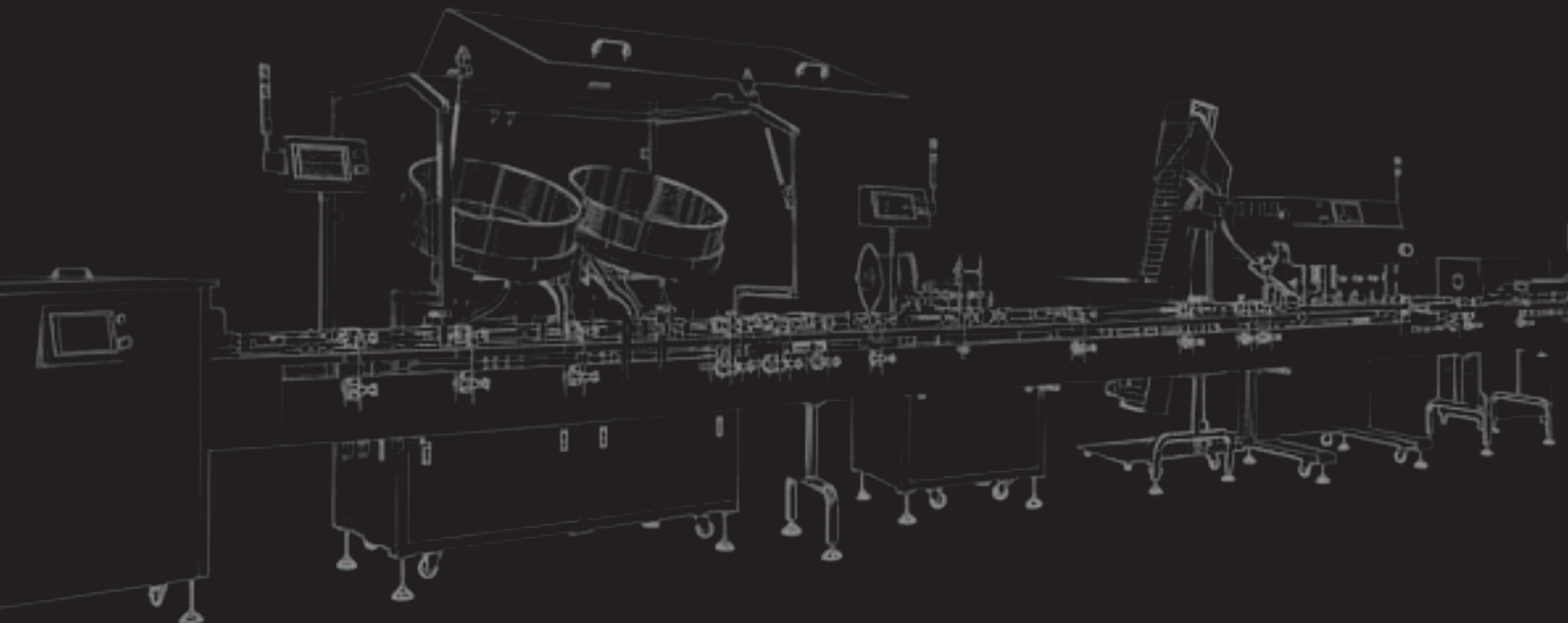# OX2 | OCTAVIC PTS

PRODUCTION EFFICIENCY TRACKER

Flexible Industry 4.0 Solutions for Manufacturing

Bridging machine data and people knowledge
for real-time production optimization

OCTAVIC PTS

PRODUCTION EFFICIENCY TRACKER

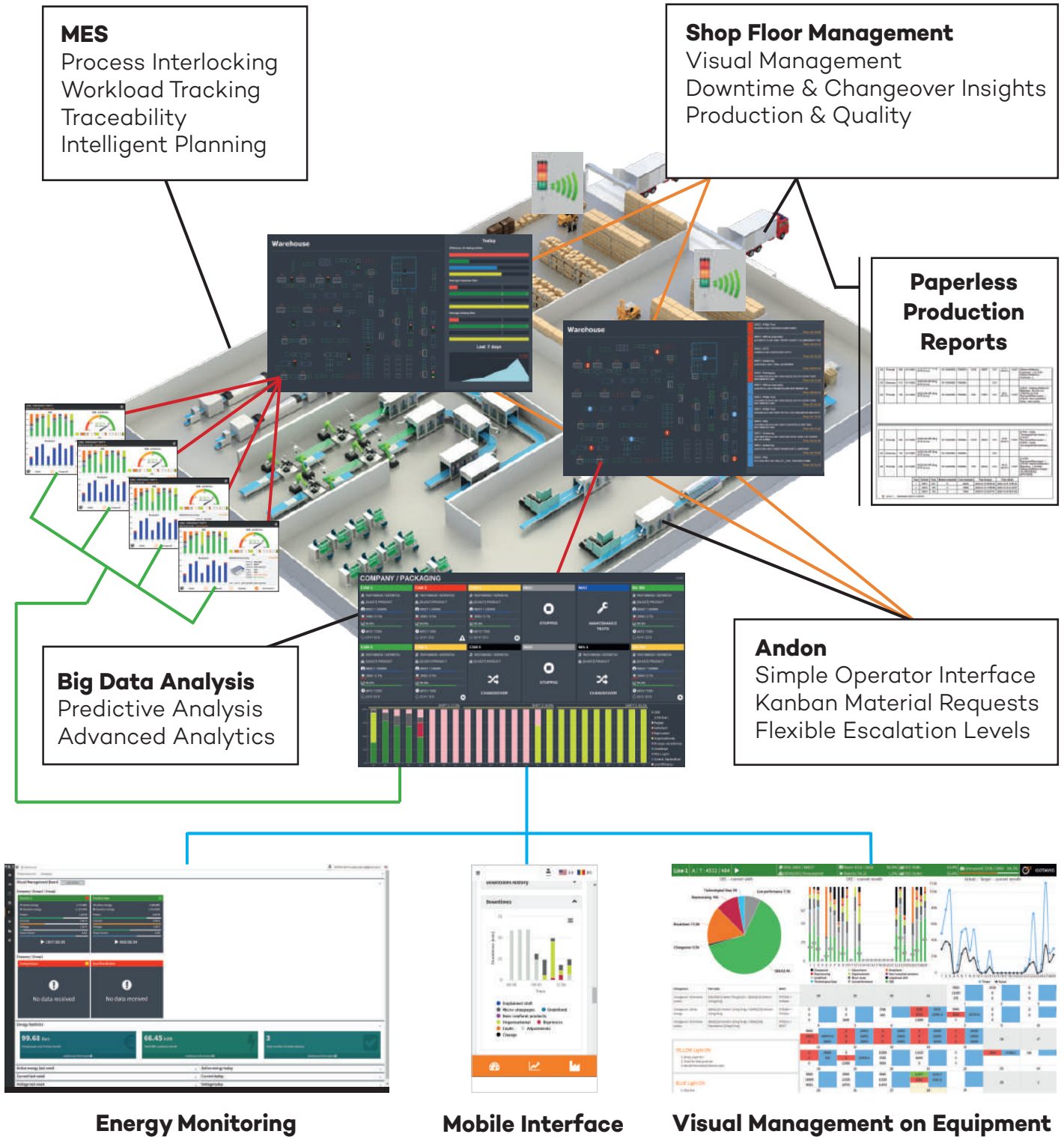Flexible Industry 4.0 Solutions for Manufacturing

Bridging machine data and people knowledge
for real-time production optimization

SUPER EASY TO INSTALL & INTEGRATE WITH EXISTING INDUSTRIAL INFRASTRUCTURE
The system can be quickly and easily integrated with any type of equipment, including old machinery

4 Big Benefits

- **Gain real-time insight to the production floor**

- **Improve manufacturing efficiency**

- **Quantify KPIs for better process improvements**

- **Reduce waste**

MES
Process Interlocking
Workload Tracking
Traceability
Intelligent Planning

Shop Floor Management
Visual Management
Downtime & Changeover Insights
Production & Quality

Paperless Production Reports

Big Data Analysis
Predictive Analysis
Advanced Analytics

Andon
Simple Operator Interface
Kanban Material Requests
Flexible Escalation Levels

Energy Monitoring   **Mobile Interface**   **Visual Management on Equipment**

OVERVIEW

The Production Efficiency Tracker (PET) is a holistic system that helps you get real-time insights from production work processes. Its aim is to help you achieve your production targets faster, while also improving your production schedule.

PET provides advanced Shop Floor Management for both manual and automated processes through a distributed system built for visualizing waste and anomalies during production, thus supporting Kaizen and Six Sigma methodologies. The system not only tracks the production processes, but it also monitors all the detailed actions simply by annotating data and organizing it into meaningfull dashboards.

OPERATOR DEVICE

PET tailors to your needs by seamlessly connecting to your equipment with an Operator Device (OPD) package which serves as a medium to collect important data as well as a way for the line operator to keep track of the production process and annotate important events.

Depending on the space and accessibility of the install location, OPD comes in an all-in-one package, fitted with a 14 inch screen for easy access and interaction, or an alternative package that contains the operator interface and a separate module which connects to the equipment.

OPD can be implemented on manual or automated production lines, on new and old equipment. For older equipment, no direct connection with the PLC is needed.

SIMPLE OPERATOR INTERFACE
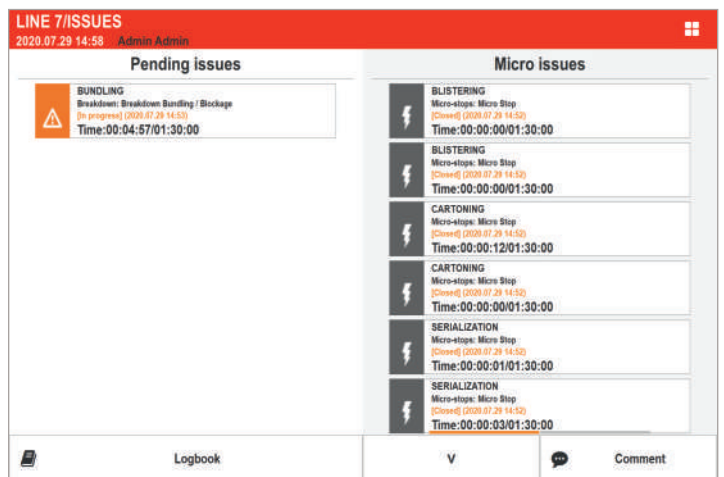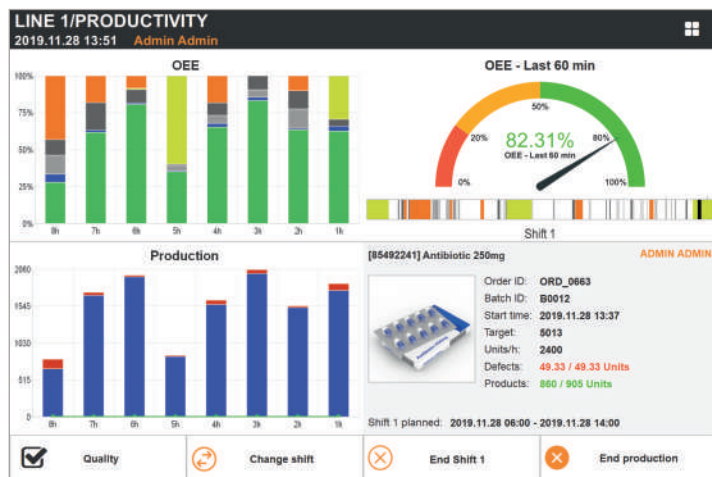
The key part for a system that uses the knowledge of the people involved in production is how easy it is for them to interact with the system and how it enforces them to input data.

That's why PET has a very operator-friendly interface, with few options and a guided workflow for collecting data from production processes. It uses simple dashboards to guide the operator interaction with the system and enforces good practice without needing prior knowledge.

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ANDON
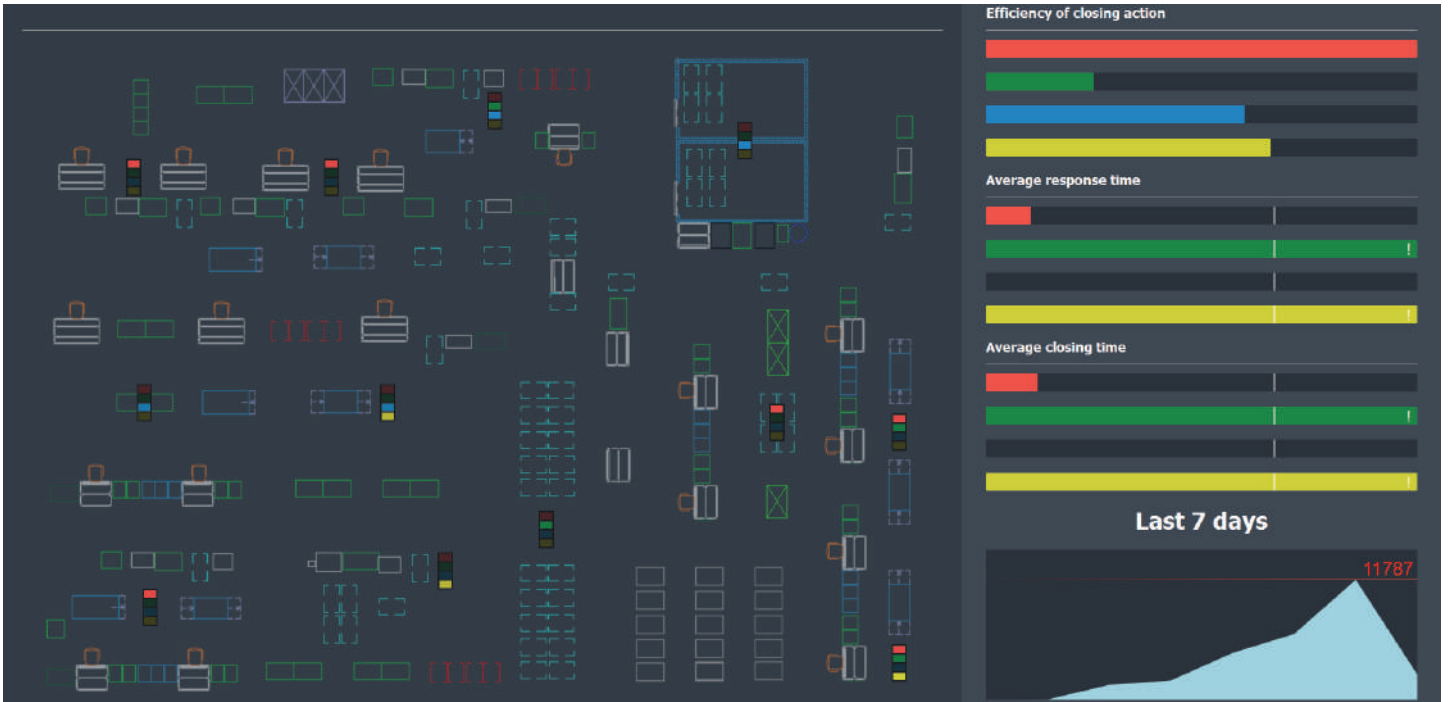
According to Kaizen, each problem should trigger a line stop in order to reveal quality and process issues. Handling of these line stops is managed in a structured way that improves reaction time, enables root cause analysis and permanent elimination of the issues.

KANBAN MATERIAL MANAGEMENT
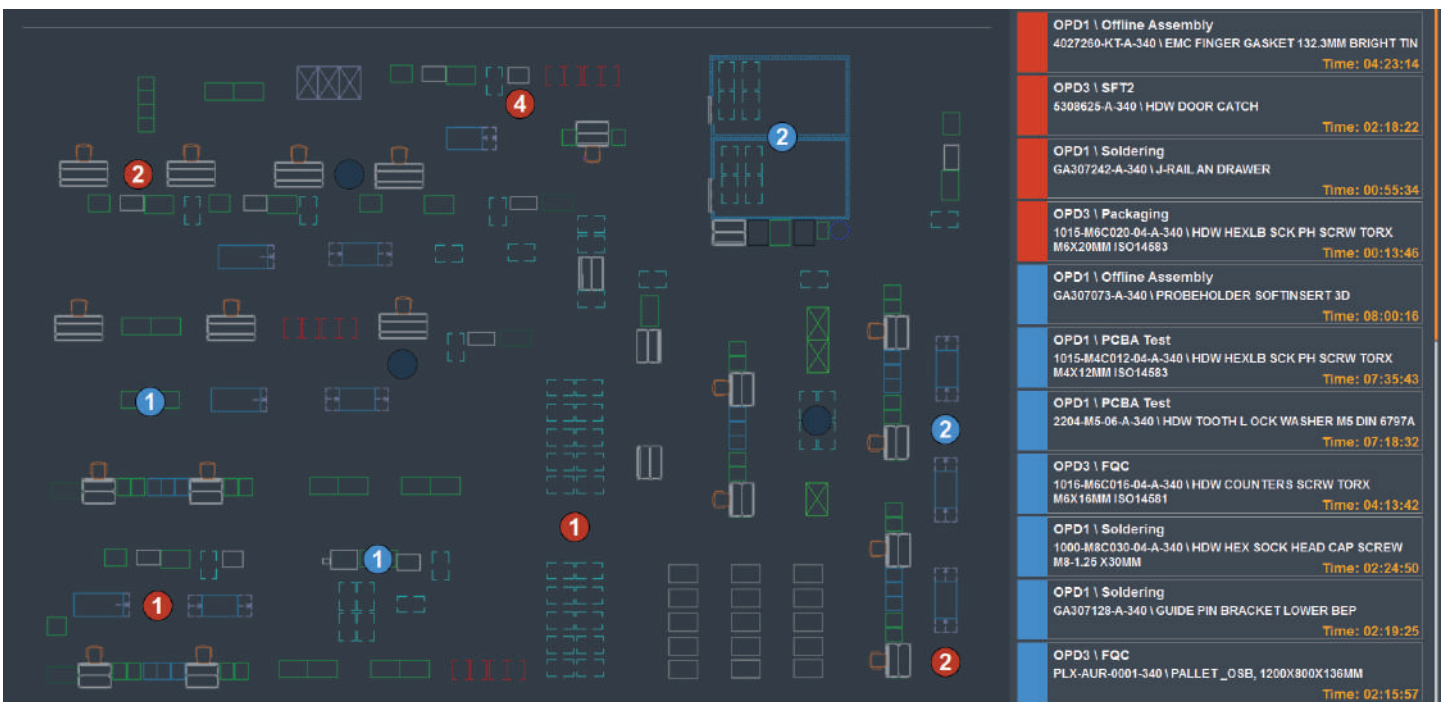
A lot of waste is generated by materials that are not conformal or are not delivered in time. PET can handle the flow of materials between the processes and the warehouse, using Kanban methodology. In this way, waste generated by missing material is reduced and the efficiency of material handlers is increased by being able to spot urgent deliveries and using optimized routes. This is the first step to have a completely automatized system for material handling on the production floor.

VISUAL MANAGEMENT BOARD

The Visual Management Board (VMB) helps you identify what equipments are currently encountering problems and provides efficient ways to react, the moment such events are happening. To support this, the dashboard provides not only key information regarding present and future data related to production, but also a historical view on how the overall process progressed in the last 24 hours along with a detailed breakdown on what issues led to the loss in efficiency.
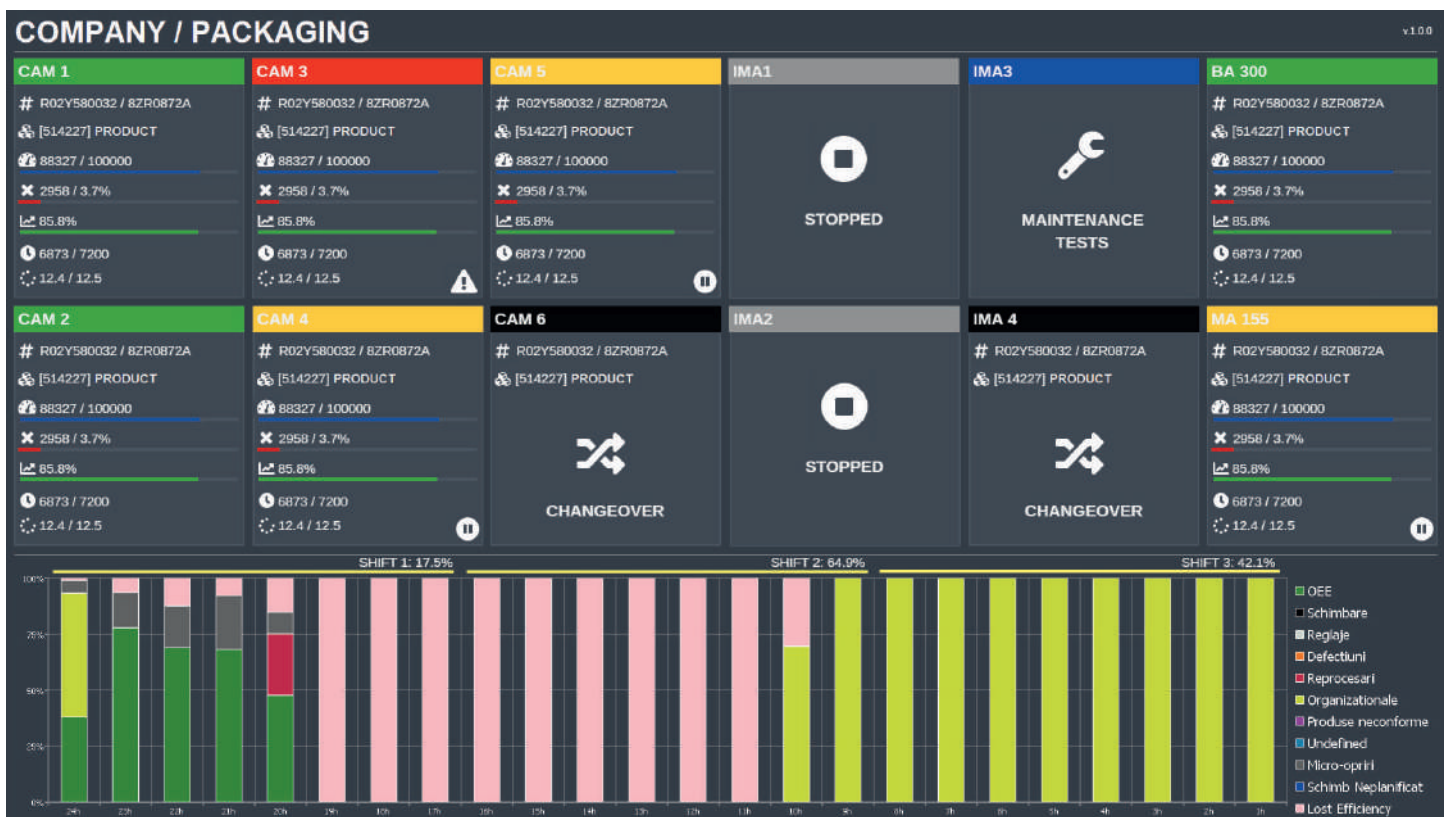
As seen above, data collected by the OPD and processed by the server creates a digital representation of the production floor by highlighting the status of each line where PET is installed, along with a suite of real-time information regarding the production process, such as OEE, the number of units produced on shift or the number of rejects. With each passing hour, said data is cummulated and transformed into a meaningfull breakdown of efficiency and added to the historical data chart.

VISUAL MANAGEMENT PER EQUIPMENT

For a more in-depth representation of your equipment, PET comes with the ability to separetely visualize various metrics and aspects of your machines through Visual Management per Equipment (VME).

Using VME allows you to monitor the selected equipment anywhere in the factory, simply by accessing a link and, for further flexibility, the charts generated using the received data are fully customizable, thus it is also capable of highlighting all the aspects which present an interest on the equipment.


The VME above, presents an example of charts and metrics created for the purpose of actively monitoring the equipment, both in the present and in the past. The header contains information regarding the order that is currently being worked on, while the charts that follow it present how the equipment behaved on different time intervals.

ENERGY MONITORING DASHBOARD

The Energy Monitoring Dashboard (EM) allows PET to monitor the power consumption throughout your factory and in the process, define the necessary tools to locate power fluctuations and irregulatities as well as calculate an approximate energy cost.
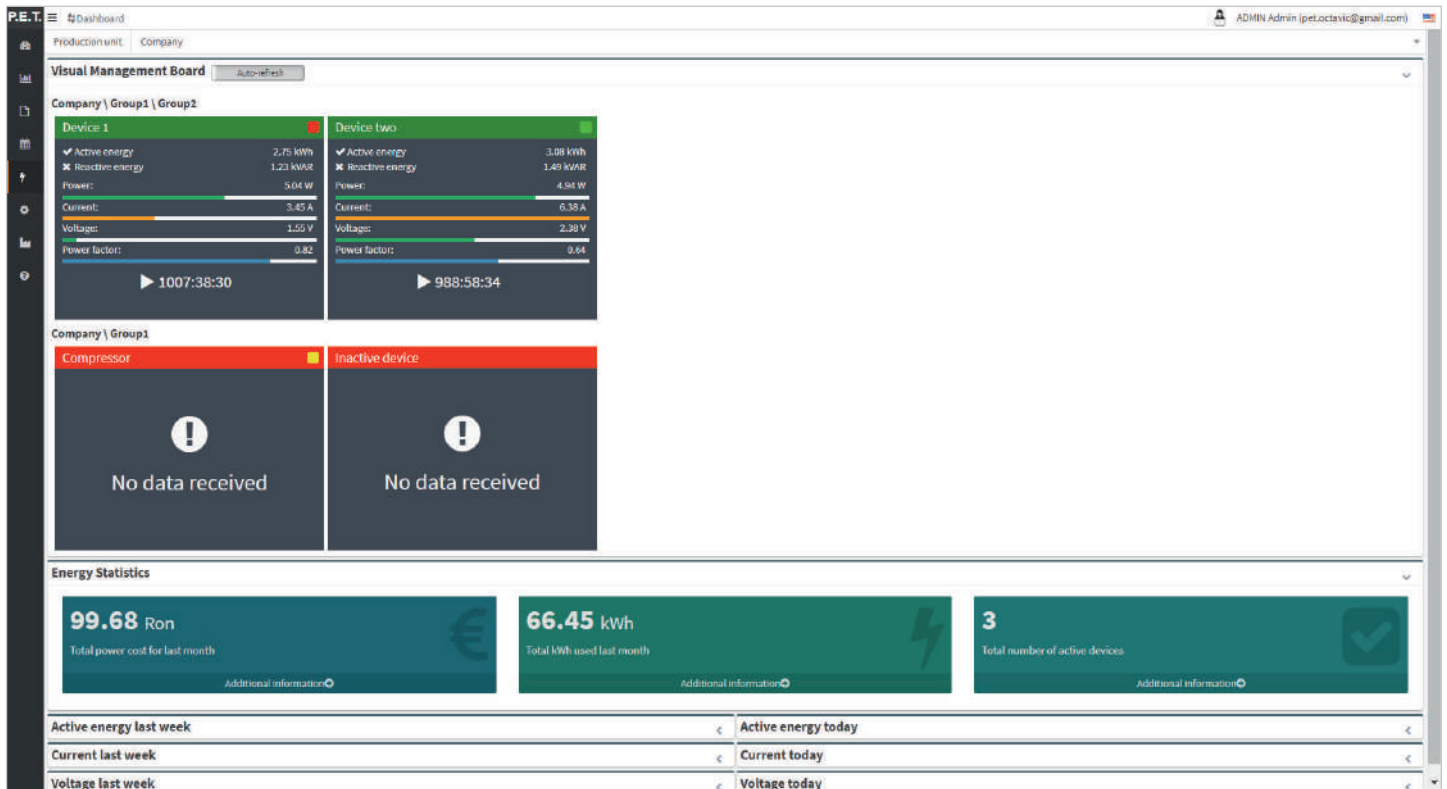

To achieve this, EM attaches to points of interest, like equipments or specific devices from an equipment, and collects data related to their cosumption, such as Power, Voltage and Current. This data is then processed by the server and converted to metrics and charts that describe historical, present and future behaviour .
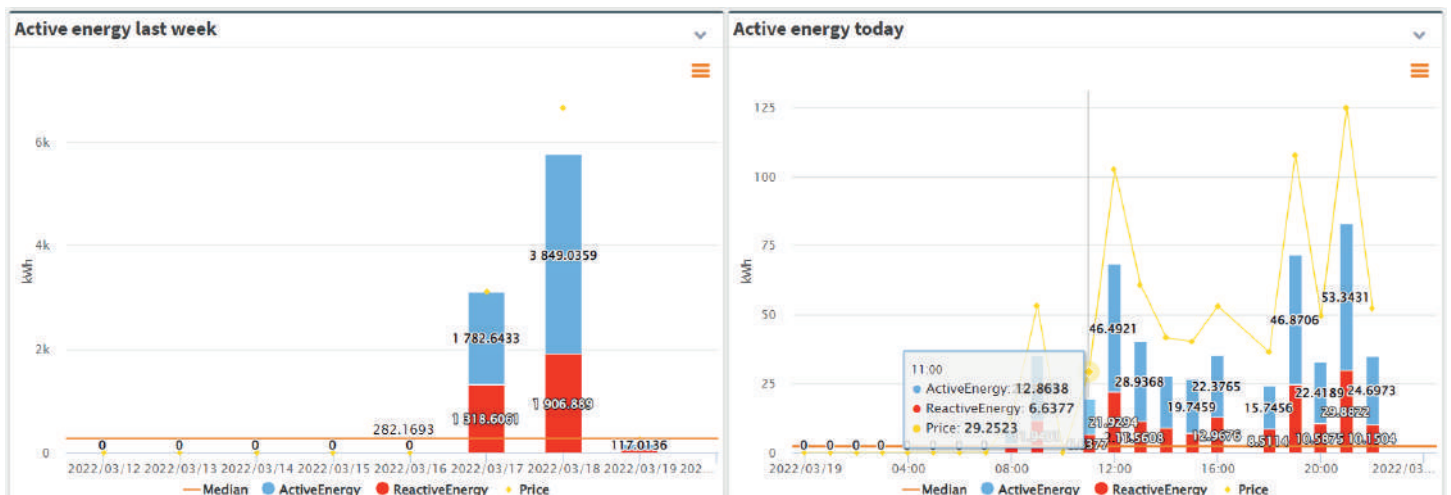
PET DASHBOARD

With PET Dashboard (PD) the time it takes to react to certain issues is diminished due to the capabilities it offers, allowing the user to pinpoint exactly where the issue has occurred the moment it appears.
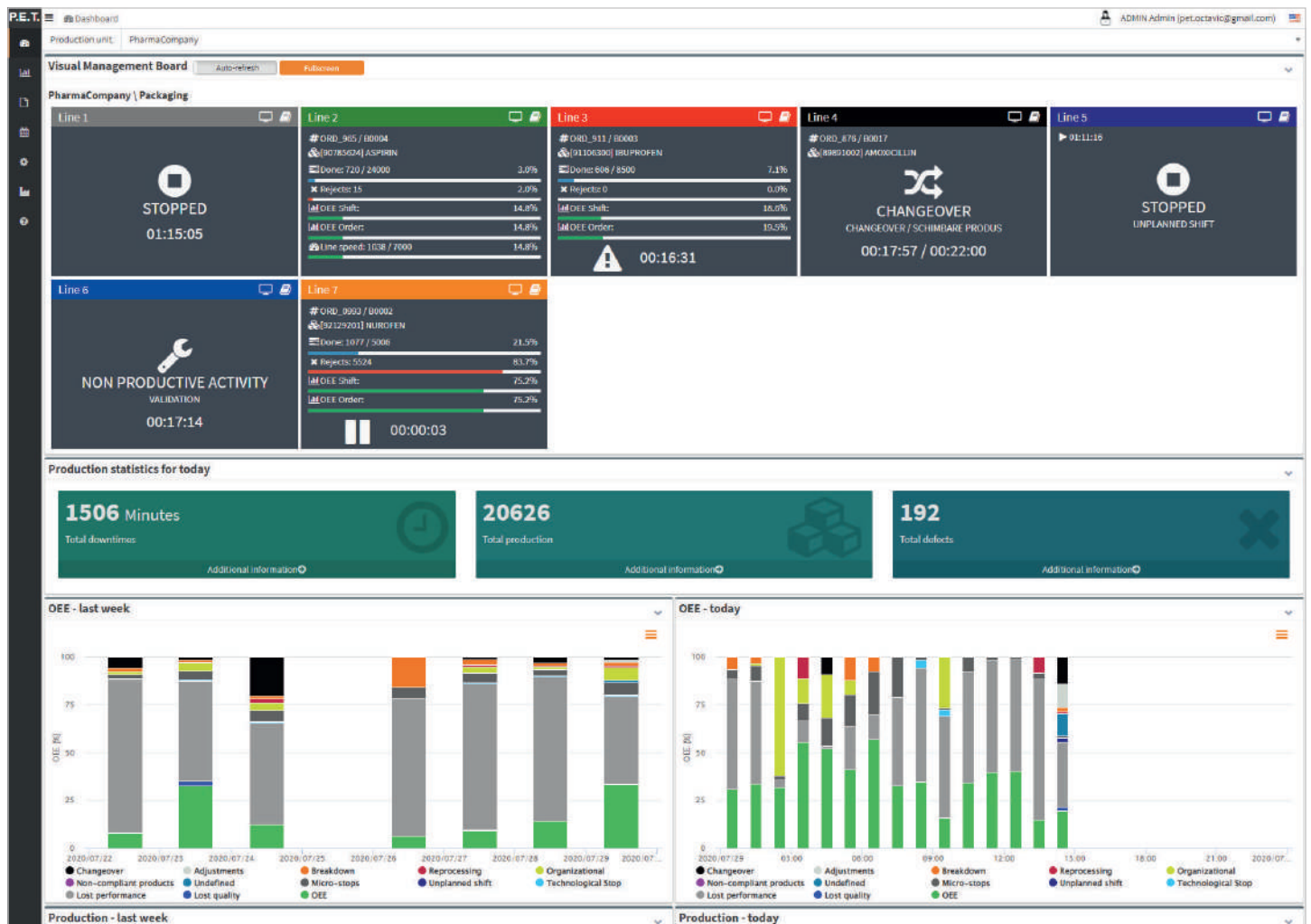

Being the home screen of the whole application, PET Dashboard offers the same capabilities as the Visual Management Board (VMB), however, it is accessible from any device and also contains a multitude of additional charts, each of them highlighting different aspects of the production process, such as OEE, downtimes, rejects and units produced.

Other than the above, PD also contains a multitude of metrics not present in the VMB, their role being to offer a summary over how the system performed and quickly indicate if any anomalies occured.

# ADVANCED PERFORMANCE ANALYTICS AND REPORTING

OEE Timeline
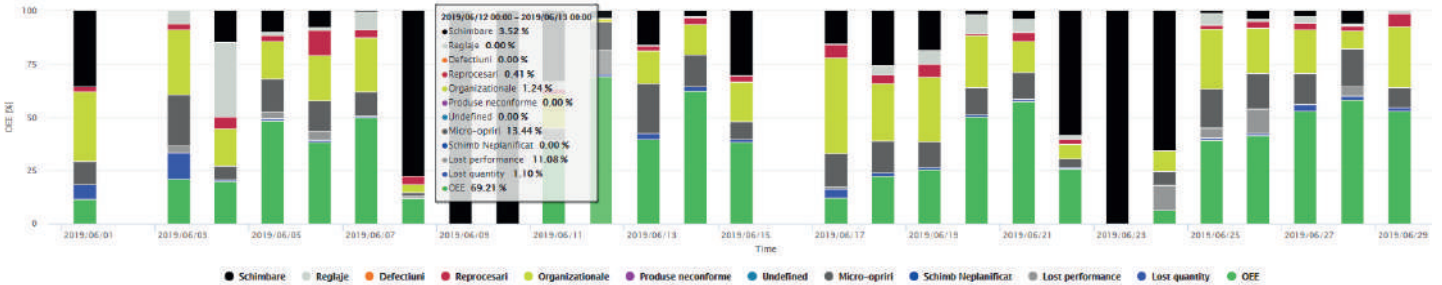
Flexibility in working with data is key to understanding what is actually happening; that's why our dynamic, filter-based reporting offers the insights needed to understand what went wrong and what is causing the losses. PET's flexible filtering system allows data drill-down from enterprise level down to an individual equipment in a production line, showing the selected group's performance in the form of a timeline.

OEE Breakdown
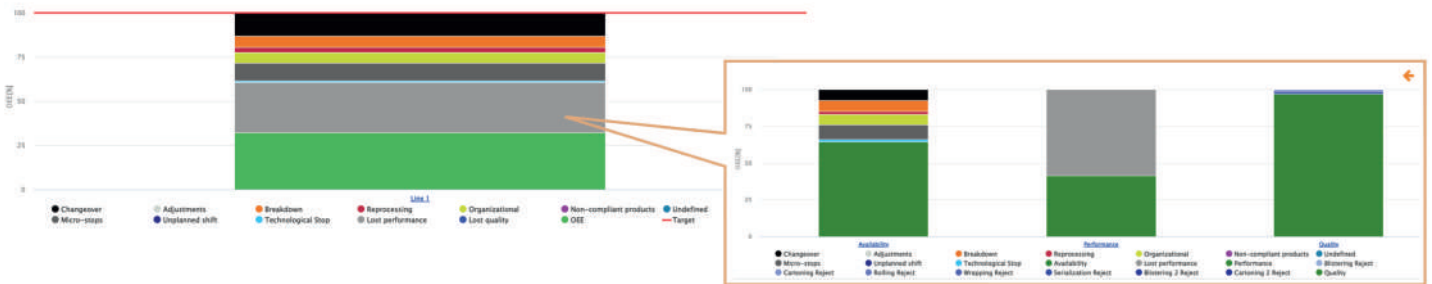
For a more in-depth breakdown, PET also comes equipped with the OEE Breakdown functionality which allows you to view the group's cummulated performance and drill-down to the lowest levels that can influence it and accurately pinpoint what caused the anomalies.
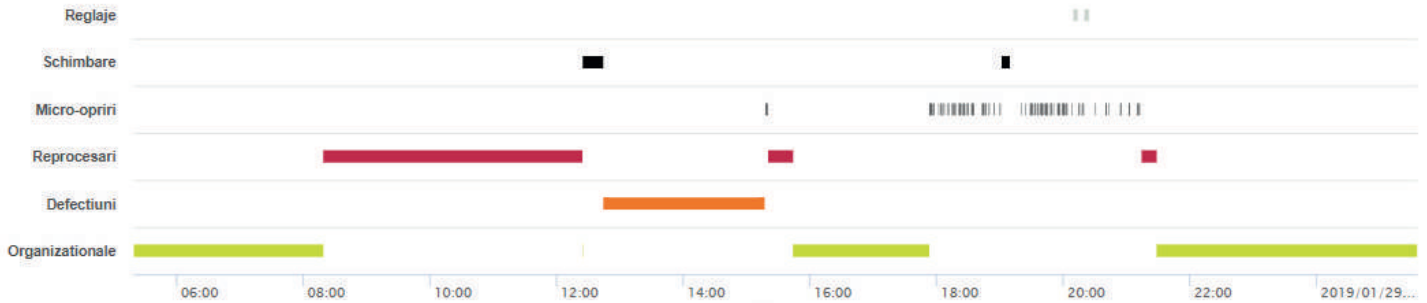
Productive time breakdown
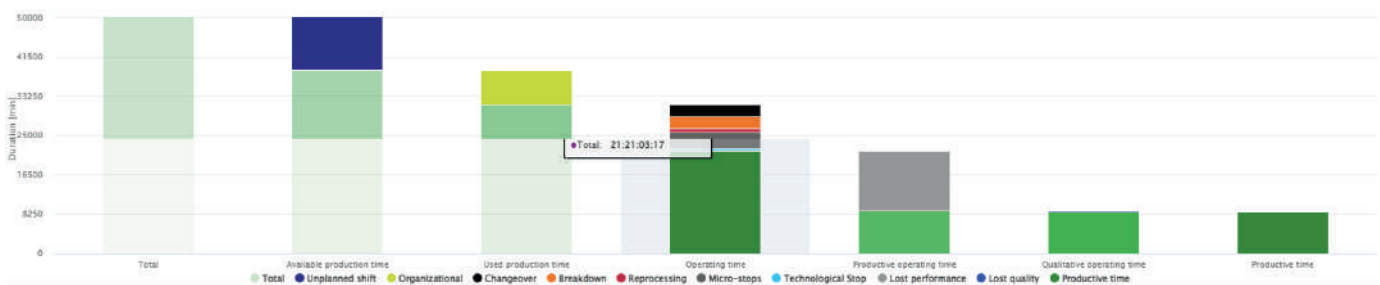
On the same topic of getting a more in-depth analysis, productive time breakdown offers another perspective by describing how each loss of performance affected the overall productive time of the selected group.

⚠ DOWNTIME INSIGHTS

Downtime history

Having a clear overview of the reasons for the different interruptions on the production line enables manufacturing organizations to have a more structured approach towards optimization. PET is able to auto-annotate part of these downtimes and offers a user-friendly interface to annotate the unknown ones. This downtimes are then organized in various charts which help uncover anomalies or repeating patterns that cause loss in performance.

Downtime timeline
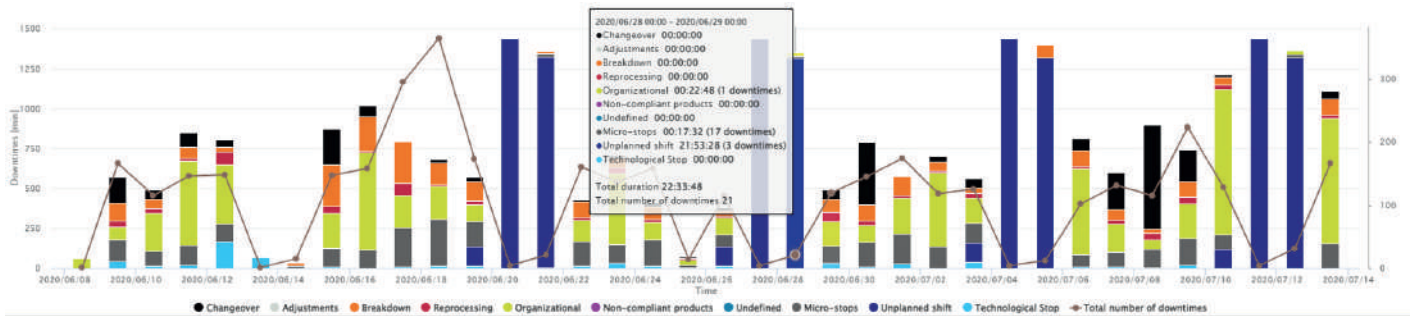
Additionally, while charts like downtime history focus on the behaviour of the equipment and help uncover said anomalies during normal operation, downtime timeline provides the tools necesarry in pinpointing repeating patterns of issues, over a specified ammount of time.

Comment analysis

Moreover, PET also offers the ability to analyze the comments added by the operators when annotating downtimes. The comments that appear most frequently are highlighted at the top and offer the biggest reasons as to why downtimes were generated in the first place, giving valuable insight an revealing hidden issues.

⇄ CHANGEOVER ANALYSIS

Changeover history
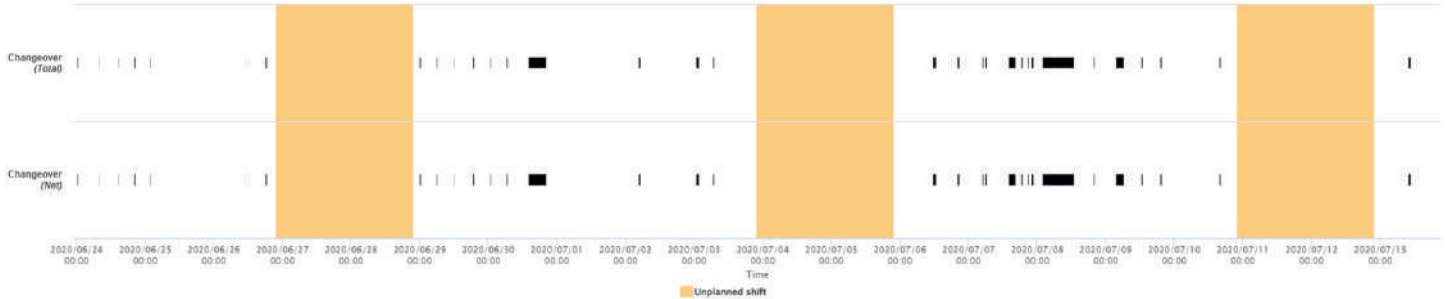
PET supports the definition of a changeover matrix for each production line, with changeover stoppages being automatically created in the beginning of the execution of production orders. Based on this, the system presents, in a friendly way, which changeovers are problematic and which sequence of production orders generate the highest delays.

Changeover timeline
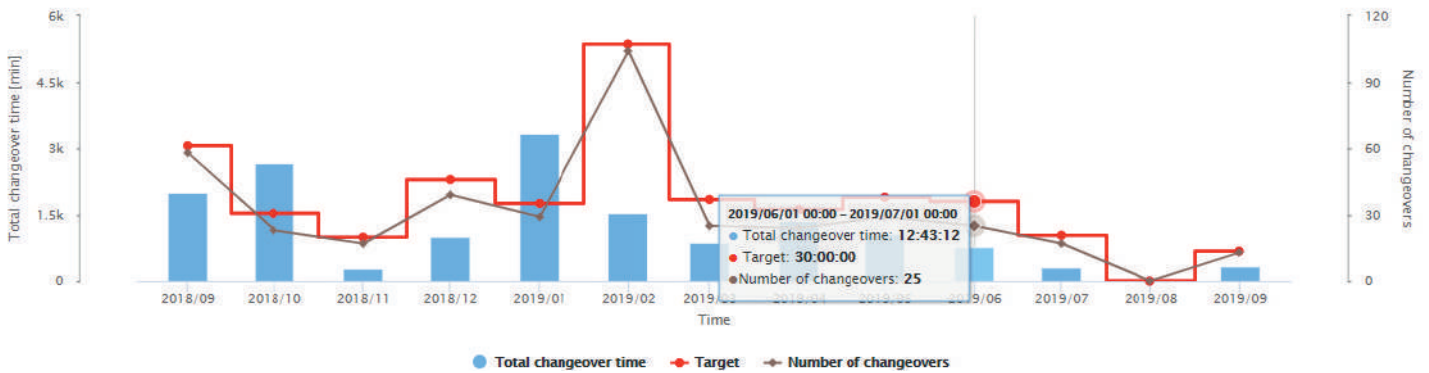
Moreover, with the timeline and changeover breakdown charts, the tasks of identifying how much time is actually spent during changeovers and what part number is causing the most delays becomes ever easier to perform.
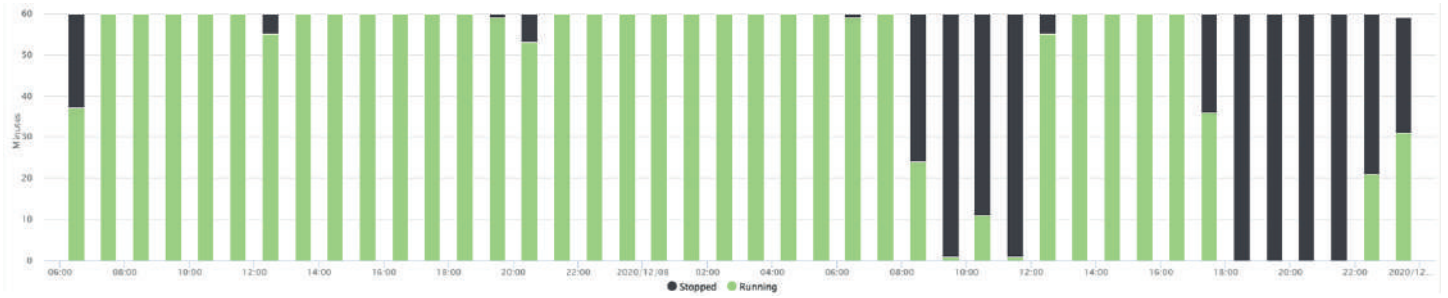
## Changeover breakdown by part numbers
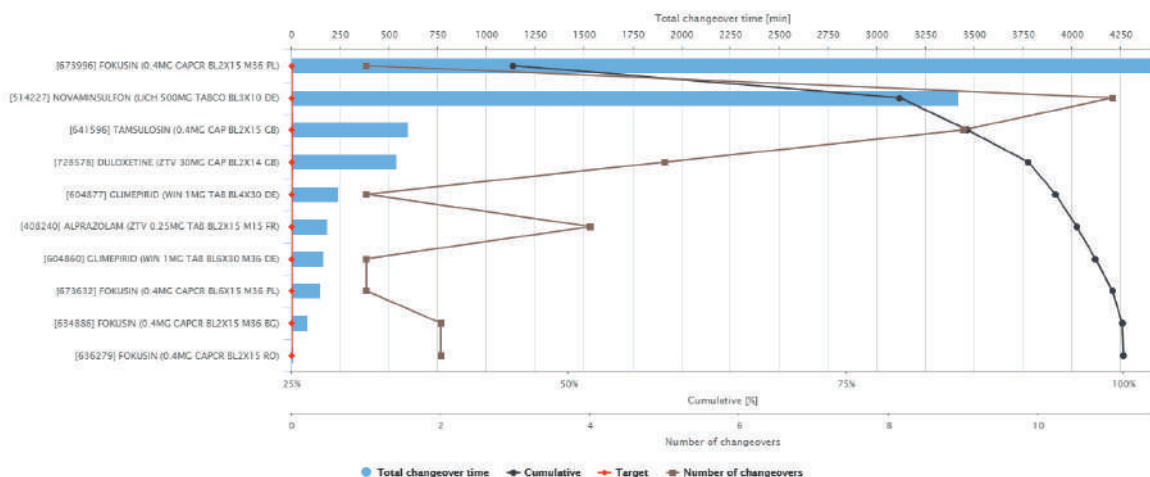
⚠ MAINTENANCE INSIGHTS

Machine runtimes

A clear understanding of when the machine is running and when it is stopped helps in determining patterns of failure, which in turn result in being able to predict when an equipment requires maintenance. With PET, this task is made simpler through the help of the runtimes chart which shows in an easilly readable manner when the machine was active and how much time was spent with the machine being inactive.
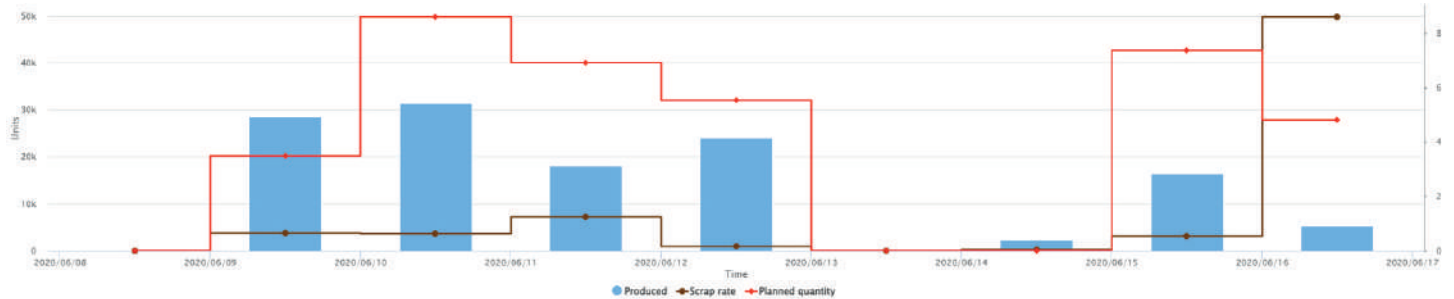
Maintenance KPIs
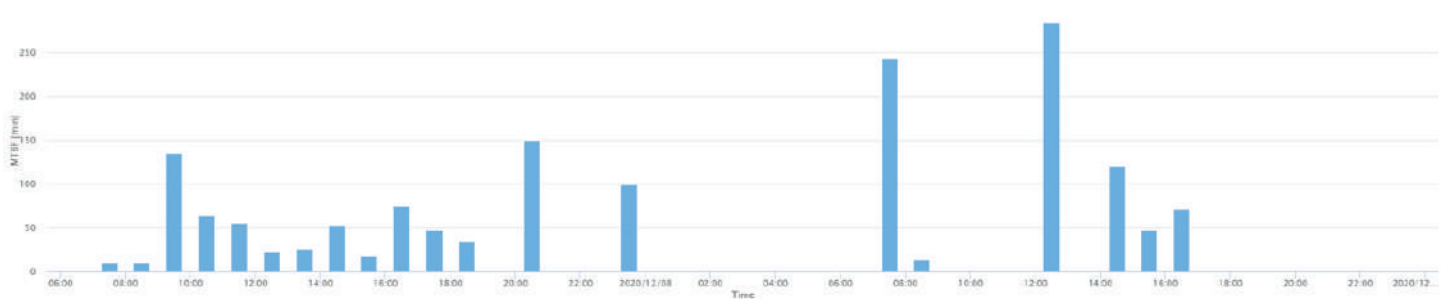
PET also offers multiple historical views on maintenance KPI's, such as Mean Time Between Failures (MTBF), Mean Time Between Repairs (MTBR) or Mean Time To Repair (MTTR), which further aid in revealing patterns on equipment breakdowns.

PRODUCTION & QUALITY INSIGHTS

Production timeline

Using automatically collected data, PET offers insights into how the production process evolved over a period of time, by reshaping it into a user-friendly chart that not only shows how many units were produced and what the scrap rate was, but also what planned quantity (PQT) should have been reached in that interval.

Production line speed
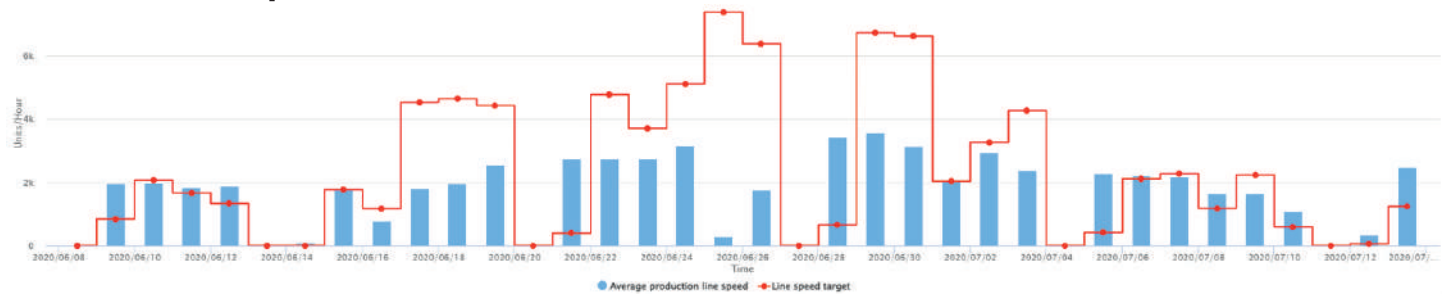
In parallel with Production timeline, PET can further detail the current status of the production process though the Production line speed and Scrap analysis charts which togheter help you form a complete understanding of why the PQT was not reached and what rejects contributed to the loss in quality.

Scrap analysis
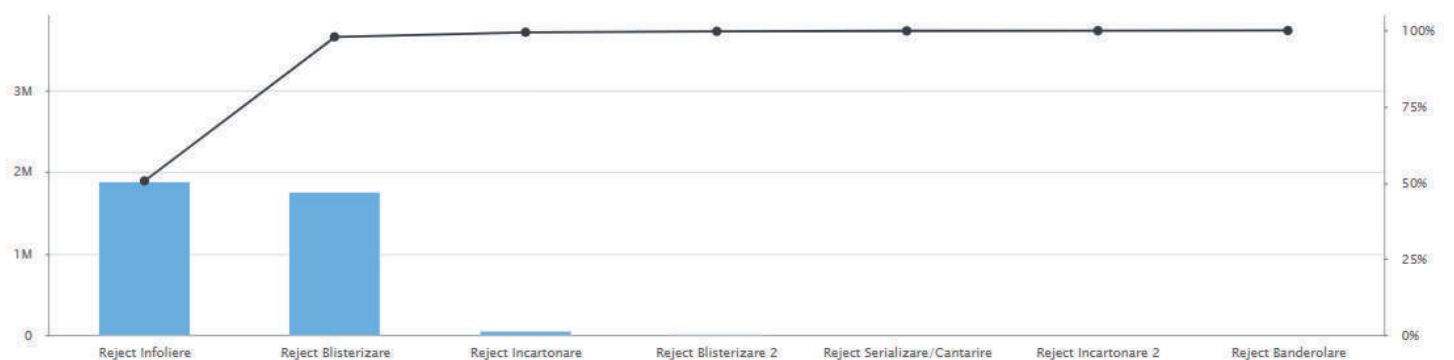
For an even deeper analysis, PET offers a multitude of other charts, each tailored to a specific aspect of the production process and made available through a user friendly interface that allows you to filter your data down to the smallest periods and granularities.

PROCESS PARAMETERS

Parameters of the process such as temperature or acidity are continuously adjusted in order to better control the process. The lack of data related to these changes results in a poor understanding of what goes wrong and what is actually improving productivity. Due to this, PET offers the tools necesarry to accurately monitor the changes in those parameters.

REAL-TIME ALERTS AND MOBILE INTERFACE

Access to the application on your mobile device, including real time notifications about what is happening, gives much better reaction time and control. With PET, all the capabilities found in our desktop interface are also made available on mobile, allowing the same level of access even when you are on the move.

Additionally, our mobile interface offers real-time data access, including valuable and significant notifications that enable you to react faster and more efficiently.

For better delegation of responsabilitites PET also offers the posibility of notifying a custom number of groups, each responsible for a different type of anomaly and having multiple escalation levels, thus minimizing reaction time and ensuring that the correct persons are being notified.
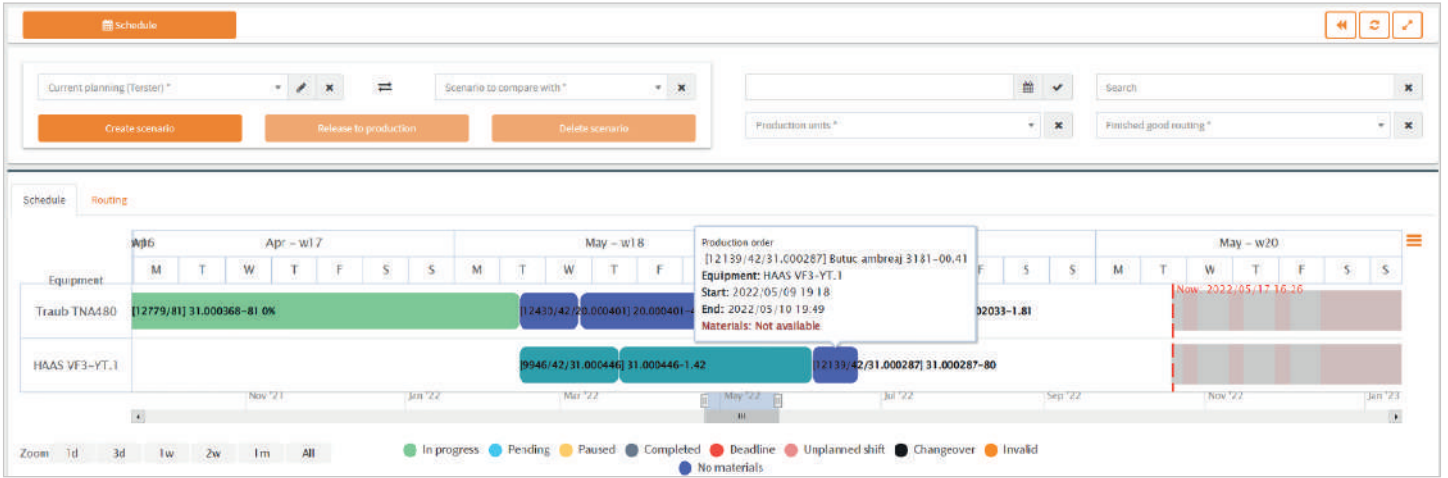
PRODUCTION PLANNING

Based on historical and real-time data, the production planning module is auto readjusting production orders in order to fulfill as best as possible delivery deadlines. At the same time, it minimizes the overall production execution time, in order to improve OEE, taking into account changeovers, historical performance on certain machines vs. others and technological process steps.

This, coupled with the added feature of creating planning scenarios which can then be compared with one another to select the best combination, creates a powerfull and all-encompassing tool that dynamically plans orders and ensures the equipments are fully utilized.

STOCK MANAGEMENT

For situations where production planning cannot happen without taking available stocks into account, PET also provides a fully fledged stock management feature that not only allows monitoring of material deliveries, but also schedules production orders based on availalble materials as well as future deliveries.

WORKSHIFTS PLANNING

Based on a predefined pattern of workshifts, the system offers an easy way to define the work structure for different production lines.
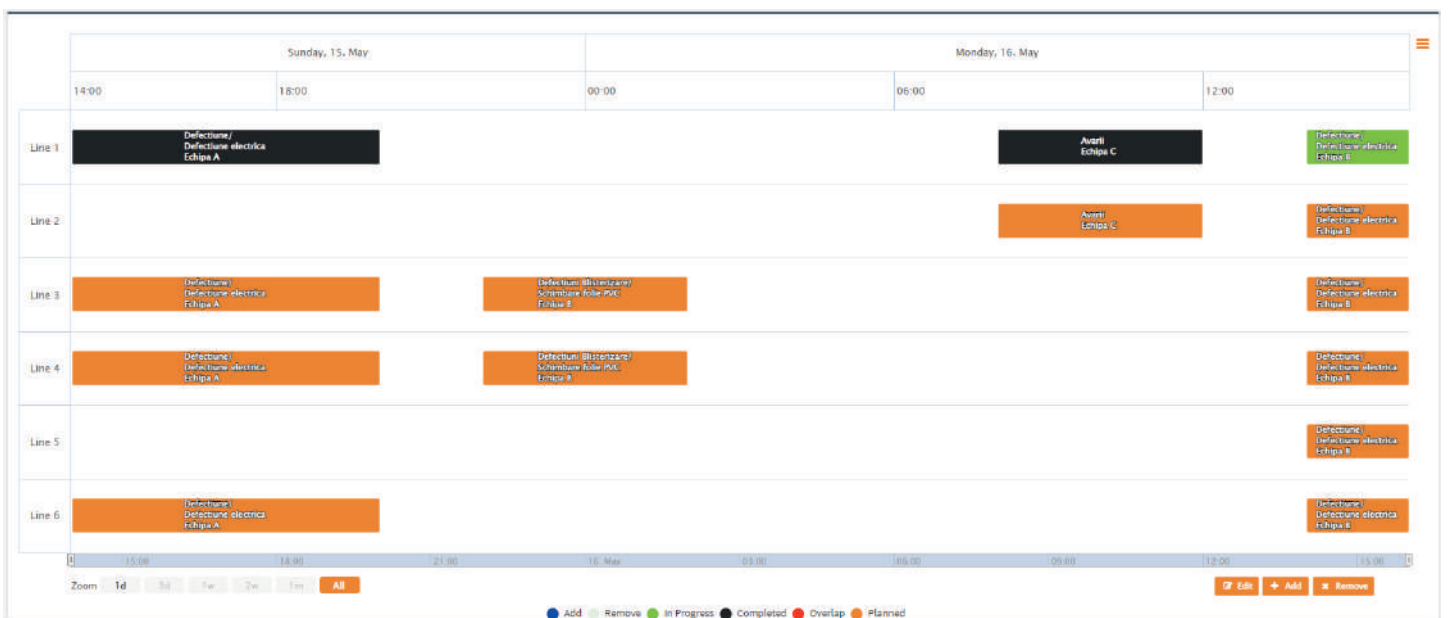
With minimum interaction from the operator, PET automatically creates downtimes for unplanned shifts, marks when a shift starts too late or ends too early and keeps track of performance.

Additionally, workteams can also be assigned to each shift, further helping in identifying what user belongs to what shift, thus improving traceability.
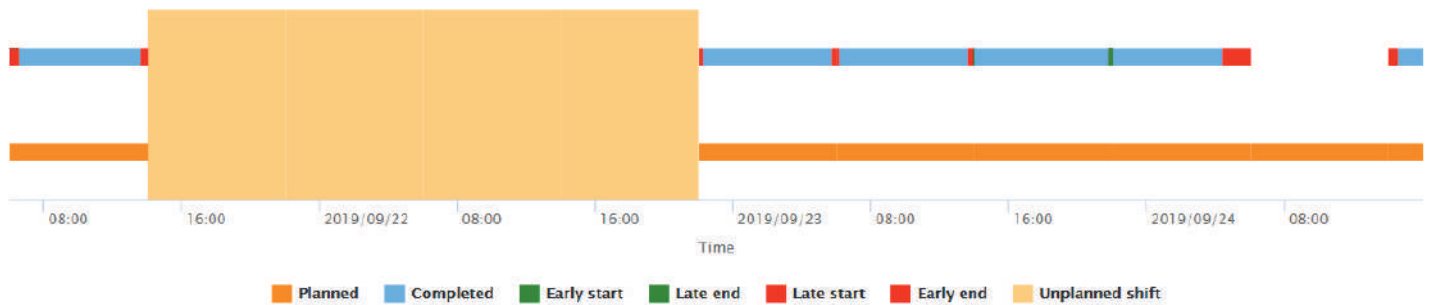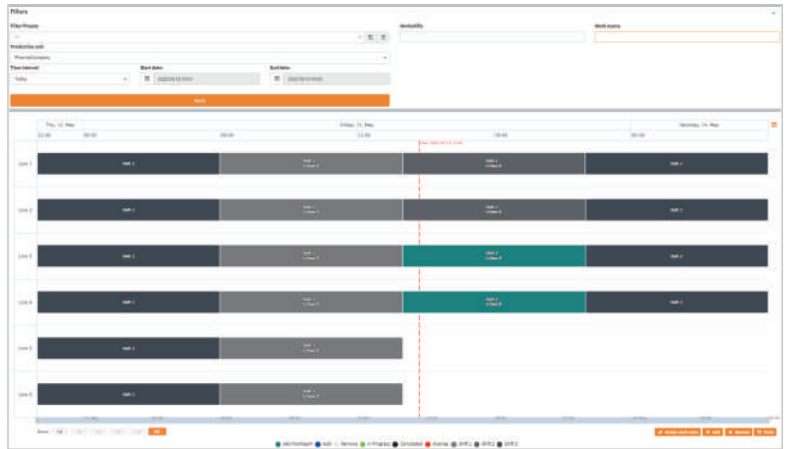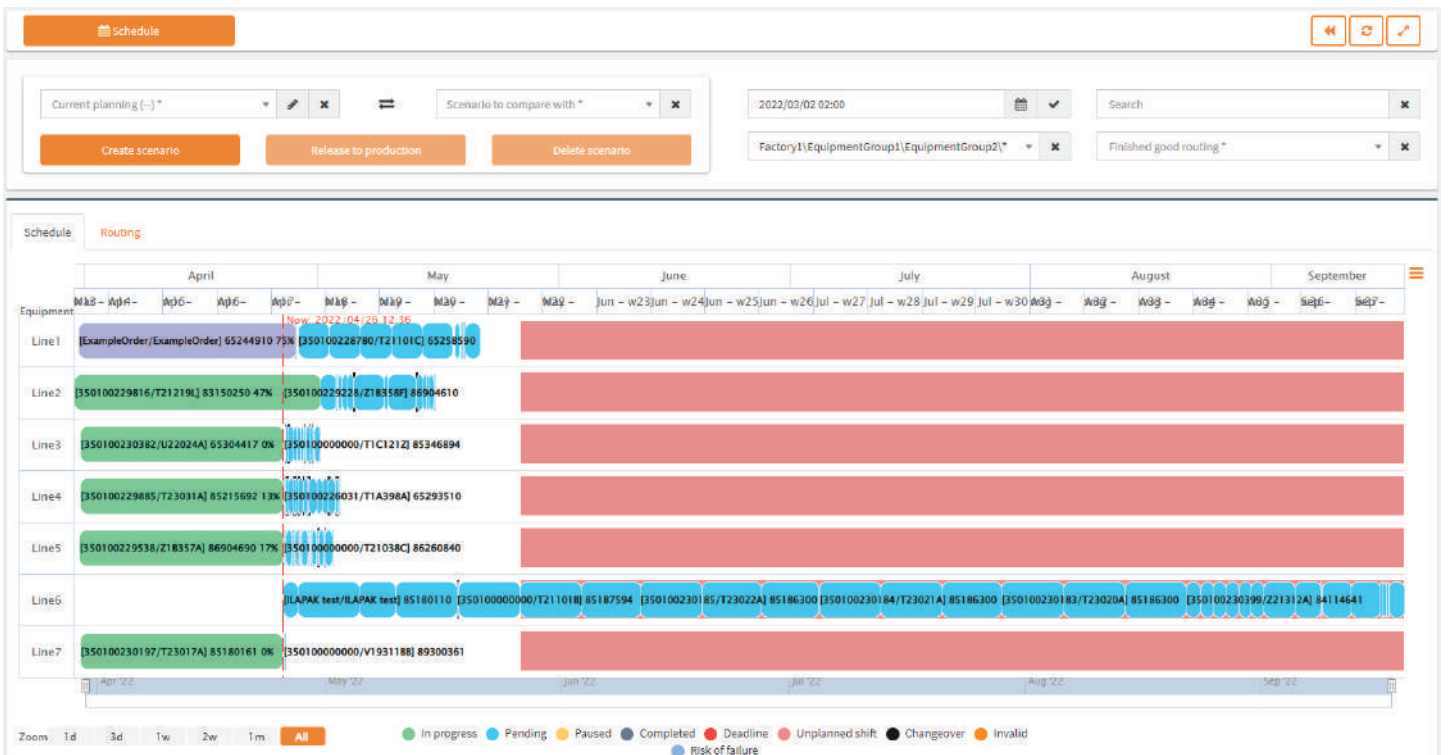

MAINTENANCE PLANNING

For situations where periodic maintenance is necesarry, PET provides a simple and user-friendly interface for planning maintenance downtimes ahead of time as well as assigning what workteam will perform the repairs or check-ups, in the process, allowing for better organization and efficient use of staff.

🕐 PREDICTIVE MAINTENANCE

Production unit	EquipmentGroup2	

Visual Management Board   Chance of Failure in the next 5 minutes: 19%   Fullscreen

Factory1 \ EquipmentGroup2

Line1 ⚠ 19%
ExampleOrder / ExampleOrder
🔧 [65244910] EXAMPLE
Done: 98495 / 129848 — 75.9%
✖ Rejects: 11450 — 10.4%
OEE Shift: — 0.7%
OEE Order: — 1.0%
Line speed: 107 / 16200 — 0.7%
293:01:07

Line2
350100229816 / T21219L
🔧 [83150250] POSTINOR-2
Done: 122983 / 261127 — 47.1%
✖ Rejects: 4507 — 3.5%
OEE Shift: — 0.4%
OEE Order: — 1.5%
Line speed: 53 / 12240 — 0.4%
2606:29:26

Line3
350100230382 / U22024A
🔧 [65304417] BLIST
⤭ CHANGEOVER
NAGY ÁTÁLLÁS
627:44:37 / 00:00:00

Line4
350100229885 / T23031A
🔧 [85215692] LIN/MILLINETTE
Done: 3388 / 24656 — 13.7%
✖ Rejects: 378.33 — 10.0%
OEE Shift: — 0.2%
OEE Order: — 0.1%
⚠ 626:17:25

Line5
350100229538 / Z1B357A
🔧 [86904690] DROVELIS
Done: 9023 / 50760 — 17.8%
✖ Rejects: 1948 — 17.8%
OEE Shift: — 0.3%
OEE Order: — 0.2%
Line speed: 14 / 9000 — 0.2%
2981:12:51

Line6
⏹ STOPPED
LATE START: 06:17:26
6578:49:18

Line7
350100230197 / T23017A
🔧 [85180161] AZALIA
Done: 371 / 50040 — 0.7%
✖ Rejects: 146 — 28.2%
OEE Shift: — 0.2%
OEE Order: — 0.0%
⚠ 626:10:34

Production statistics for today

3144 Minutes	0	20
Total downtimes	Total production	Total defects
Additional information	Additional information	Additional information

OEE - last week   OEE - today

With the latest version of the server, PET now has the capability of predicting when failures may occur and what orders may be impacted. In doing so, equipments that have a high chance of failure will have their orders rescheduled to other machines where possbile, thus avoiding production delays.

📅 Schedule

Current planning (--) *	Scenario to compare with *	2022/03/02 02:00	Search
Create scenario	Release to production	Delete scenario	Factory1\EquipmentGroup1\EquipmentGroup2* Finished good routing *

Schedule   Routing

Equipment	April	May	June	July	August	September

Now: 2022/04/28 12:36

Line1 — [ExampleOrder/ExampleOrder] 65244910 75% [350100228780/T21101C] 65258590
Line2 — [350100229816/T21219L] 83150250 47% [350100229228/Z18358F] 86904610
Line3 — [350100230382/U22024A] 65304417 0% [350100000000/T1C121Z] 85346894
Line4 — [350100229885/T23031A] 85215692 13% [350100226031/T1A398A] 65293510
Line5 — [350100229538/Z18357A] 86904690 17% [350100000000/T21038C] 86260840
Line6 — ILAPAK test/ILAPAK test] 85180110 [350100000000/T211018] 85187594 [350100230185/T23022A] 85186300 [350100230184/T23021A] 85186300 [350100230183/T23020A] 85186300 [350100230399/Z21312A] 84114641
Line7 — [350100230197/T23017A] 85180161 0% [350100000000/V1931188] 89300361

Zoom: 1d   3d   1w   2w   1m   **All**

🟢 In progress   🔵 Pending   🟡 Paused   ⚫ Completed   🔴 Deadline   🔴 Unplanned shift   ⚫ Changeover   🟠 Invalid   🔵 Risk of failure

CUSTOM REPORTS

Based on real-time data as well as historical data, the custom reports module delivers a powerfull tool for generating custom Excell reports by defining a user-friendly interface and allowing you to shape the way your data is presented. The filters used to configure those reports can then be saved for you or all users and accesed anytime at the press of a button.

Additionally, custom reports can also be scheduled for delivery to multiple users and even sent automatically at regular intervals, tasks that would be otherwise repetitive, such as generating daily reports, being handled automatically by PET.

AUDIT TRAILING

Sometimes, it would be beneficial to have the tools necesarry to track what changes have been made to the system as well as who made the changes, especially in environments where certain configurations change frequently.

To reduce the burden of having to manually track said changes, PET comes with a full suite of management tools, designed to automatically track exactly when modifications were made, to what part of the application and by who. Doing so, you have the full history of events ready to be displayed at a moments notice and with the added capability of allowing users access only to certain parts of PET, mistakes can be easily identified and corrected.

CLOUD OR ON-SITE DEPLOYMENT

Cloud

On-Premise

Not only does PET come with a full suite of features and modules, but it is also quite flexible when it comes to installing the application. Thus, the server which contains the base application as well as the collected data, can be deployed either on cloud or on-site depending on available resources and budget.

HOW PET IS HELPING MANUFACTURING ORGANIZATIONS

Manufacturing organizations commonly face the following issues...	... PET addresses these problems by ...
Unusable systems and time wasting due to a complicated operator interface	A simple unobtrusive operator interface, customized for each industry
Not having an efficient production setup	Monitoring and Calculating real time OEE
Not delivering production orders in time	Smart planning based on actual data gathered over time
Not having the needed information from the shopfloor on time and in a flexible manner	Unique mode of presenting information for each organizational level
Facing regulatory pressure due to collecting inaccurate data on paper	Automated data gathering with our GMP compliant solution
Poor process traceability	Electronic logging for every action and production event
Not able to identify and quantify issues in real-time	Real-time shopfloor visual management

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Flexible Industry 4.0 Solutions for Manufacturing

Bridging machine data and people knowledge
for real-time production optimization

SUPER EASY TO INSTALL & INTEGRATE WITH EXISTING INDUSTRIAL INFRASTRUCTURE

The system can be quickly and easily integrated with any type of equipment, including old machinery

OX2 | OCTAVIC PTS

PHARMA	**PLASTICS INJECTION**
FOOD	**METALWORKING**
BEVERAGE	**CONSUMER GOODS**
DAIRY	**BUILDING MATERIALS**
COSMETICS	**EMS**

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