



Battery postprocessing ecosystem with QWall Catalyst traceability solution

InterBattery 2024, 21.06.2024

**QSense – European leader in battery
industry outsourcing solutions**

ABOUT US

QSense is a group of **committed, experienced and highly educated managers, engineers, and specialists** from various industries. Our aim is to provide top quality process outsourcing services for battery and electromobility industries. All our efforts are focused on **quality control and production support through top quality assurance and truly implemented lean approach.**

Since 2015 QSense builds its own innovative **quality control outsourcing service.** Driven by **passion, accountability and professionalism** is always focused on creating more-than-expected value for the customer.



SCOPE OF WORK

- QUALITY CONTROL
- CELLS & MODULES DISCHARGING
- BATTERY LIFECYCLE SUPPORT
- PRODUCTION SUPPORT
- LOGISTICS SUPPORT
- HR SUPPORT
- DEDICATED SOFTWARE

WHY US?



**OVER THE YEARS IN SUPPORTING LEADING
BATTERY MODULES MANUFACTURERS.**

6 750 000+ MODULES

CHARGED, INSPECTED, SENT TO CUSTOMER

300 000+ CELLS

DISCHARGED & SENT TO CUSTOMER

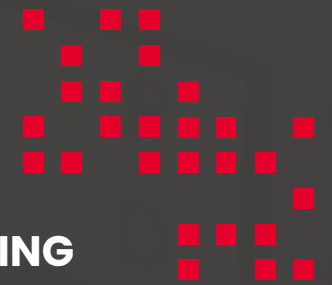
86 200+ MWh

CHARGED

- DISCHARGING
- CHARGING
- IT SYSTEMS
- QUALITY CONTROL
- CONTINUOUS IMPROVEMENT
- PRODUCTION SUPPORT
- ASSEMBLY
- MAINTENANCE & TPM
- LOGISTICS
- PROCESS MANAGEMENT
- VISUAL MANAGEMENT

- 1000+ battery industry experienced quality controllers
- 500 000+ man-days in battery industry
- 60+ different levels battery managers on duty
- 220+ battery industry related projects

QSENSE SUPPORT FOR BATTERY MANUFACTURERS



CELL MANUFACTURING

CELL ASSEMBLING

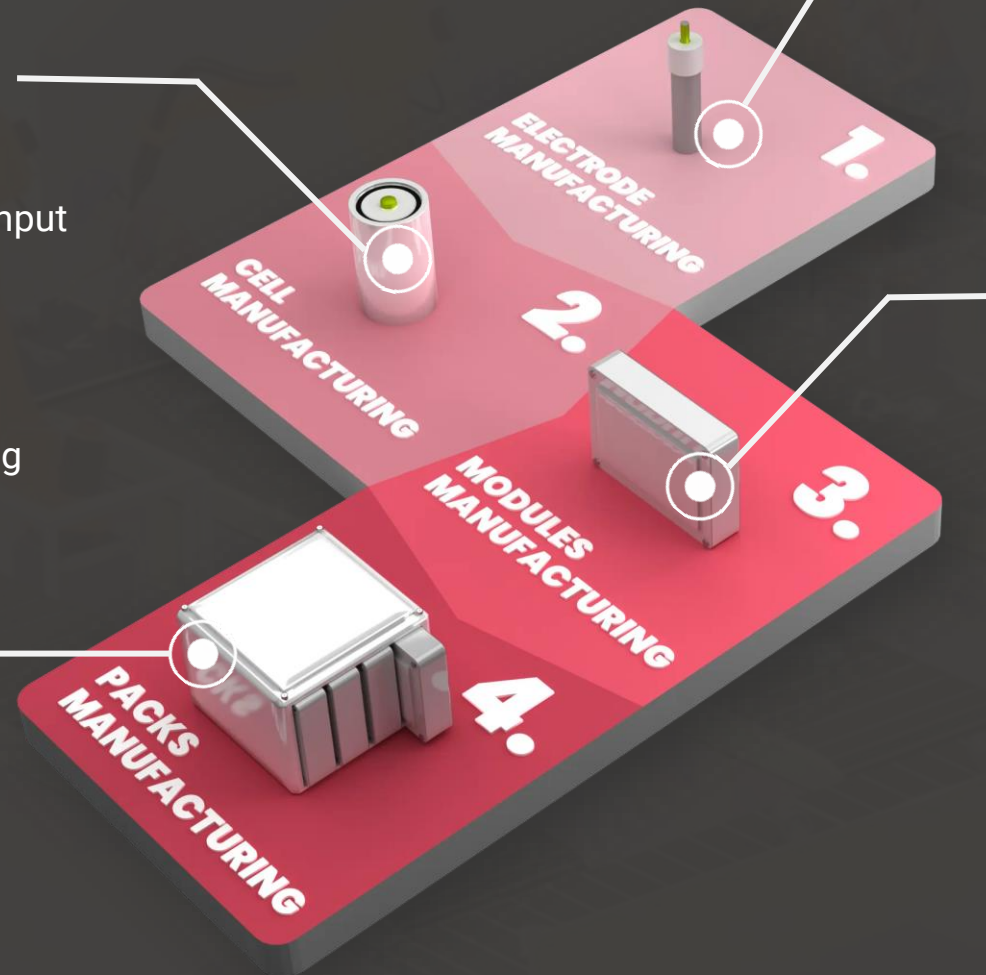
- Material delivery and input for production lines
- Electrolyte refueling

CELL FORMATION

- Visual control & sorting
- Internal logistics

PACKS MANUFACTURING

- Packs functional measurements
- Packs disassembly & discharging



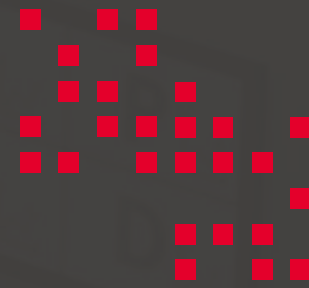
ELECTRODE MANUFACTURING

- Cores & bobins cleaning
- Automatic lines support
- Scrap management

MODULES MANUFACTURING

- Production & assembly line support
- Modules charging & discharging
- Internal Logistics, stock management
- Functional measurements (OCV, IR)
- Visual inspection (incoming and final)
- Equipment & machines, technical maintenance (TPM)

QSENSE SUPPORT ON POSTPROCESSING



DIAGNOSIS AND ASSESSMENT

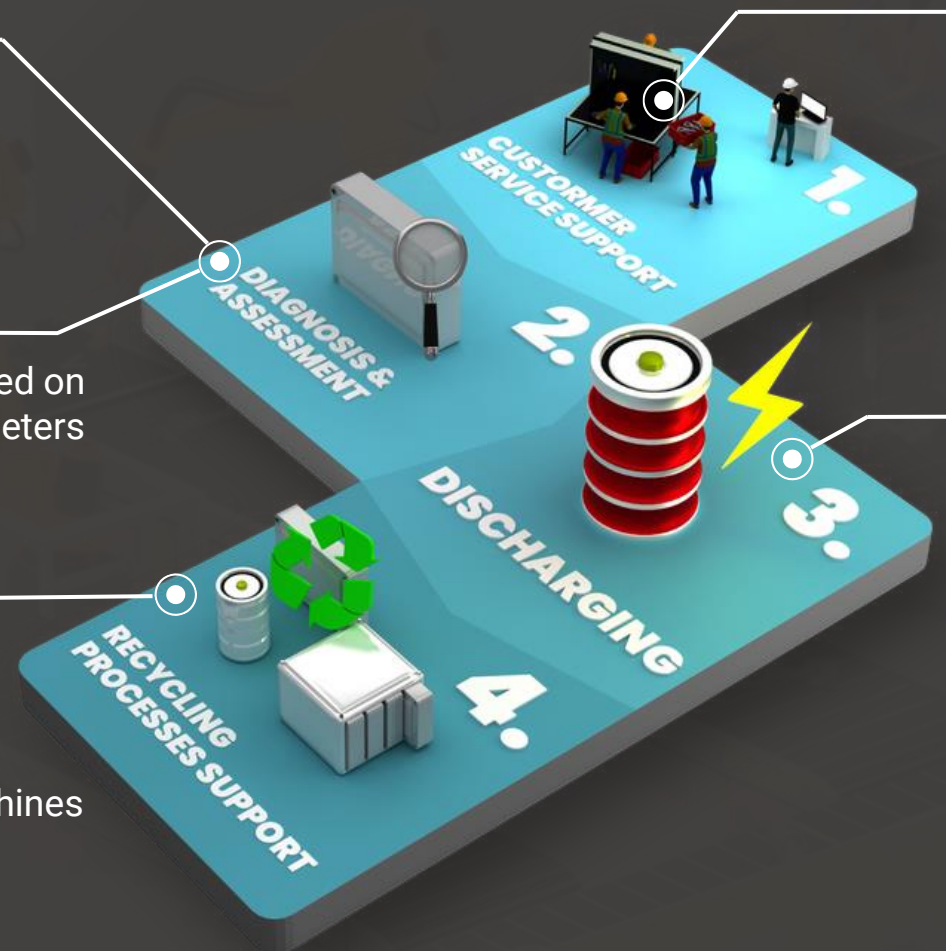
- Diagnostics and battery condition assessment
- Warranty and post-warranty service

REPURPOSING

- Classification of batteries based on technical condition and parameters
- Repurposing

RECYCLING PROCESSES SUPPORT

- Battery disassembly
- Operation of devices and machines
- Area management
- Ensuring safety procedures
- Reporting
- Traceability



CUSTOMER SERVICES SUPPORT

- Material sorting
- Full traceability of items
- Non-compliant products isolation
- Separation and defect analysis

DISCHARGING

- Support for all types of: cells, modules, packs, energy banks
- Discharging to zero voltage
- Electronic load discharging
- On-site and off-site service providing
- Working on own or client's equipment



Circularity, Sustainability, Traceability Support Software

KEY FEATURES AND OBJECTIVES

PURPOSEFUL UTILIZATION ASSURANCE

– BLACK MARKET PREVENTION

- Guarantees the batteries sent to 3rd parties are utilized as intended,

COMPREHENSIVE TRACEABILITY

- Any predefined step required by the process can be incorporated, either integrated from the external system, or manually inputted

SECURITY STANDARDS IMPLEMENTATION

INTER-PARTY COMMUNICATION

REPORTING AND ANALYTICS

PROGRESS MONITORING

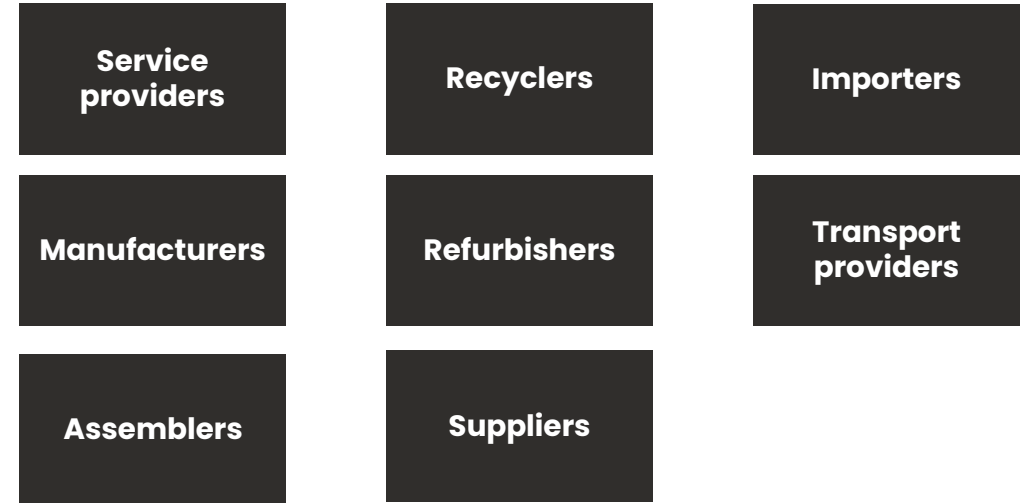
BLACK MASS FORECASTING

- Estimation of black mass volume production based on battery delivered to 3rd party,

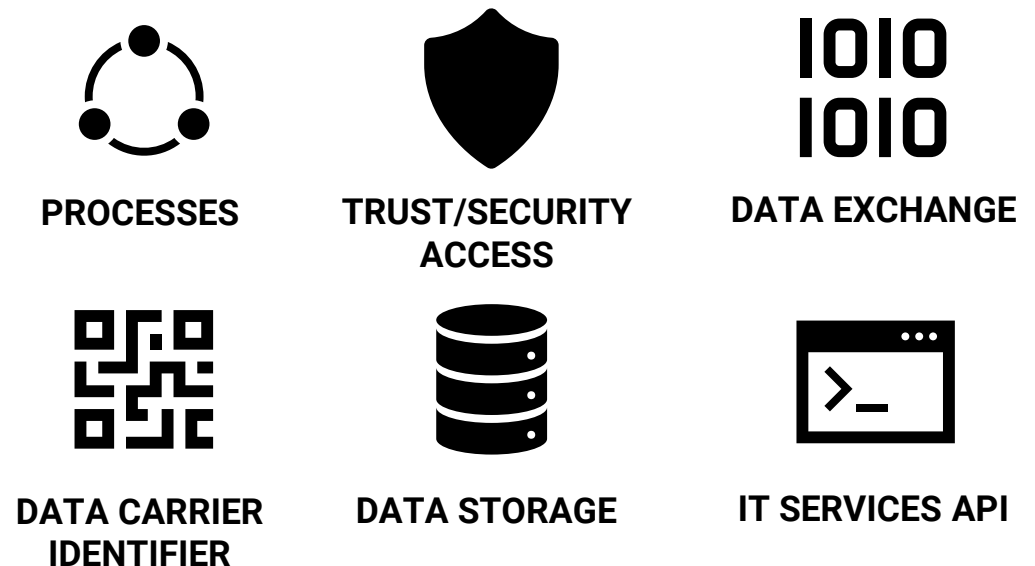
BLACK MARKET PREVENTION

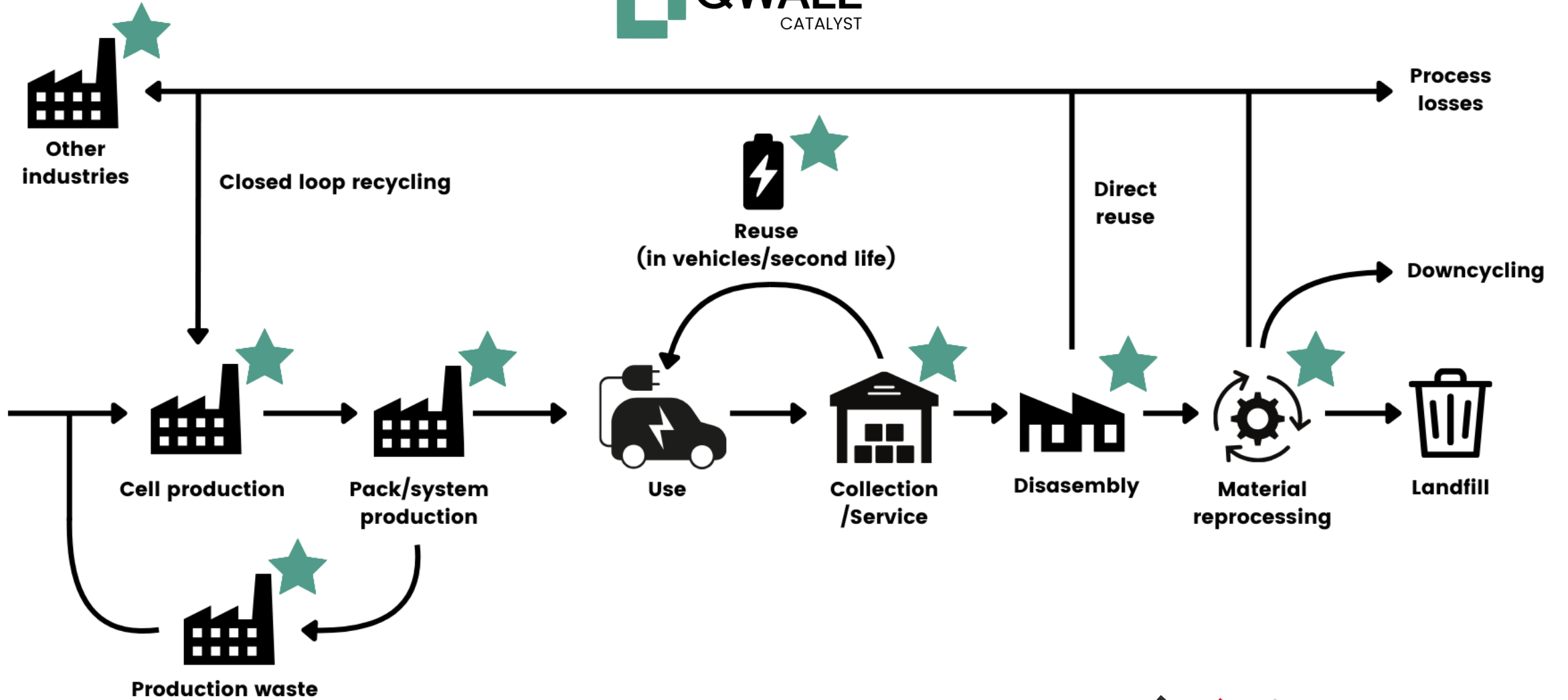
SERVICING AND MAINTENANCE PROCESSES SUPPORT

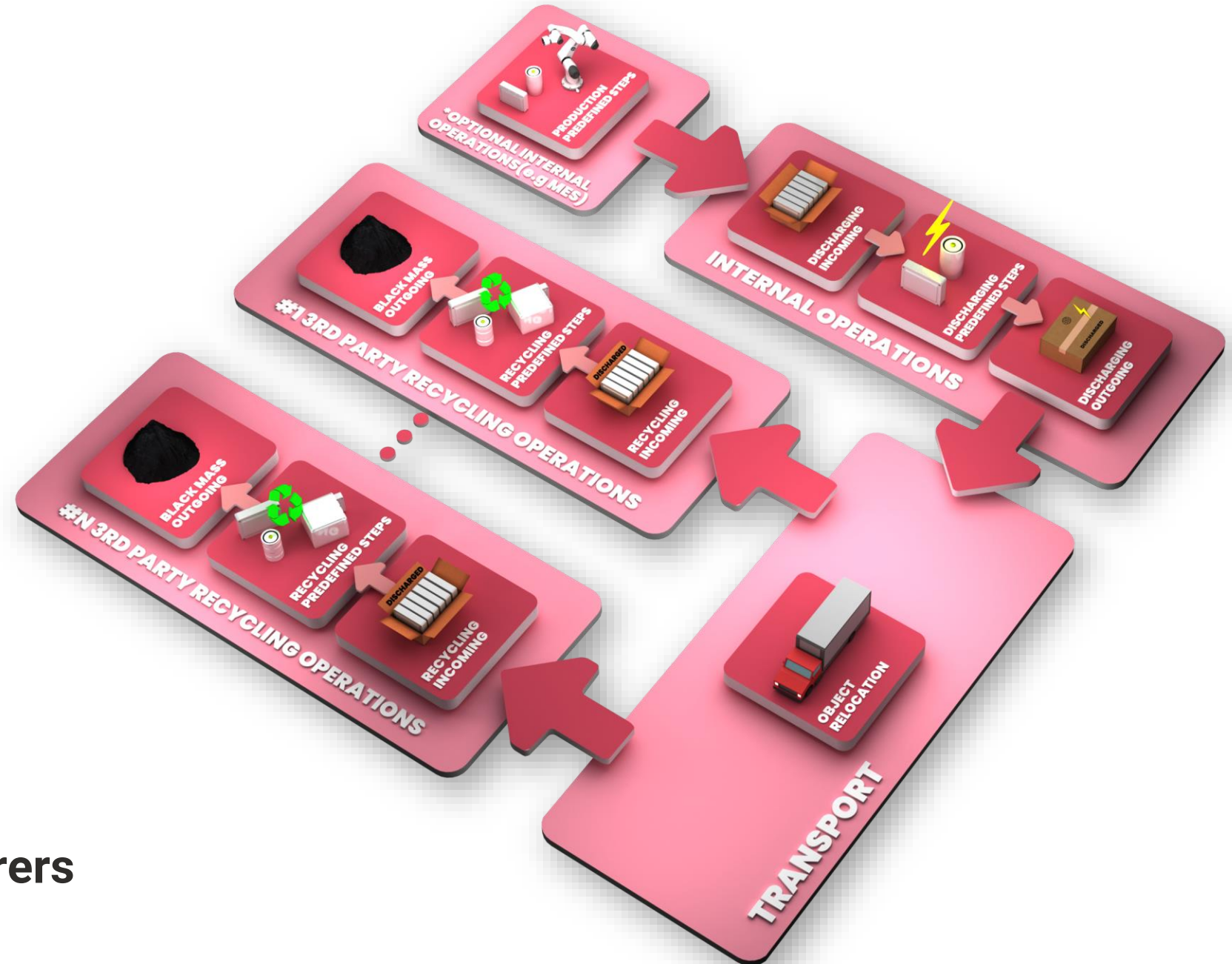
INTERCONNECTING 3RD PARTIES



KEY TECHNICAL ELEMENTS



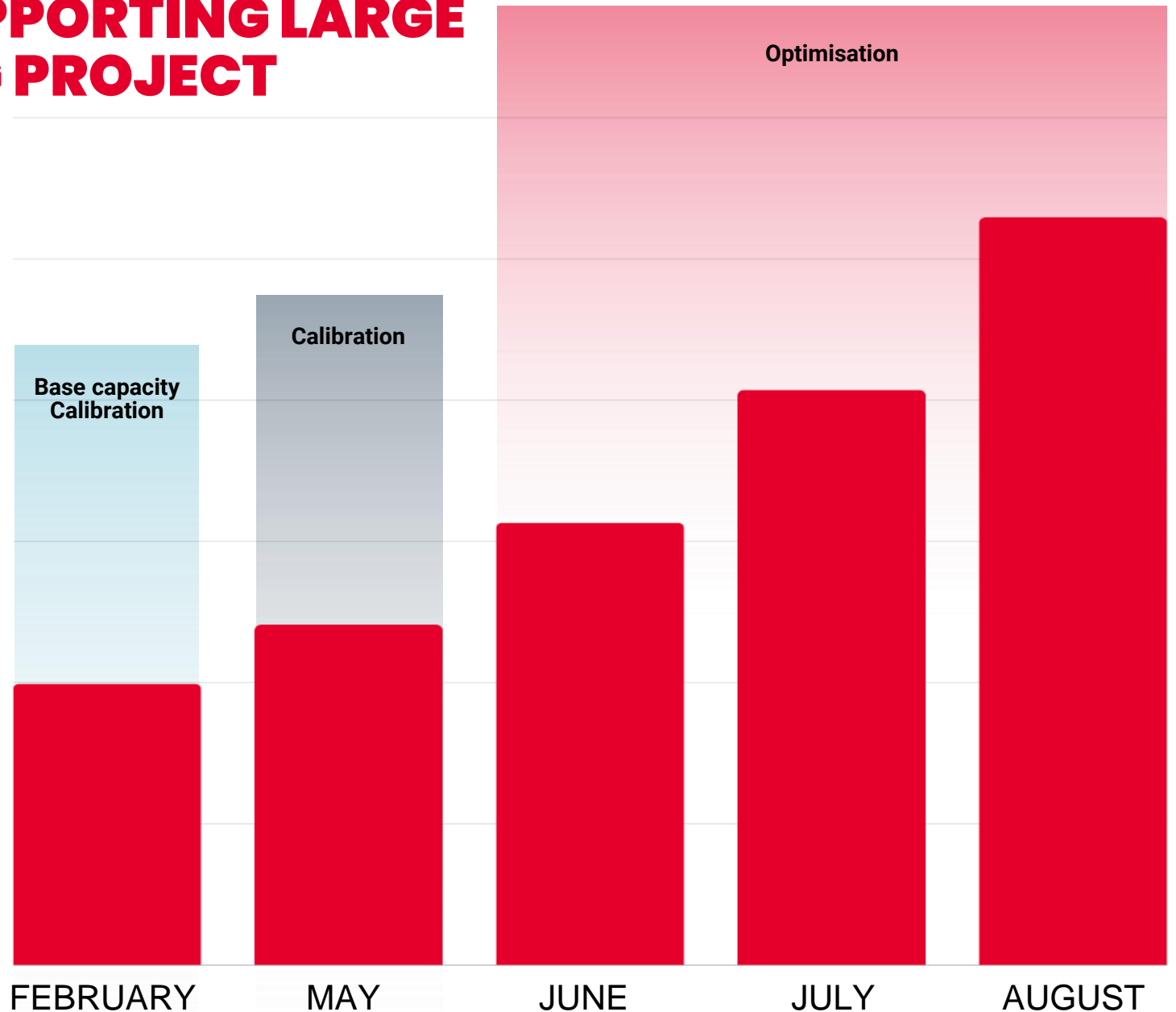




**Example:
For Cell Manufacturers**

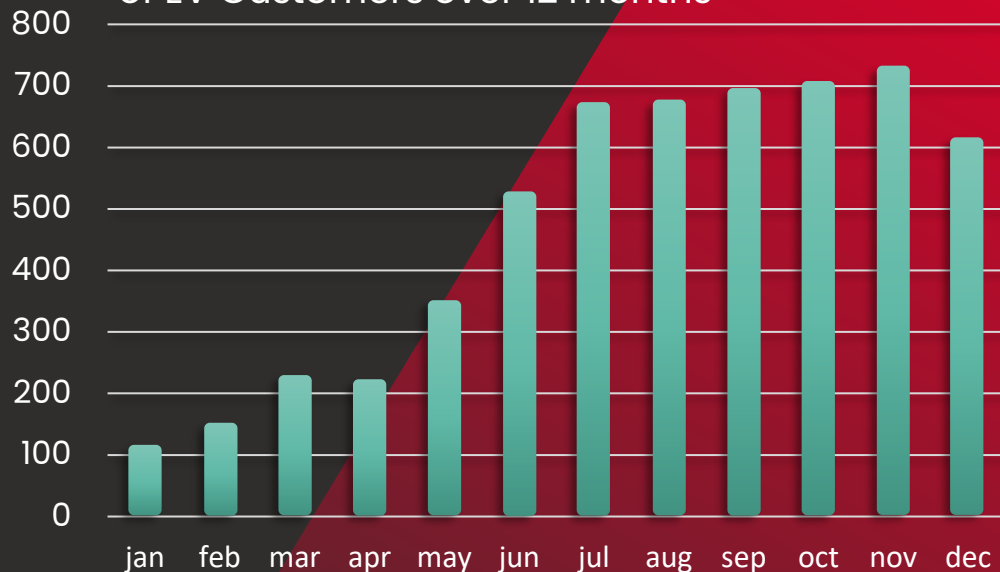
QSENSE TEAM DAILY SUPPORTING LARGE VOLUMES DISCHARGING PROJECT

- Operations Manager
- IT / R&D Department Managers
- Software developers / Coders Team
- Process Engineer & Continuous improvement engineer
- Procurement specialist
- Central Management MSL & SL
- External consultants / specialists
- Quality Engineer
- Maintenance Engineer
- EHS specialist



PROVEN RECRUITMENT, TRAINING & ONBOARDING PATTERN

Number of workers trained and onboarded to one of EV Customers over 12 months



QLEARN

QLearn is a training system for quality control and quality awareness including traditional and VR modules.

STAFFING

- Controllers and operators
- Quality Engineers (SQE, CCE, PQE)
- Auditors
- Managers
- Training and excellence centre
- Employee friendly onboarding process
- Employee management app

QUALITY CONTROL



- **Comprehensive modules quality control**
- Visual inspection
- Specialistic measurements
- Quality assurance
- Work standardization
- Customers claims analysis
- Resident engineering
- Reporting
- Quality Wall

1000+ quality inspectors already
deployed at the Customer's premises

SYSTEMS

QWALL[®]



KEY FUNCTIONALITIES

■ FLEXIBILITY

QWall[®] - fully adaptable to any production process.

■ INTEGRATION

QWall[®] - integrable with external systems with an extensive API.

■ ANALYSIS

QWall[®] - continuous statistical analysis. Allowing to react quickly on irregularities in the production process.

■ REPORTS

QWall[®] - real time data results.

■ DATA

QWall[®] - easily accessible, exportable data.

■ DOCUMENTATION

QWall[®] - complete process documentation and archiving in one place.

■ ACCESS

QWall[®] - full access to functionality and data on every platform.

■ DATA ACQUISITION

QWall[®] - creation of photo documentation and full data acquisition.

SYSTEMS

OPERATIONAL KPIs



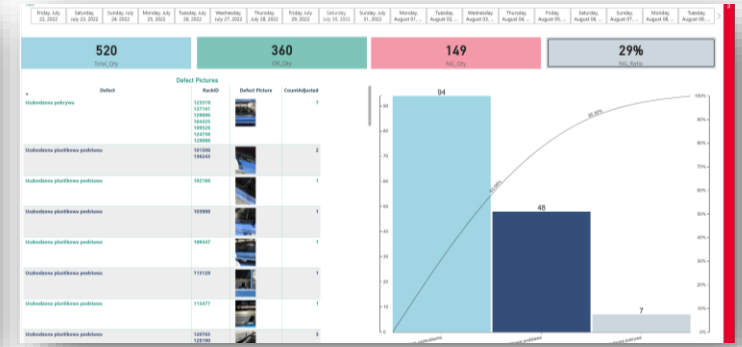
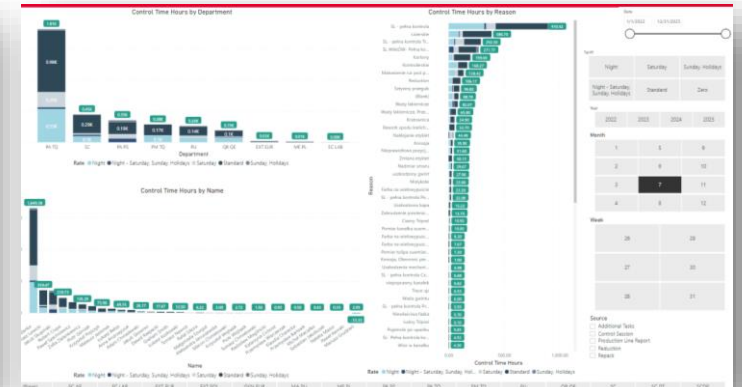
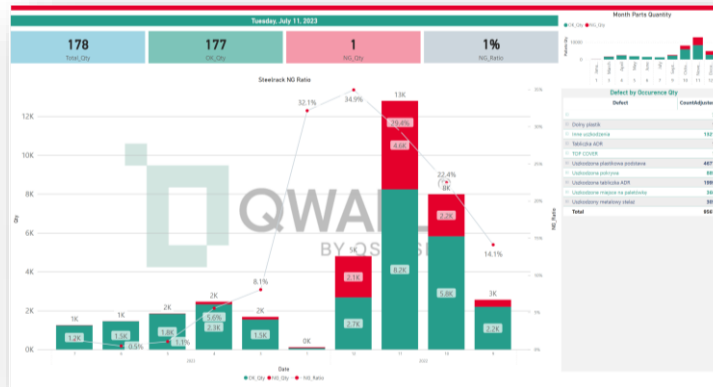
FLEXIBLE KPI

QSense provides KPIs based on customer requirements.



DYNAMIC KPI

Dynamic KPIs are available on smartphones, tablets and computers.



Shopfloor dynamic KPI

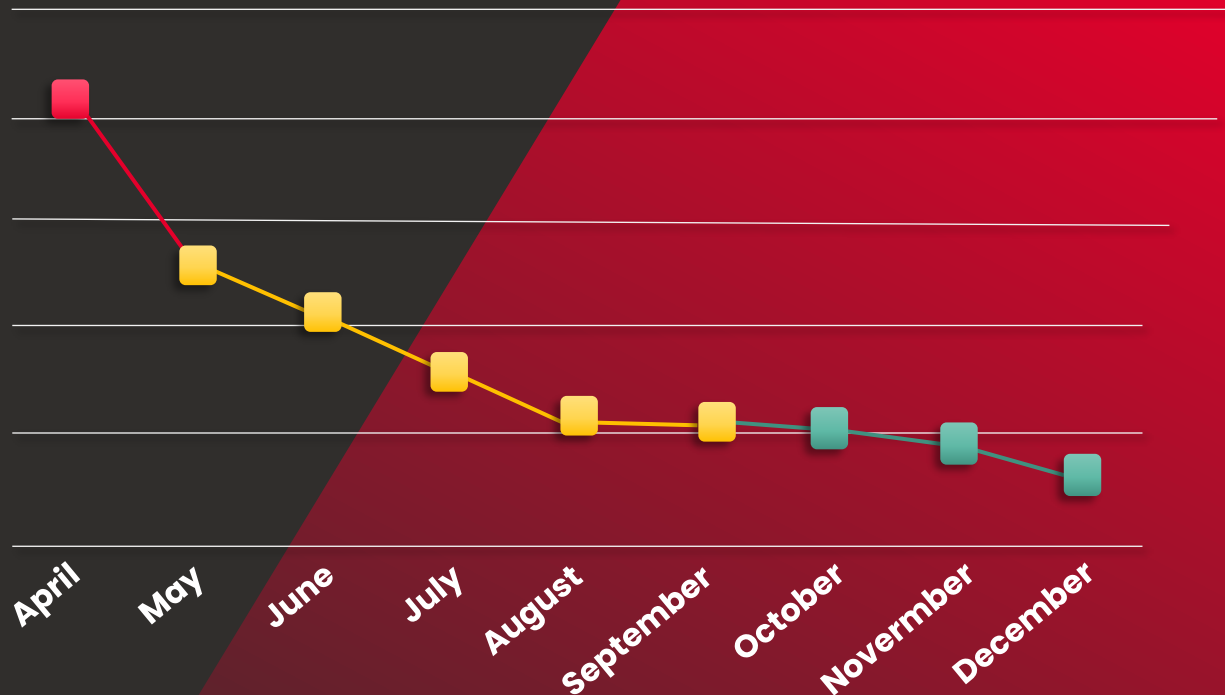
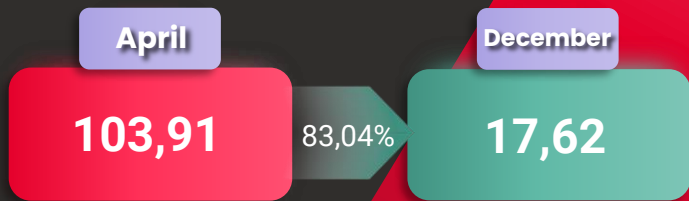
CONTINUOUS IMPROVEMENT

At **QSense**, we follow **Continuous Improvement** principles to **optimize material flow, reduce poor quality and production costs**. Through CI programs and **Lean Management**, we eliminate waste and make improvements at every process stage.

- Technical support
- Equipment design and modification
- Equipment maintenance
- Layout organization
- Process optimization
- Cost optimization
- Material flow mapping
- Process standarization



COST & PROCESS OPTIMIZATION

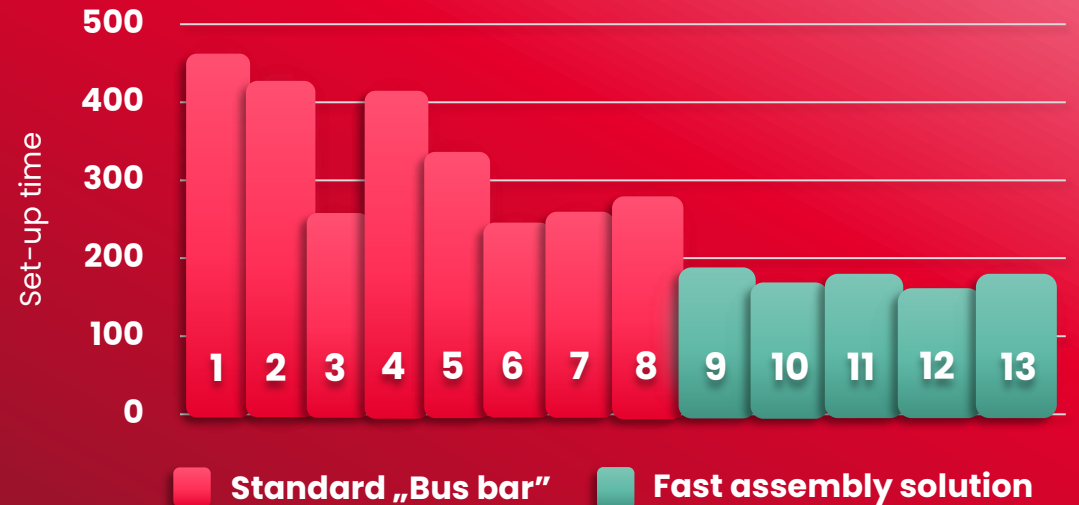


ACTIVITIES

Process and cost optimization achieved with:

- Standarization
- Material flow & layout improvement
- Equipment design
- Tools modification
- Time study & bottle neck elimination
- Idea Qsense (Kaizen Methodology)

ASSEMBLY – 61% FASTER



SELECTED CUSTOMERS



 LG Energy Solution

 Mercedes-Benz



 **Vetro**[®]
Automotive Glass


persán

 Paragon Medical

 | HUTCHINSON[®]


AUTOMOTIVE

 SK innovation

 DST
Dongshin Motech

 ZF WABCO

 **RONAL**[®]

 Gonvarri
Steel Services

 **BASF**
We create chemistry

Gestamp 


ArcelorMittal

TEKNIA 

 **ELDISY**
Vorwerk & Sohn Gruppe


NEDSCHROEF

VOGELSANG 

REFERENCES & CERTIFICATES

For us, the most important thing is what our customers and partners say about us. Their opinions make us recognize our strengths and influence crucial changes.

ISO 9001:2015 & 45001:2018
Based on an internal procedure, we conduct system audits for compliance with ISO 9001:2015 and 45001:2018 requirements. We also maintain a post-audit action register in which corrective and improvement actions are planned. The aim of the internal audits is to assess compliance and continuous improvement of the QMS and health and safety processes.

AWARDS



1st Award for innovative technology for **industrial discharge of lithium-ion batteries and cells** by Battery Forum Poland



2nd place in the "medium-sized enterprise" category in the **Quality Supermen 2023** by TUV NORD Polska



First prize "Moto Innovator" in the category: optimization of quality control processes awarded by the **Polish Chamber of Automotive Industry**

THANK YOU FOR YOUR ATTENTION



Andrzej P. Kublik

CEO



Grzegorz Królik

CONTINUOUS IMPROVEMENT
MANAGER



Mateusz Siwek

BATTERY POSTPROCESSING
MANAGER



DOWNLOAD PRESENTATION