



E-MOBILITY AND POWERTRAIN



- International engineering and application team
- Expertise across all technological processes
- Continuous development of processing procedures
- Experience from dozens of successful projects
- Global customer service

The automotive industry is adapting to meet the current global challenges with priority given to the areas of safety, sustainability, and individual mobility. The new technologies needed to overcome these challenges require intelligent production.



WE AUTOMATE YOUR E-WORLD

DRIVES FOR THE FUTURE

The e-revolution in automotive engineering is having significant consequences for production: the diversity of variants and increasing quality requirements in the powertrain area are constantly evolving as a result of hybrid and electric drive technologies. Due to this global pressure to innovate, adaptable and process-reliable production systems are increasing in importance.

For the production of e-mobility components, PIA has developed the concept of semi-automated and flexibly interlinked assembly cells. These result in an agile and future-proof system, which - due to product changes and type diversity - prepares the integration of further units and enables variable employee deployment. The use of in-house designed autonomous mobile robots (AMR) rounds off completes PIA's portfolio.

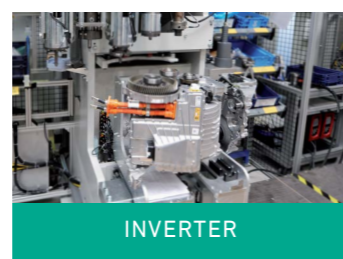
Power units and energy sources are an essential core element of e-mobility. For the production of battery modules and packs, PIA offers customized solutions both for mechanical and electrical assembly, as well as for fast cycle times and large components.



HYBRID-MODULES



E-DRIVES



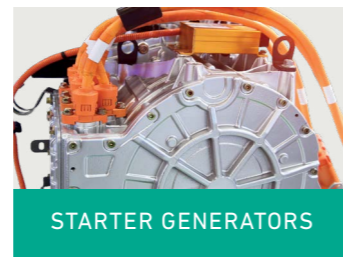
INVERTER



ROTORS, STATORS



BATTERY SYSTEMS

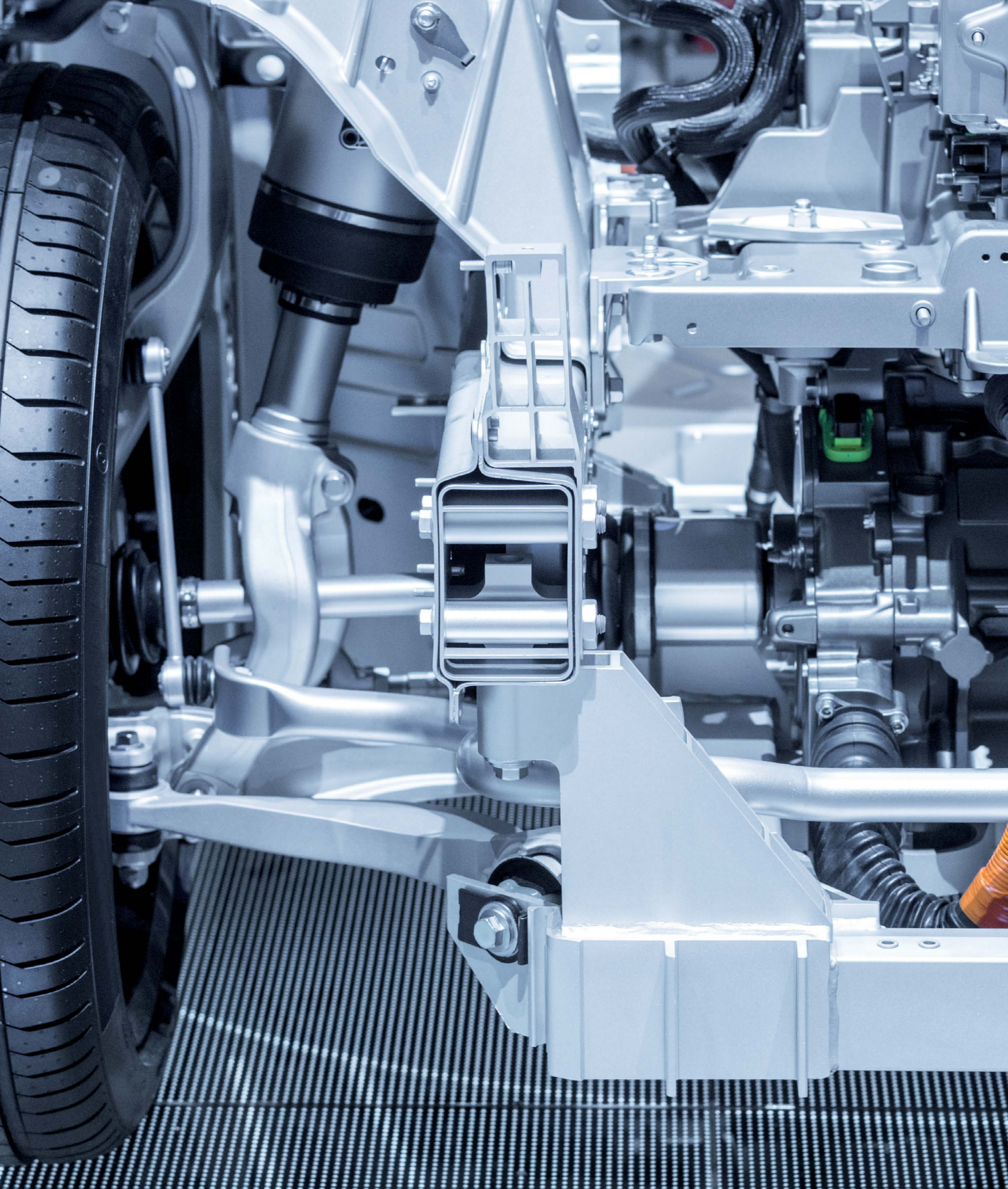


STARTER GENERATORS



ASSEMBLY AND TESTING SYSTEMS FOR E-MOBILITY COMPONENTS

- Hybrid modules
- E-drives and E-axles
- Rotors and stators
- Starter generators
- Battery systems (cylindrical, prismatic, pouch): module und packs
- Cell connectors, tempering systems
- Inverter, booster, BMS



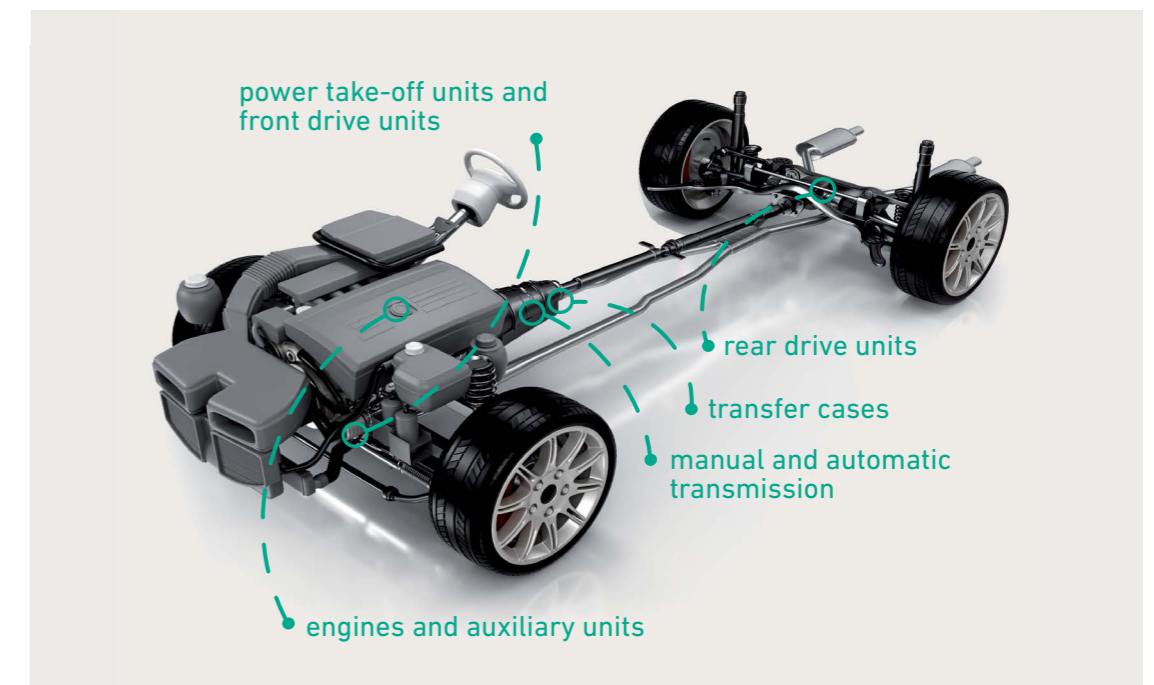
GIVING MOMENTUM TO THE FUTURE

POWERTRAIN

The automotive powertrain is undergoing major changes. The demands on the system in terms of performance, consumption, exhaust emissions, and durability have increased enormously. PIA offers comprehensive production solutions for combustion, hybrid, and electric drive systems. The modular production units include all machines and equipment required for the assembly and testing of powertrain assemblies. In this area, PIA can draw on system expertise that has grown over decades.

Numerous technological developments within the powertrain are based on automated processes that were conceived and continuously refined at PIA. Our most important motivations are combining innovative production technologies with technically advanced solutions as well as opening up new ways for our customers to achieve reliable productivity.

With the PIA Industrial App Suite – a portfolio of I4.0 solutions – we support our customers in achieving their business objectives (e.g. improved OEE, increased production quality, more transparent production planning) in a sustainable way.



ASSEMBLY AND TESTING SYSTEMS FOR POWERTRAIN COMPONENTS

- Engines and auxiliary units (e.g. turbochargers, camshafts, torsional dampers, dual mass flywheel, double clutch)
- Dual clutch transmission
- Transfer case, front and rear axle transmission
- Differential modules
- Steering systems

POWERTRAIN



COLLAR NUT BOLTING

The collar nut bolting station is used for mounting the drive pinion bearing in transfer cases. The tightening criteria can be an end screw torque or a defined friction torque of the pinion bearing.

TORSIONAL BACKLASH TEST

The dynamic torsional backlash measurement is used to check gear pairs. The backlash of the pairings and the imbalance of the gear set are determined and any damage to teeth is detected.

GEAR SET SETTING STATION

This adjusting station is used to determine the shims of axle-distribution gearboxes with high precision - matched to the design of the gearbox - in order to achieve the correct circumferential backlash at the end of assembly.

PRECISION MEASURING AND TESTING SYSTEMS

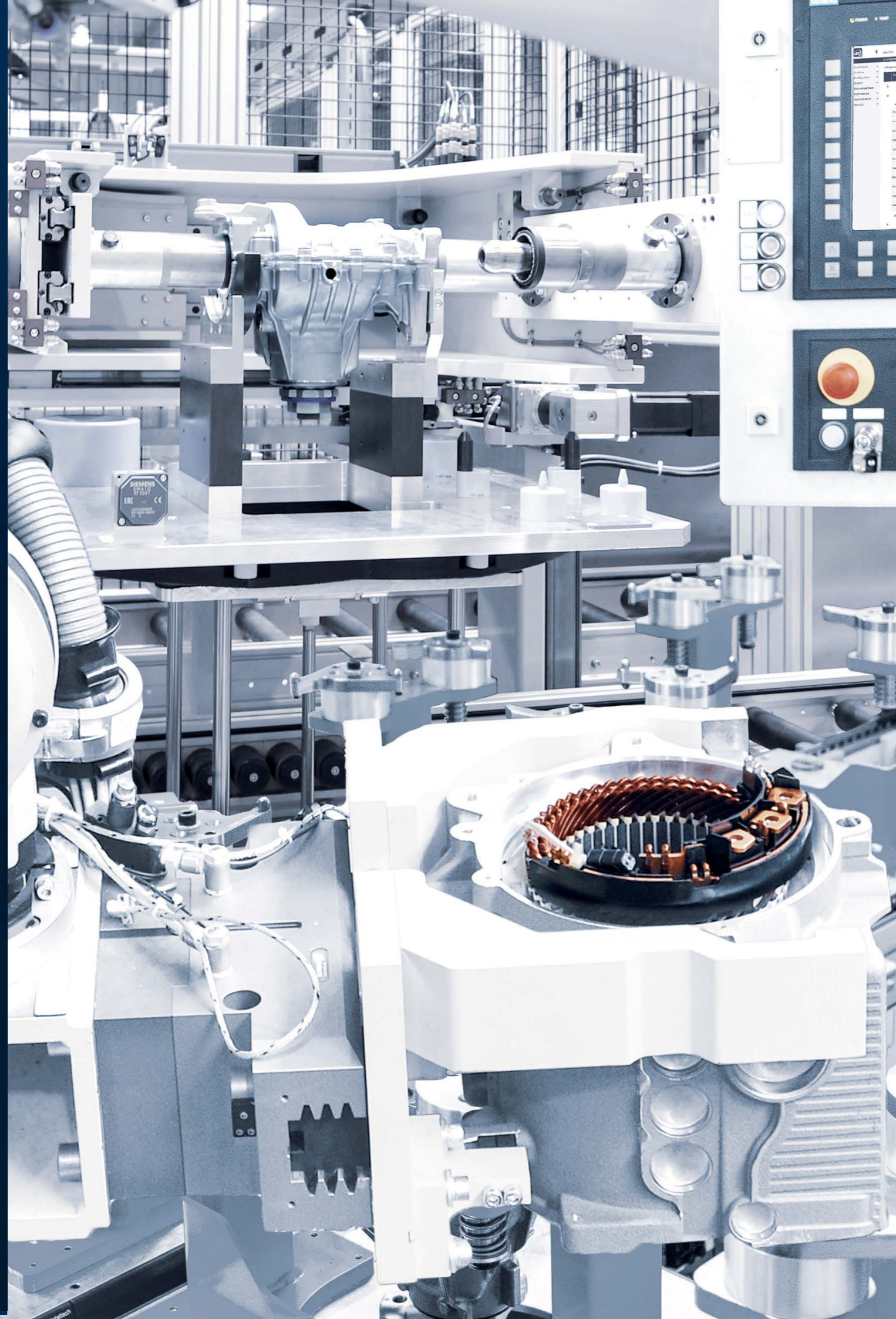
PIA's measurement and testing technology expertise guarantees perfect products and reliable quality assurance. All relevant measurements for coordination processes and intermediate tests (mechanical, electrical) of assemblies are carried out.

LASER WELDING

Welded joints make it possible to significantly reduce both size and weight in the design of components. An ultrasonic inspection system enables automated inline seam inspection after welding.

END-OF-LINE (EOL) TESTER

PIA's portfolio of test systems for testing complete systems ranges from complete EOL test fields (e.g. noise testing of gears and drive systems) to inline testers integrated in the assembly process. The range also covers the manufacturing of audit test benches.



E-MOBILITY



E-MOBILITY PROCESSES

PIA is specialized in the production of assembly systems for electric and hybrid drives and has acquired the corresponding process expertise. Assembly systems for transmissions and electric machines, assembly of rotor and stator, magnetization of the rotor, inductive heating, flashing of the control unit, winding (with partners) to name a few. PIA systems are scalable for all customer needs at every stage (e.g. start with few stations, expansion with AMRs or transfer system and duplicated stations).

BATTERY MOUNTING SYSTEMS

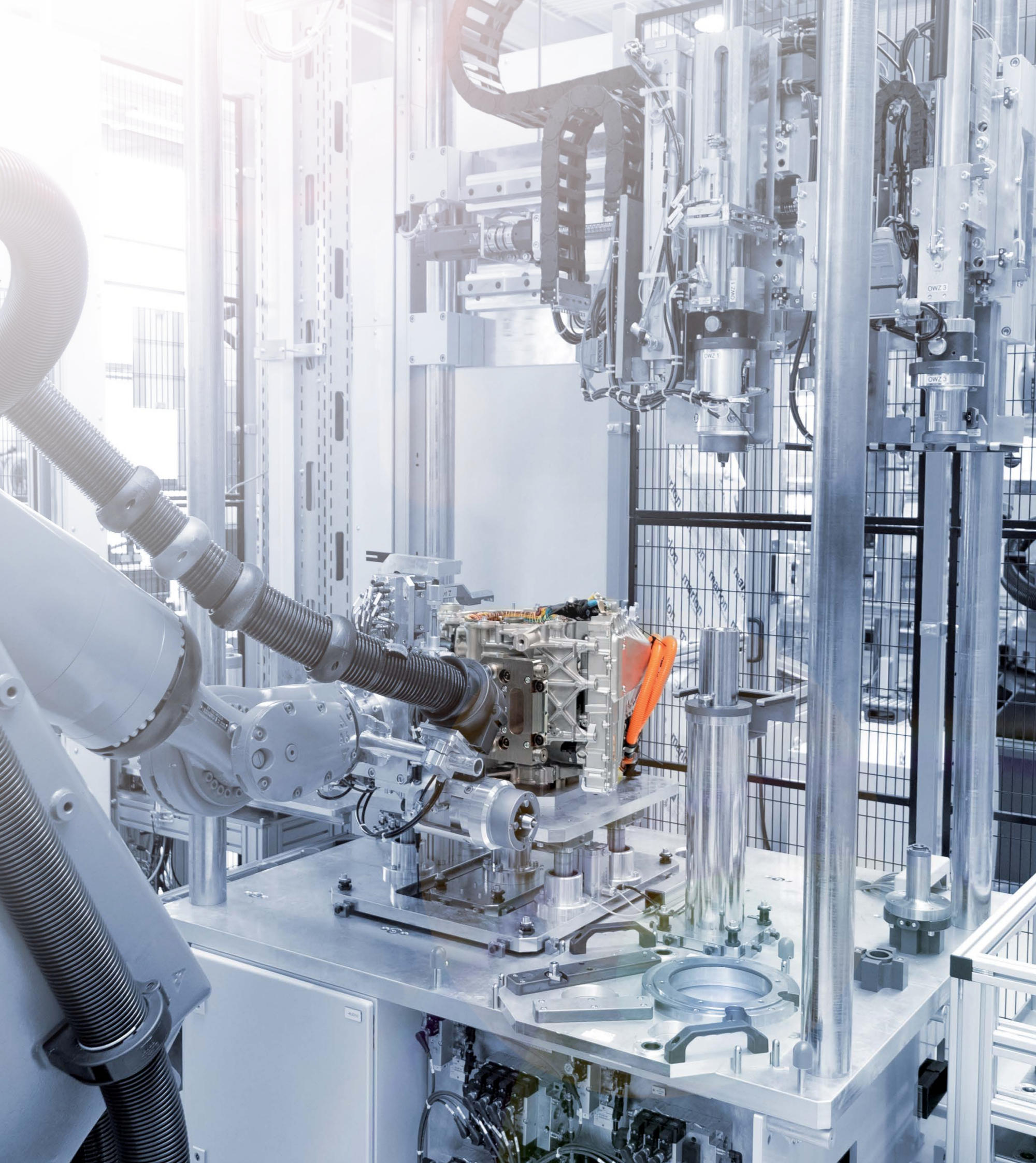
It is impossible to make the heart of the e-drive too reliable. PIA has production and testing solutions for long-life battery modules and packages. Those solutions include laser welding systems for connecting the battery cells, final assembly systems for modules, assembly systems for battery connectors (ZKS), production systems for connectors (HV), inspection and test stands for battery modules.

TRANSFER SYSTEMS

Transfer systems must be flexible for the products of tomorrow. Depending on customer requirements, PIA's portfolio ranges from rigidly linked systems and manual assembly trolleys to the in-house development of autonomously driven transport systems (AGV/AMR).

DIGITALIZATION AND NETWORKING OF PRODUCTION

- PIA's 14.0 solutions provide comprehensive functionality for production, maintenance and quality-managers to meet the challenges of plant operation and optimization. Making big data smart!
- PIA uses Virtual Reality as a tool in both engineering and customer interaction: Plant review in the planning phase (e.g. ergonomics, logistics, assembly, walkways), offline training, etc.



NEW CONCEPTS FOR SUSTAINABLE SOLUTIONS

PIA establishes new standards with regard to the production of components for electric cars

The automotive industry is adapting to meet the current global challenges with priority being given to the areas of safety, sustainability, and individual mobility. The dynamic development of the e-Mobility megatrend and the awareness of limited global resources demand agile action and the new technologies involved require intelligent production.

At PIA, new solutions and production systems are continuously being developed to further promote progress in the assembly of sustainable automotive solutions.

New strategies and production approaches are developed in-house together with our global customers. Likewise, there is an ongoing intensive collaboration with research institutions in order to both guarantee production standards and also to constantly advance them further.

Our methods and the adaptability of our products to new developments represent an advantage for us in the sustainable implementation of projects as well as for our customers in the overall facility planning and realization.



” At PIA, new strategies and product approaches are developed in-house together with customers. We are confident that our strategies and the adaptability of our products to new developments provide a competitive advantage for us in winning orders.

Franz Reiter, Managing Director at PIA Automation Austria & segment leader in eMobility & Powertrain

EXPERIENCE COUNTS

With more than 60 years of experience, we are one of the world's leading suppliers of assembly systems for automotive manufacturers and their suppliers at all levels worldwide. Our portfolio includes turnkey assembly systems ranging from the assembly of individual components to the testing of the final product - each one sophisticated and efficient.

PIA INDUSTRIAL APP SUITE



The digital package of the future

The PIA Industrial App Suite (piaIAS) is a modular software package and contains smart apps to meet the challenges of assembly line operation and optimization. In developing the apps, the knowledge of custom machine builders - especially the expertise of PIA Automation - and customers from a wide range of industries were combined to create a digital solution portfolio that is perfectly aligned with customer requirements. Assembly and test systems can be analyzed worldwide, their weak points localized and their productivity optimized. It doesn't matter whether it is a single station or a complex interlinked assembly line locally on site or remotely at another location.

PIA's smart tools address different user groups with features providing information for line workers, evaluations for shift managers and the maintenance team, or reports for management. All apps share the following advantages: (1) Increasing the degree of digitalization of production, (2) future-proofing thanks to modular and expandable design, and (3) reduction of travel costs through location - and device-independent access.

ADVANCED

DATA ANALYSIS

ET piaOEEtracker
to increase the
Availability

Target group: Production manager

Key-Features:
Classification of plant shutdowns

Benefits:

- Increase of availability at line and station level
- Increase in output through the prevention of shutdowns
- Efficient use of existing plant capacity

AN piaAnalyze
to improve the
Quality

Target group: Quality manager

Key-Features:
Analysis of measurement and process data

Benefits:

- Increase in the quality of production
- Reduction of costs through rejects prevention or increase of the IO rate
- Prevention of rework and thus increase the plant profitability

OP piaOptimum
to optimize the
Efficiency

Target groups: Production manager
Optimization team

Key-Features:
Analysis of cycle times and partial cycles

Benefits:

- Increase in efficiency, output and thus plant profitability
- Cost reduction due to earlier start of production (short ramp-up phase)
- Support for optimization measures during operation

BASIC

DATA ACQUISITION

VB Visibility Box
to increase the
Digitization | Transparency | Insights

Target group: Production Manager | Operators

Key-Features:

- Dashboard for production data
- Calculation and visualization of the OEE key figure
- Visualization and localization of assembly line bottlenecks

Benefits:

- Increase of availability at line and station level
- Increase in output through the prevention of shutdowns
- Efficient use of existing plant capacity

CUSTOMER SERVICE

Our Service ensures maximum availability

With our configurable Customer Service Packages, we offer professional solutions to optimize the uptime of your machine. That offers a wide range of customer services such as reactive, preventive, adaptive and predictive services.



We make high-quality products available to everyone –
sustainable and worldwide.



creating efficiency.
in global mobility assembly systems.

Austria. Canada. China. Croatia. Germany.
Mexico. USA.



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