



## ENABLING E-MOBILITY SOLUTIONS FOR BATTERY ASSEMBLY

The e-revolution in the automotive industry has far-reaching consequences for production: The high variant diversity and increasing quality requirements in the powertrain sector are being continuously supplemented today by the newly emerging drive concepts for hybrid and electric drives.

As a result of this pressure to innovate, adaptable concepts are becoming increasingly important, as these market requirements call for highly flexible and process-reliable production systems. PIA Automation focuses on flexible assembly stations, high-precision measuring machines and testing machines with patented technology. PIA offers flexible and customized solutions for the production of battery cells, modules and packs.

### FEATURES

- System solutions for the production of lithium ion battery cells (cylindrical, prismatic, or pouch), battery modules and battery packs.
- For connections screw joint, welding, gluing or crimp methods are used.
- Solutions are available for partially-automated and fully-automated production, depending on your requirements.
- Safety and fire prevention concepts are developed in collaboration with the system operator and designed to suit individual requirements.
- Quality monitoring and the traceability of incoming materials together with end-of-line (EOL) testing of the battery cells, modules, and packs can be provided from one source.



### PIA INDUSTRIAL APP SUITE

With the digitization strategy „PIA 4.0“ we offer our customers added value. We provide a solution portfolio using PIA Industrial App Suite - a digital portfolio of products, solutions and services. With PIA Industrial App Suite our aim is to support our customers in achieving their business goals in a sustainable and proactive way. We understand goals as priorities and therefore improvement of OEE, the increase of production quality, along with an even more flexible and transparent production planning are essential.

- PIA AI**  
Artificial Intelligence
- PIA Analyze**  
Analysis of host computer data
- PIA Optimum**  
Optimization of production efficiency
- PIA LineController**  
Increased production transparency
- PIA Dynamics**  
Hardware-independent measuring computer system
- PIA Bottleneck**  
Identify bottlenecks
- PIA Monitor**  
Monitoring and control



## ENABLING E-MOBILITY SOLUTIONS FROM THE WORLD'S LEADING AUTOMATION PARTNER



### EUROPE

**PIA Automation Holding GmbH**  
Theodor-Jopp-Straße 6  
97616 Bad Neustadt a.d. Saale  
Germany  
T +49 (0) 9771 6352 - 1000  
info@piagroup.com

**PIA Automation Amberg GmbH**  
Werner-von-Braun-Straße 5  
92224 Amberg  
Germany  
T +49 (0) 9621 608 - 0  
info@piagroup.com

**PIA Automation Austria GmbH**  
Testastraße 8  
8074 Grambach/Graz  
Austria  
T +43 (0) 316 4000 - 0  
info@piagroup.at

**PIA Automation Bad Neustadt GmbH**  
Theodor-Jopp-Straße 6  
97616 Bad Neustadt a.d. Saale  
Germany  
T +49 (0) 9771 6352 - 1000  
info@piagroup.com

**PIA Automation Croatia D.O.O.**  
Ulica Dr. Franje Tuđmana 26  
10431, Novaki (Sveta Nedelja)  
Croatia  
T +385 (1) 264 - 1771  
info-cr@piagroup.at

**PIA Automation Service DE GmbH**  
Niederlassung Erfurt  
Stotternheimer Straße 37b  
99087 Erfurt  
Germany  
T +49 (0) 361 26279 - 610  
sales@piagroup.de

**PIA Automation Service DE GmbH**  
Niederlassung Stuttgart  
Kollwitzstr. 1  
73728 Esslingen am Neckar  
Germany  
T +49 (0) 711 50482 - 841  
sales@piagroup.de

### AMERICAS

**PIA Automation Canada Inc.**  
355 Norfinch Drive  
Toronto, North York, Ontario  
M3N 1Y7  
Canada  
T +1 416 665 - 9797  
sales@piagroup.ca

**PIA Automation US Inc.**  
5825 Old Boonville Highway  
Evansville, IN 47715  
USA  
T +1 812 485 5500  
info-us@piagroup.com

**PIAMEX Automation**  
La Vid 107, Tablas de la Virgen  
León, Guanajuato, C.P. 37140  
Mexico  
T +52 477 167 5042  
piamex@piagroup.com

### ASIA

**Ningbo PIA Automation Holding Corp.**  
Building 4#  
No. 99, Qingyi Road  
Hi-Tech Park | Ningbo  
Zhejiang Province  
Post code: 315040  
PRC  
T +86 (574) 8749 - 7888  
info-nin@piagroup.com

**PIA Automation (Suzhou) Co., Ltd.**  
No. 12, Baiyu Road  
Suzhou Industrial Park | Suzhou  
Jiangsu Province  
Post code: 215028  
PRC  
T +86 (512) 6818 - 9566  
info-suz@piagroup.com

WE AUTOMATE  
YOUR WORLD



www.piagroup.com

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## ENABLING E-MOBILITY SOLUTIONS FOR BATTERY ASSEMBLY

PIA offers flexible and customized solutions for the production of battery modules and packs.

WE AUTOMATE YOUR WORLD





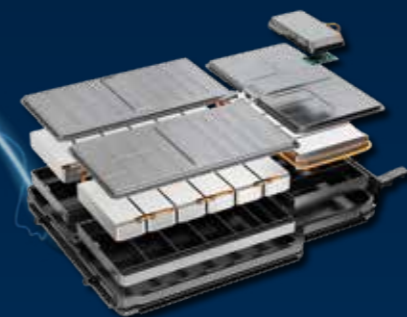
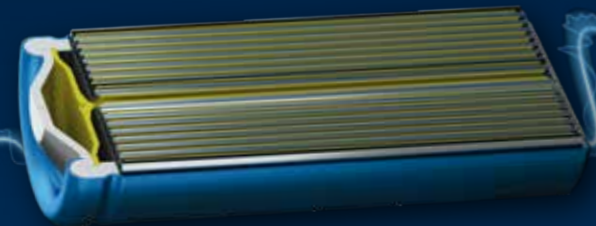
### COMPETENCE IN CELL MANUFACTURING PROCESS



### COMPETENCE IN MODULE MANUFACTURING PROCESS



### COMPETENCE IN PACK MANUFACTURING PROCESS

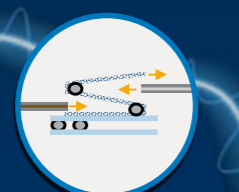


BOOSTER & INVERTER

GO!



NOTCHING



STACKING



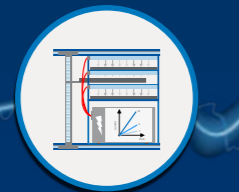
PACKAGING



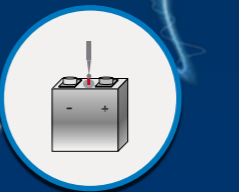
CELL LID/CAP



EOL TEST



FORMATION



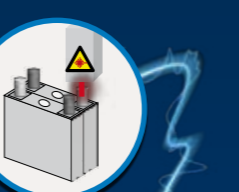
FILLING



PRE-ASSEMBLY



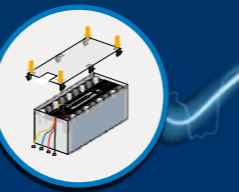
INSULATION & TENSIONING



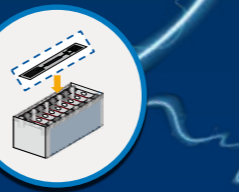
ELECTRICAL CONTACTING



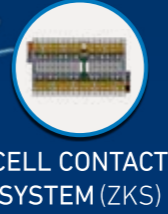
EOL TEST



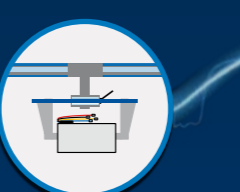
MOUNTING COVER



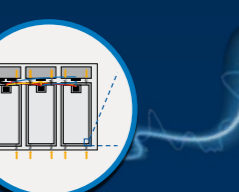
MOUNTING BUSBAR



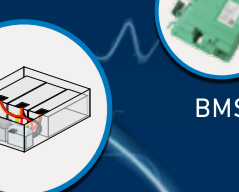
CELL CONTACT SYSTEM (ZKS)



INSERTION OF MODULES



ATTACHMENT OF MODULES



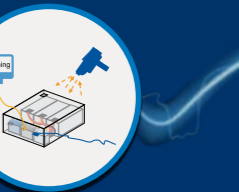
ELECTRICAL & THERMAL INTEGRATION



BMS



EOL TEST



CHARGING & FLASHING



SEALING & LEAK TEST

## CELL

## MODULE

## PACK



### CELL ASSEMBLY

For the production of battery cells, PIA offers years of experience in process-safe and reliable assembly of small parts in the high-cycle range. Cells can be produced in cylindrical, prismatic or pouch form. The scope of services includes the assembly of all components: Electrode winding or stack, housing, cover, seal, insulation and safety valve. The assembly is completed by qualified EOL testing.



### MODULE ASSEMBLY

In the field of battery modules, PIA Automation is the ideal partner for the key processes of laser welding, cleaning, testing, stacking, handling of medium-weight parts. Customers also benefit from PIA's know-how in software, traceability and logistics, based on many years of experience in the automotive industry.



### PACK ASSEMBLY

Besides the conventional automation systems we can also offer flexible and scalable solutions in the battery pack production using our AMR (Autonomous Mobile Robot). Due to the high flexibility within the PIA Group we can react to market needs and implement special requirements.