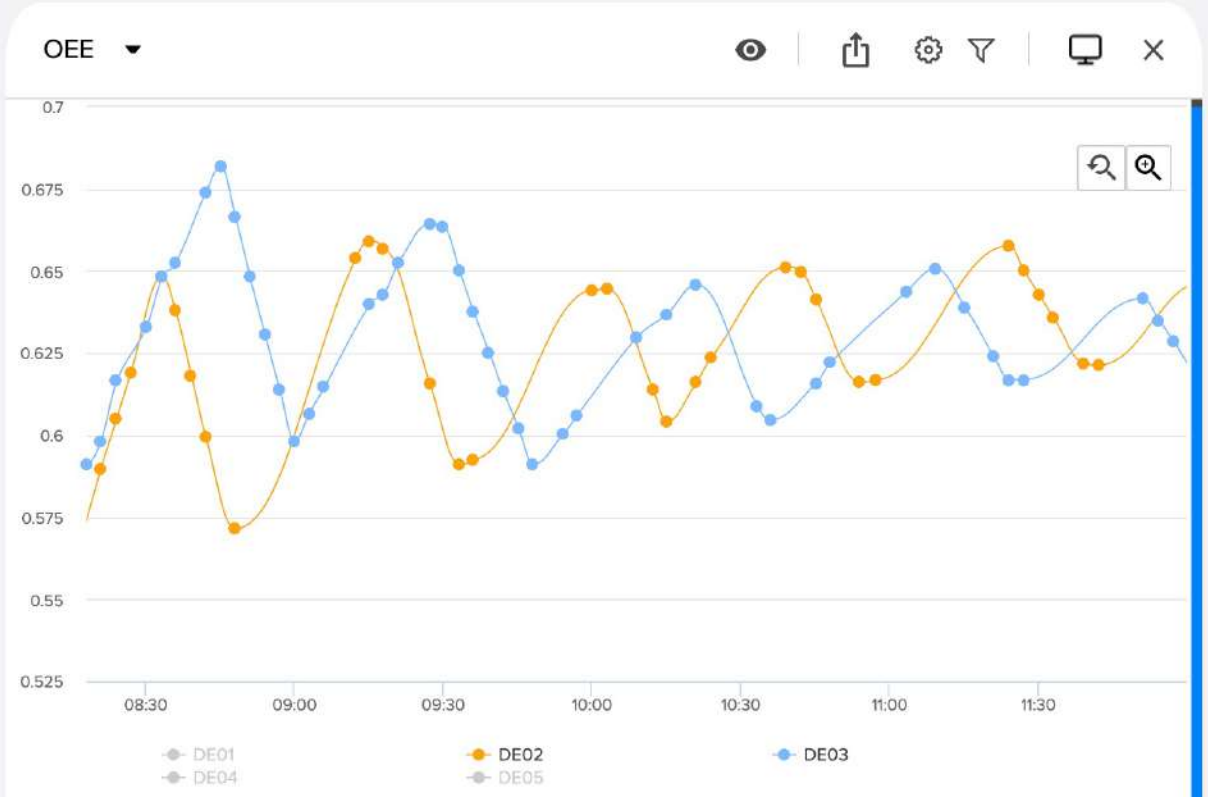
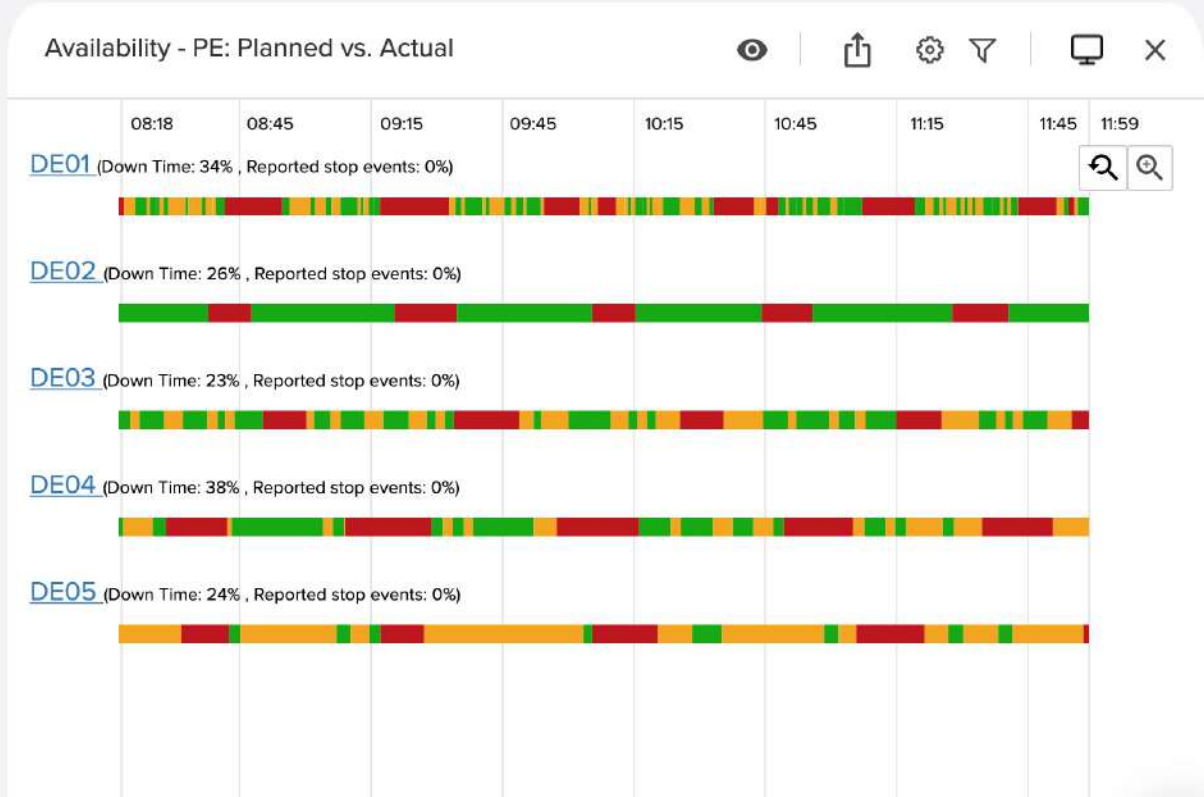
Manage your shift in real-time

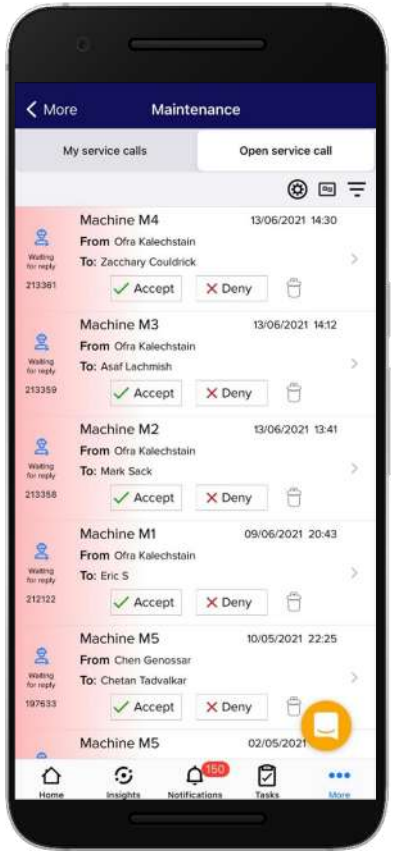


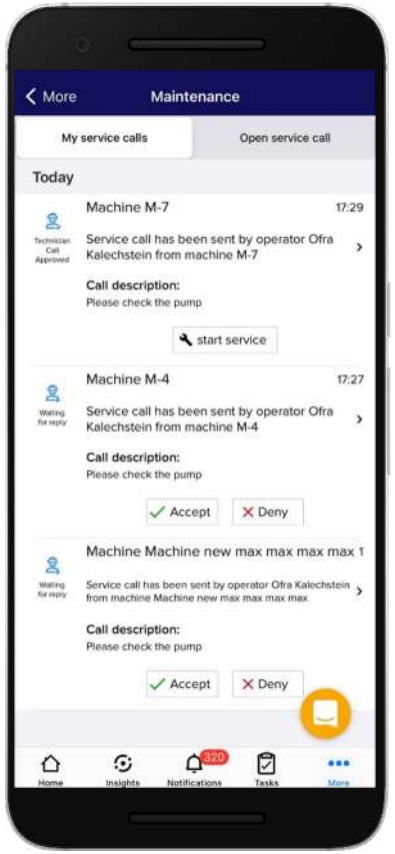


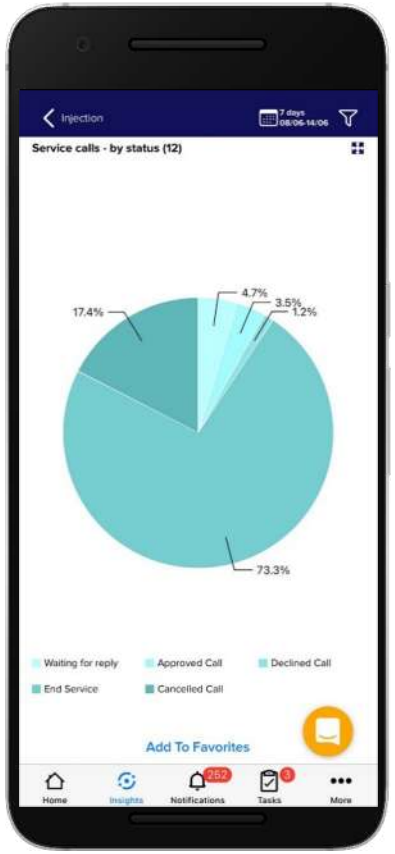


Service Called
Rafael Segura
0:20
Operator calls
a technician
Matics
Cycle weight
17
Cycle time
24
Report Rejects
241
Time left to current job
00:09
Units made
640
Report Cycle Units
37
Report Production

On-to-go Mobile Service call Management







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Client testimonial: Arkal Automotive

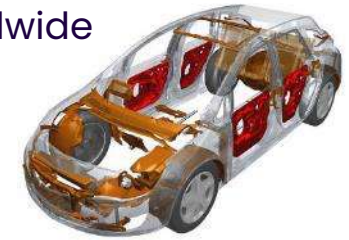
Leading thermoplastic manufacturing supplier, serving the international automotive industry, such as BMW, VW, GM, Daimler AG.

There customers demand Just in time delivery to their assembly lines worldwide and had to open local mid-size facilities to be closer to its customers and stay relevant

> *Matics enables us to apply standard measurement to our production lines worldwide and react in real-time to critical production issues.*
> *Staff has access to production data on-the-spot from anywhere in the world*
>
> **CIO - Yehuda Bakal**

The challenge: how to mange remotely distributed operations effectively from its Israeli based HQ

- Ensure flexible delivery and agile operation
- Deliver consistent product quality globally
- Ensure standard working routines and procedures worldwide
- Know and Solve problems in real-time
- Apply consistent KPI measurements across all sites
- Achieve higher productivity worldwide with 85% Goal



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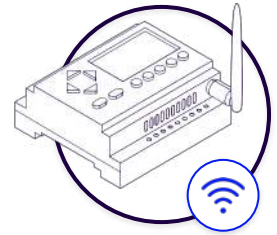
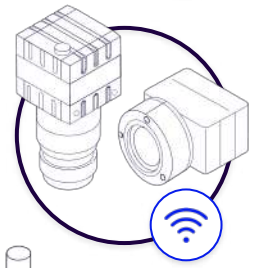
Results: Arkal became more agile and lean, adopting continuous and real-time management techniques, consistently and globally

- Improved machine utilization in all sites, achieving 85% OEE goal
- Gained complete visibility over operations in 5 countries from a single interface
- Created a cultural shift, improved transparency and collaboration
- Enabled data-driven decisions at factory and HQ level

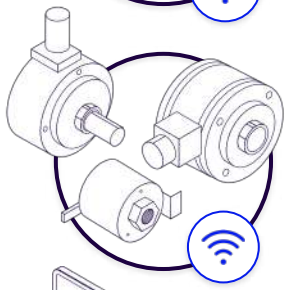
Matics overall System Architecture



External PLCS



Machine vision



Low-touch IIoT

Industrial Protocols

Using company network No need to Extra Hardware

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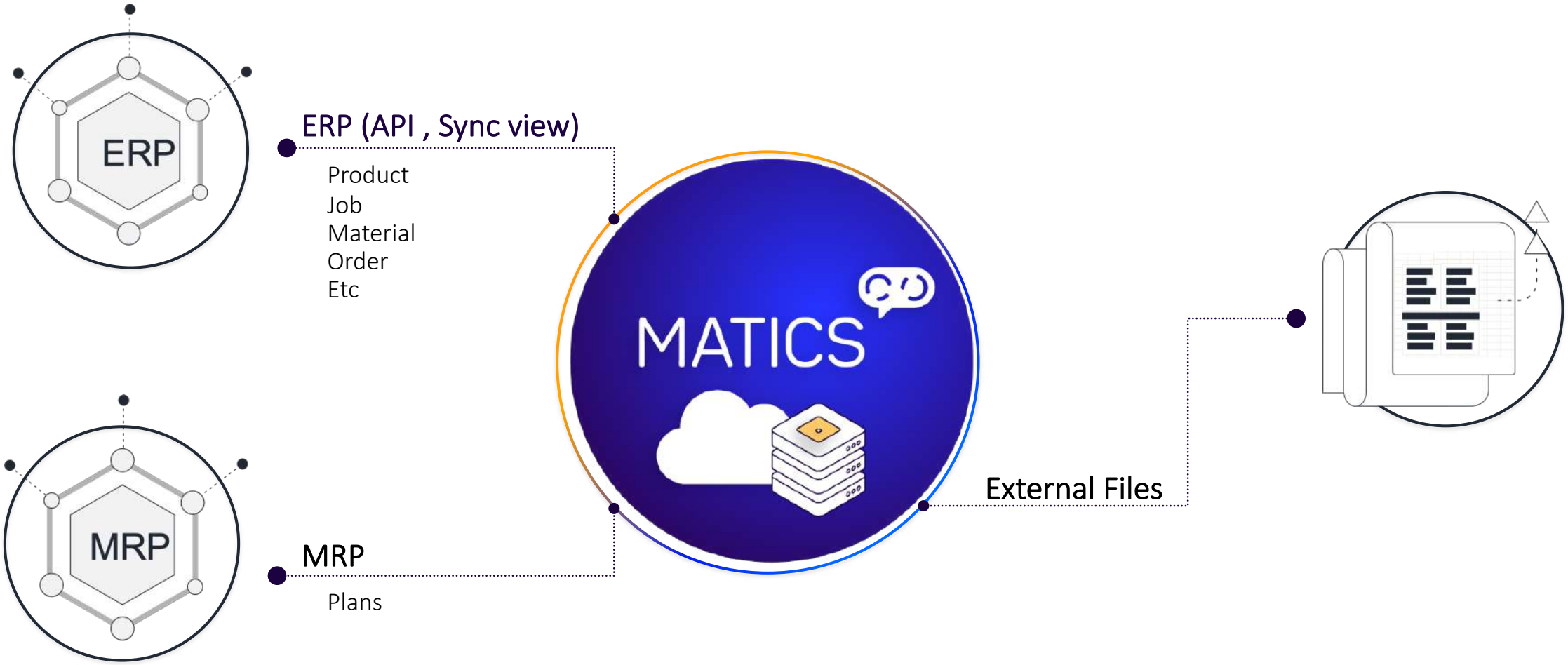
Fully Connected Open System

Verity of method to connect from file loading , sync view to API



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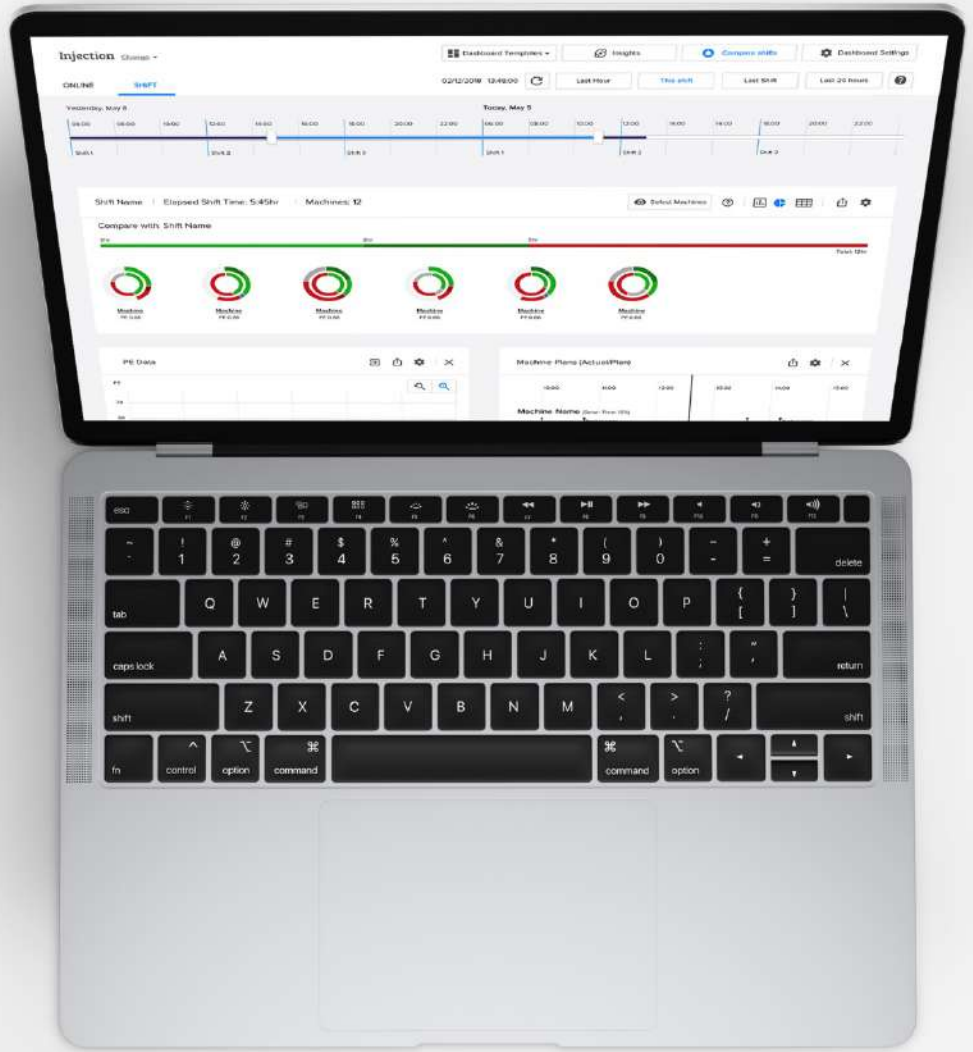
MATICS Smart Connected Applications

Operator App



Manager App

Transforming vast amounts of operational data into actionable information