

2023

intelligence. making. future.

Intelligent Manufacturing. One Stop

AUTOBOX Mission

Dedicated
to become world's
leading service provider
for intelligent
manufacturing solutions

A member of the TJASSET Group,
AUTOBOX is committed to provide professional solutions
for intelligent manufacturing equipment and system integration.

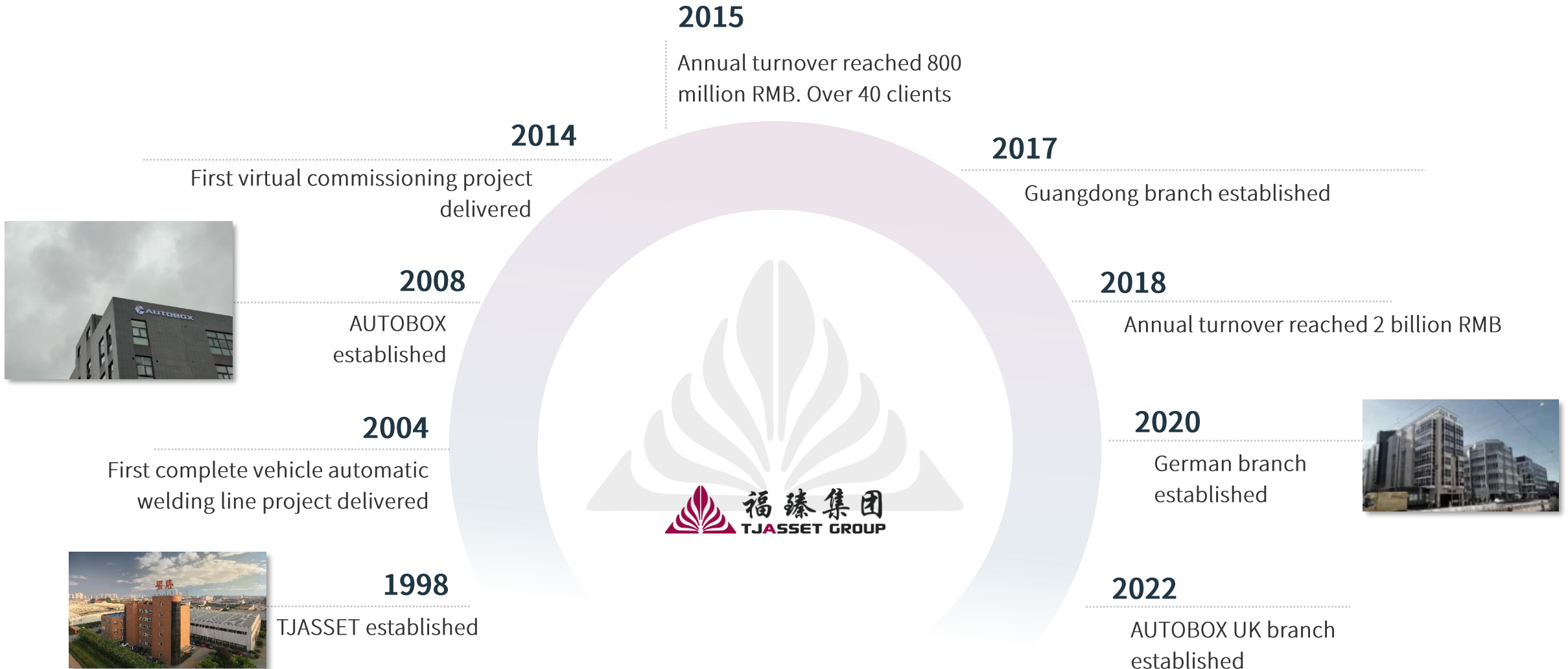
About TJASSET

25 years of intelligent manufacturing, leading industry development

With fully independent R&D investment, TJASSET explored through the four major stages of manual, automation, informationization, intellectualization from the ground up; successfully created a digital intelligent equipment development platform with a complete quality assurance system, efficient process planning capabilities, rich system debugging and quality nurturing experience.



TJASSET Milestones



About AUTOBOX

**15 years of system integration,
3 business sectors**

A subsidiary of TJASSET. AUTOBOX is advance in industrial automation, possessing strong delivery competency and vast experience in system commissioning and project management.

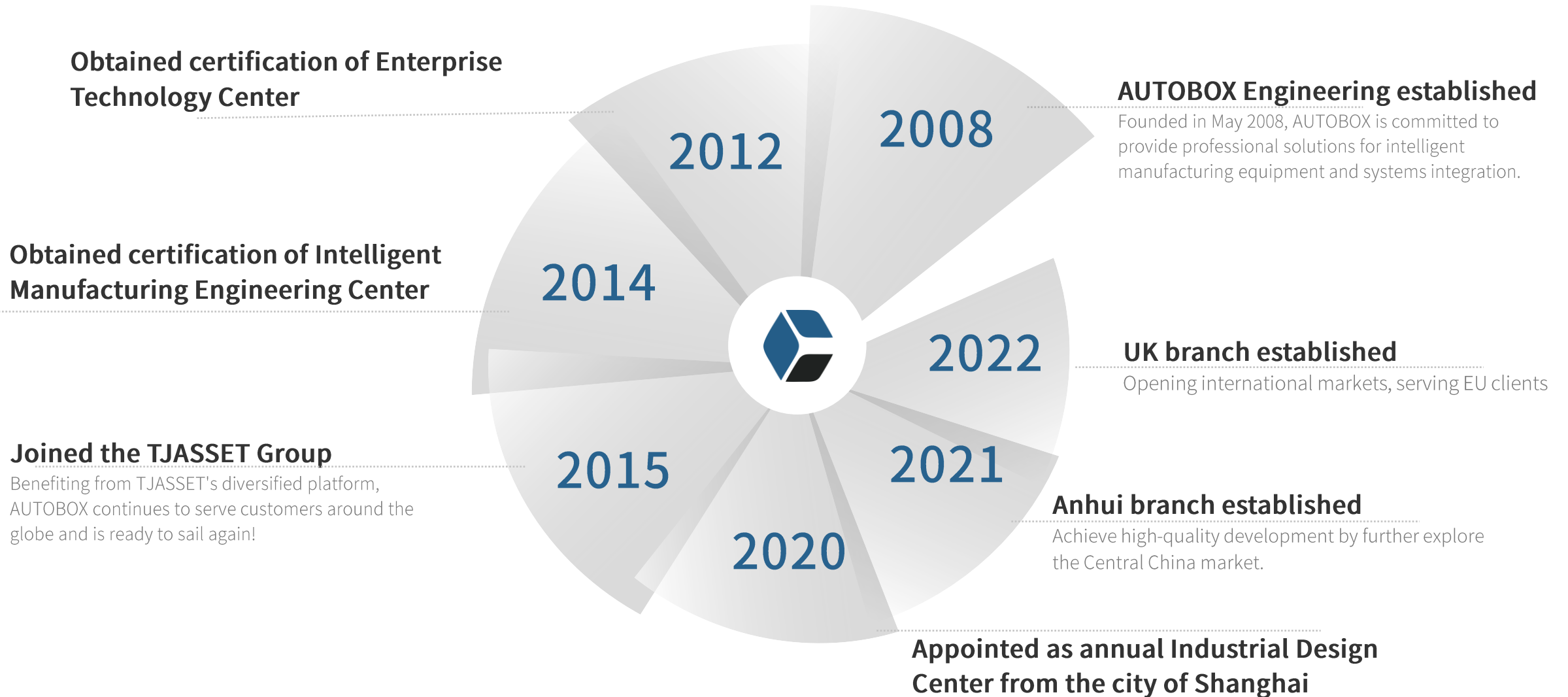
Our capability embeds

30+ leading manufacturing processes
In excess of 80% of our employee are engineers

The four defining pillars of AUTOBOX



AUTOBOX Milestones



Flexible solutions, serving clients around the globe



AUTOBOX Footprint

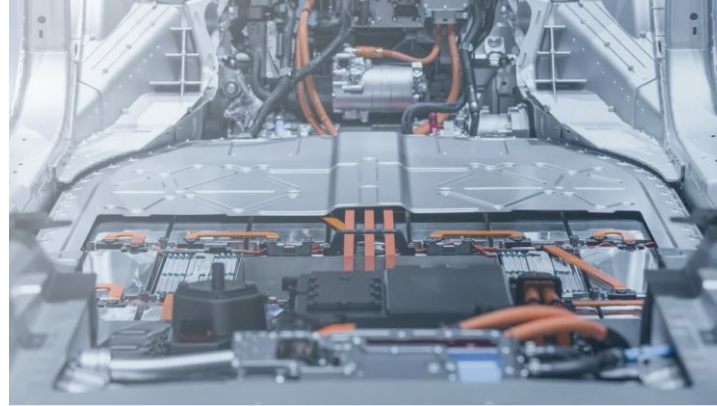
AUTOBOX has delivered to 9 international locations and 40+ international OEM + Tier 1.

Combined with the support of TJASSET's robust R&D system, AUTOBOX has been trusted by clients around the globe.

Our core business sectors



BiW Assembly



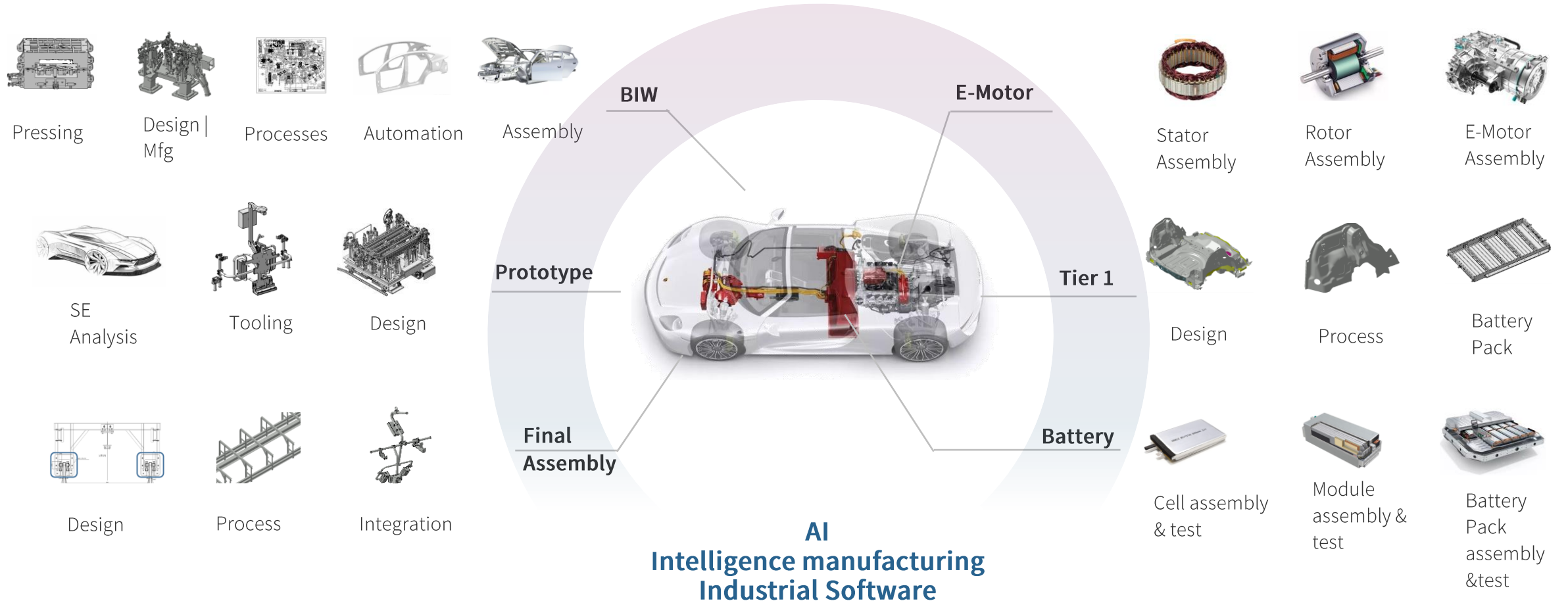
NE Assembly & Testing



Industrial Software

Innovative solutions and fast response and delivery in BiW,
Battery(cell, module & pack), E-Drive, and digitalisation services for
modern manufacturing

Our detailed segmentation in automation



AUTOBOX in figures



FY2022 1.2 Billion(RMB)



Employees

400+

Employees

350+

Engineers & technicians



Systems
Engineering

14 Years

Experience

300+

Global client delivery Cases

Major Clients



Client recognition & awards



-
- 2017 Best Collaboration Award of general material supplier
 - 2021 Outstanding Contribution Award
 - 2022 Best Contribution Award



-
- 2017 Excellent Supplier



-
- 2019 Quality Excellence Award
 - 2021 Breakthrough Star
 - 2022 Award for Collaboration



-
- 2019 Third prize in Engineering Contractor Safety Assessment
 - 2022 First prize in Engineering Contractor Safety Assessment



-
- 2022 Special Contribution Award



-
- 2021 Project Special Contribution Award

AUTOBOX Solutions

Today's global manufacturing industry demands higher efficiency and flexibility. Our engineers tackle those challenges with high automation, information-based and intelligent products and services, making AUTOBOX a trusted service provider.

We offer

BiW Assembly
NE Assembly & Testing
Industrial Software

AUTOBOX Solution – BiW Assembly

Efficient, lightweight body assembly solutions

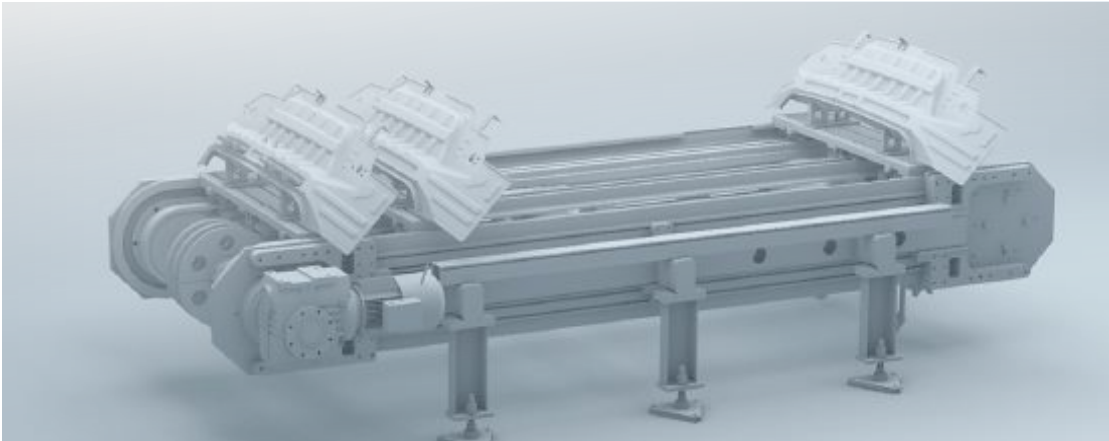
- Advanced, flexible BiW line solutions
- Industry-leading manufacturing processes & assembly technology

Body Manufacturing System



Body Manufacturing System

BIW Standardized Products

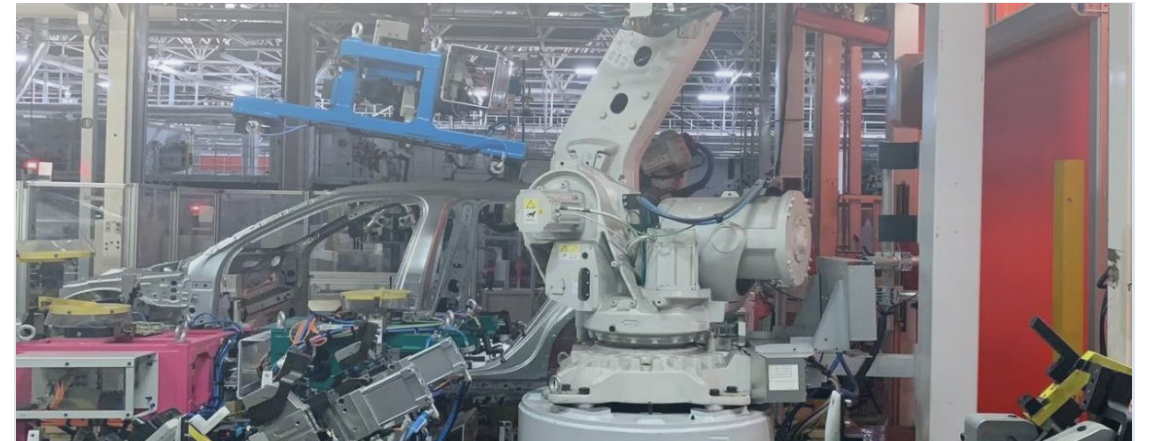


Products: APC Transportation | Servo flexible positioning unit | Tip-dresser

Features: High efficiency and stable, customized, standardization

Cost: Reduce investment and improve customers' competitiveness

Intelligent assembly



Application: Automatic door parts loading | AGV conveying | Automatic screw feeding | visual guidance and matching

Efficiency: Vastly replace traditional manual work, solving increasing difficulties in automatic door assembly

Traceability: Bolt tightening torque, door flush and gap can be recorded and traced

Cost: High investments on equipment, reduce million of labor costs every year

Body Manufacturing System

Flexible Framing System



Application: Robot Gripper | Open Gate | Drum | Turn table

Brief: Designed for multi-model, high JPH production; Maximum capacity of 6-8 different models, up to 100 welding points. High accuracy of +/-0.1mm and easy to maintain

Flexible Hemming System

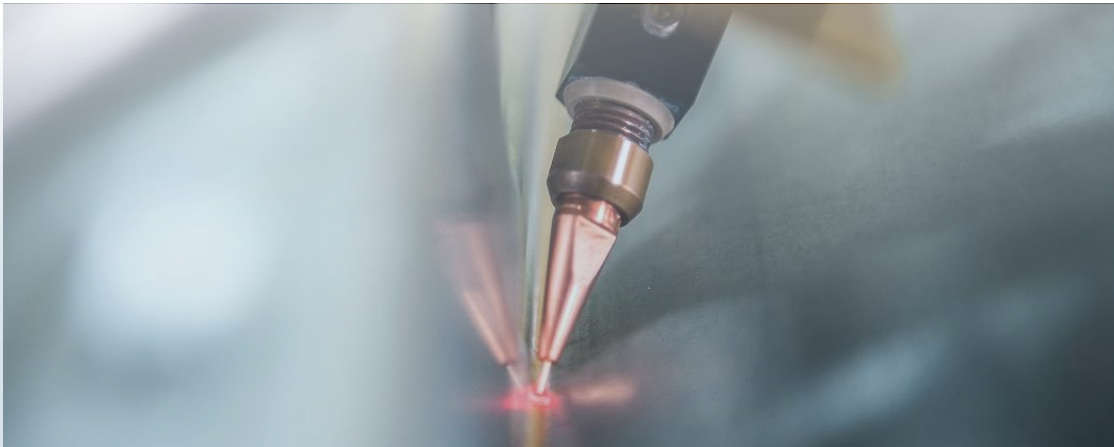


Application: Decklid | Doors | Hood | Fenders | Sunroof | Wheel Cover line

Brief: Able to load different parts at the same station; with fault tolerance, able to deal with complicated and uncertain products; Cheaper cost compared to press machines

Body Manufacturing System

Laser System Technology



Application: Laser Brazing Weld | Penetration Welding | Laser Ablation | LSW | Laser cutting

Brief: Purposed for decklid, roof, other special parts, compatible with iron and aluminum materials.

Advantage: Less CO2 emission, less weight, larger weld cross section, stable quality with an elegant finish

Lightweight Vehicle Joint Technology



















Application: SPR | FDS | RSWA | Clinch | Adhesive

Service Contents: From part suggestions, planning, development, design, production until delivery of the whole system

Purpose: Increase output power, better fuel economy, handling & reliability etc.
























Advantage: Applied to connect multiple kinds of materials and alloys, with higher strength than welding

BIW Project experience











Brand	Year	Code	JPH	Robots	Area	Technical Application	Image
	2019-2021	MEB MABT	60	5	Fender + MABT	Clinch + Punching + Sealing	
	2020-2021	BMPV PA1	31	100+	Roof + MB + UB	Laser welding + Stud	
	2021-2023	VW316	30	2	Fender + MABT	Clinch + Punching + Sealing	
	2021-2023	Teramont X PA2	60		Bodyside + Closures + Mainline	Clinch + Punching + Sealing	
	2022-2024	AERO B	60	137	Bodyside	Clinch + Punching + Sealing	
	2019-2021	Audi A7L MABT	30	-	MABT	All-aluminum body	
	2019-2021	621K	30	13	Mainline	AUTOBOX Framing systems + Welding	
	2020-2021	K316 + CX11	31.5	-	Closures + HOP line + Mainline	Sealing + Welding	
	2020-2022	P519	12.4/34	110	Bodyside + Mainline	Welding + Sealing + Roller hemming	
	2020-2022	723K	14	60	Mainline	AUTOBOX Framing systems	
	2021-2022	V317 + P319 + 621K	30	200	Closures + HOP line + Bodyside	Roller hemming + Remote laser + Brazing + SPR + Automatic Assembly	
	2022-2023	623B	28	14	UB	Clinch + Punching + Arc Welding	
	2022-2024	V551	83	193	Mainline + UB	Sealing + Welding	
	2023-2025	V436	35	124	Bodyside	Welding + Sealing + Roller hemming	
	2023-2025	825K	24	147	Bodyside + Mainline	Welding + Sealing + Roller hemming	











BIW Project experience

Brand	Year	Code	JPH	Robots	Area	Technical Application	Image
	2020-2022	Lambda	10	47	Mainline	SRE + FDS + AUTOBOX Framing systems	
	2020-2022	Lambda	10	22	Closures	Automatic Assembly + Aluminum roller hemming	
	2020-2022	Lambda	10	17	Bodyside	SRE + FDS + AUTOBOX Fly Roller	
	2022-2024	Alpha	10	135	Mainline + bodyside + Closures + UB	Automatic Assembly & Aluminum roller hemming + SRE & FDS	
	2014-2016	X261	25	60	Closure + HOP line	SPR + Aluminum roller hemming	
	2015-2019	X760-18/20	25	60	Closure + HOP line	SPR + Aluminum roller hemming	
	2016-2018	X540-18/20	30	265	Closure + HOP line + UB	Aluminum roller hemming + Aluminum laser welding	
	2017-2019	L551/L551-EWB	30	265	Closure + HOP line + UB	Aluminum roller hemming + Aluminum laser welding	
	2018-2020	L550-20	30	243	Closure + HOP line + UB	Aluminum roller hemming + Aluminum laser welding	
	2020-2023	U12 ICE / BEV	30	42	Front Floor	Spot welding	
	2022-2024	VS20		8	Rear Floor	Spot welding	
	2021-2023	J34C	30	105	Mainline + HOP line	Automatic Assembly	
	2018-2021	CX483	66	72	Bodyside + Closures	Spot welding + Sealing	
	2018-2021	U6XX	30	176	Bodyside + Closures	Spot welding + Sealing + Punching	
	2020-2022	CD542	50	681	Bodyside + Closures + UB + Mainline	Spot welding + Sealing + Punching	
	2019-2024	P375 + P703	7	19	Body Shop	Welding + Sealing	

BIW Project experience

Brand	Year	Code	JPH	Robots	Area	Technical Application	Image
 CHERY	2019-2021	FX11+FX11E	36	79	Mainline + UB	AUTOBOX Framing systems	
	2021-2023	T18	60	90	Closures	Sealing + Spot welding	
	2021-2023	T19	30	140	UB + Closures + Bodyside	Sealing + Spot welding + Stud	
	2022-2024	T22	36	144	Bodyside + Floor	Sealing + Spot welding + Stud	
	2022-2024	T26	60	90	Closures	Sealing + Spot welding	
	2022-2024	T1EJ	30	80	Bodyside + Floor + Closures	Sealing + Welding + Single-sided welding	
	2022-2024	M31T/32T/36T	20	76	Mainline + UB	AUTOBOX Framing systems	
	2023-2025	E03/E0Y/EH3	20	89	Closures + Fender + Bodyside + Commissioning	Spot welding + Sealing + Hemming + Curing + SPR	
	2023-2025	S56	20	56	Engine bay + Front Floor + Rear Floor + Lower assembly	Arc welding + Laser welding + SPR	

BIW Project experience

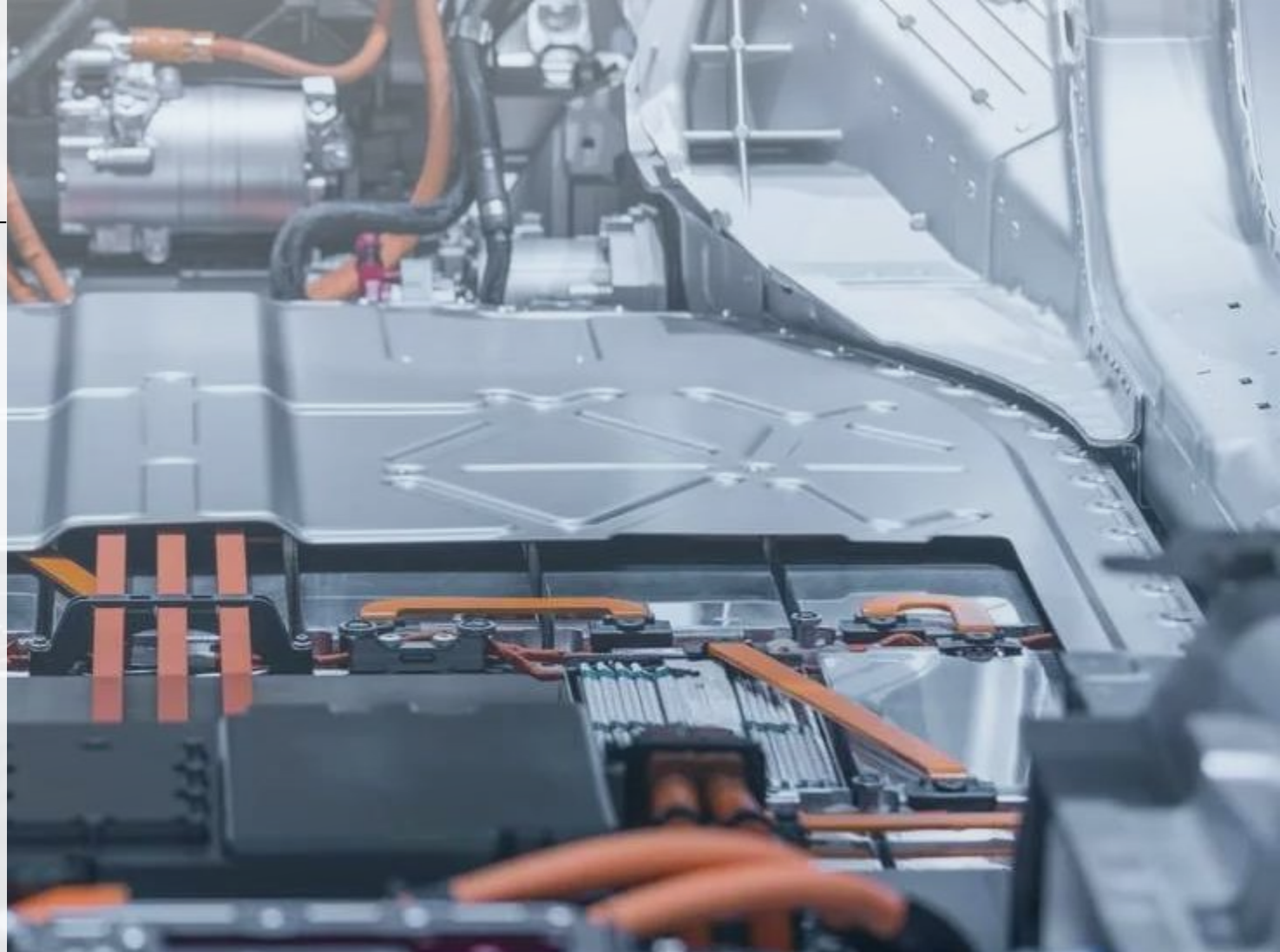
Brand	Year	Code	JPH	Robots	Area	Technical Application	Image
	2020-2022	ET5	28	56	Bodyside + Closures	Aluminum spot welding + Aluminum roller hemming	
	2021-2022	W01	40	90	Bodyside + HOP line	Door automatic Assembly	
	2021-2023	X02 + X03	40	85	Bodyside	Spot welding + Sealing	
	2023-2025	X04	43	72	Bodyside	Spot welding + Sealing	
	2018-2019	MRA2	27.4	70	Rear floor + Rear wheelhouse	Spot welding + SPR + Sealing	N/A
	2019-2022	EVA2-V295	30	32	Rear floor	Spot welding + SPR + Sealing	N/A
	2020-2023	EVA2-X294	10	31	Rear floor	SPR + FDS + Aluminum spot welding	N/A
	2020-2023	MRA2-V254	30	80	Rear floor + Rear wheelhouse	Spot welding + SPR + Sealing	N/A
	2021-2022	Highland	45	61	Battery Case	Aluminum spot welding + Tightening + Leak test + Press in	N/A
	2016-2022	G08 + G68	40	70	Front Floor + Hood + Fender	Aluminum spot welding + Clinch + Aluminum roller hemming	N/A
	2023-2025	EB42X	15	13	Battery case upper shell	Laser cleaning + Induction heating + Leak test	N/A

AUTOBOX Solution – NE Assembly & Testing

Covering the entire EV value chain

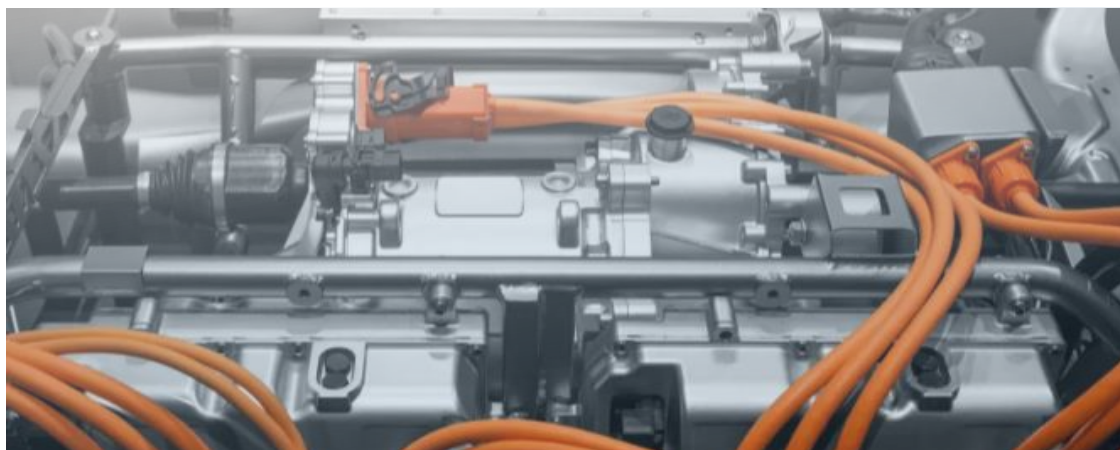
- From the development of equipment and processes to the technical aspects of rotors, stators, speed reducers, electronic controls, and final assembly, providing customers with reliable, highly flexible solutions, become an important guarantee for the customer value chain.
- Covering the entire key manufacturing process from cell, module to PACK, in house research of battery development trends, meeting customer needs

Battery & EDS Assembly & Testing



Battery & EDS Assembly & Testing

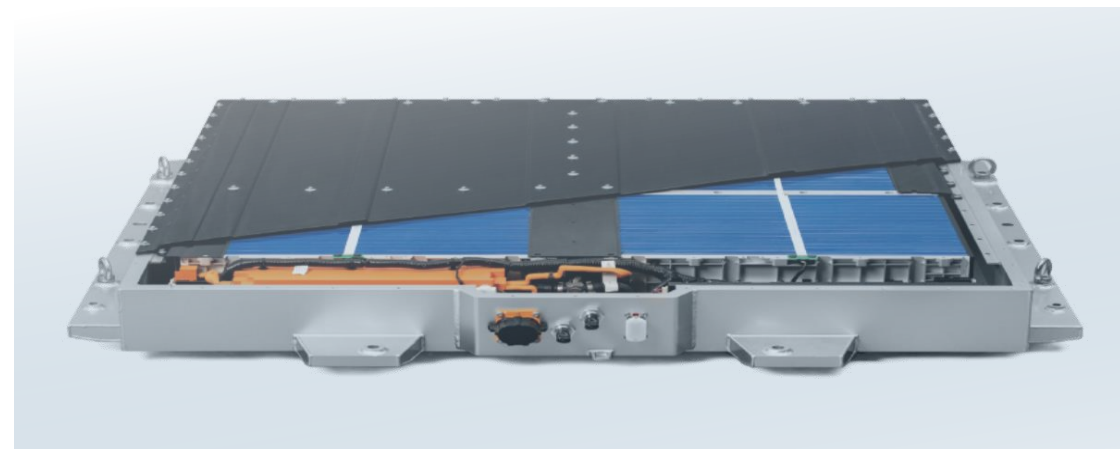
EDS Assembly & Testing



Process: Magnet insertion | Rotor dynamic balance, magnetized, tested | Stator hot sleeve, cooling | Shaft meshing, shell assembly oil injection, programming | Leak test, EOL test etc.

Advantage: customized production lines, high compatibility, high scalability, fast delivery and response, integrated logistics solutions

CTP – Dual Module Assembly & Testing



Process: Cell loading | Cell scanning, OCV test | Gluing | Module Stack | Busbar welding | EOL/charge recharge testing | Size check | Module weighting off the line

Advantage: Save fasteners, improve volume utilization, improve mass density and vehicle range, simple assembly process, reduce cost and increase efficiency

Battery & EDS Assembly & Testing

Battery PACK Assembly & Testing



Process: PACK integrated housing loading | Harness mounting, BMS mounting, lid assembly | EOL test, whole package airtightness test | PACK off the line

Advantage: Strong compatibility, works with a variety of products of the same series, high assembly accuracy, stable and fast delivery, achieve a final pass rate of 99.95%

Module Assembly & Testing



Process: OCV | Plasma cleaning | Cell matching, gluing, stacking | Side seam laser welding or cable ties | Laser engraving, static heating, filming | Busbar laser welding, post-welding dust removal | Electrical performance testing, size inspection, module off the line

Advantage: Automation rate up to 90%, high compatibility and high assembly accuracy, automatic controlled processes that can be docked with various types of MES systems

NE Project experience

EDS Assembly & Testing

End user	Year	Location	Product	JPH	Technical Application
UAES EDS Assembly	2018	Taicang	2	6	Tightening + Leak test + EOL test + Stator Assembly + Rotor assembly
Geely EDS Assembly	2019	Cixi	1	32	Gluing + Tightening + Leak test + EOL test
Huawei EDS Assembly	2020	Dongguan	2	30	PEU installation + Gluing + Tightening + Leak test + EOL test
Dongfeng Motor EDS Assembly	2018	Wuhan	2	5	Tightening + Leak test + EOL test + Stator assembly + Rotor assembly
Shanghai EDRIIVE EDS Assembly	2019	Shanghai	1	20	Magnets Insertion + Rotor press-fit + Stator Rotor Assembly + Airtightness test + EOL Test
CFMOTO EDS Assembly	2022	Hangzhou	3	0.5	Rotor press-fit + Speed reducer installation + Stator Rotor Assembly + Corresponding tooling making

Battery Assembly & Testing

End user	Year	Location	Product	JPH	Technical Application
CATL-Module line	2020	Yibin	1	150s	Strapping & Laser mark & Laser welding & EOL Test & OCV Test & Gluing
EVERGRANDE-PACK line	2021	Shanghai	1	720s	Sideboard welding & Laser mark & Laser welding & EOL Test & OCV Test
T- Battery shell	2021	Shanghai	1	67s	Airtightness test & Laser engraving & Laser welding & Gluing & Riveting
T- Battery shell	2021	Shanghai	1	53s	Airtightness test & Laser engraving & Laser welding & Gluing & Riveting
T- Battery shell	2021	Shanghai	1	53s	Airtightness test & Laser engraving & Laser welding & Gluing & Riveting
CATL-模组线	2021	Ningde/Liyang	1	15s	Sideboard welding & OCV & Cell assembly & Heating and static cooling & BUSBAR welding
Vinfast-PACK line	2021	Vietnam	1	150s	Sideboard welding & Laser mark & Laser welding & EOL Test & OCV Test

AUTOBOX Solution – Industrial Software

Breaking down data barriers, optimizing workshop operations

- We have built a smart platform with production management at the core, to enable linkages between various systems and efficient data flow
- Integration of real-time workshop dynamics, efficient and comprehensive capability
- Rapid response to unforeseen events

Intelligent Workshop Digital Twin



Intelligent Manufacturing



Production Management

Flexible production line order management without manual intervention. Check real-time status of orders on the production line at any time



Quality Management

Analyze and trace the information on welding, gluing quality, size, and incoming material information of production line orders, allowing continuous optimization of production.



Equipment Management

Push various monitoring data of equipment in real-time with automated analytics. The system automatically sends alert when it detects abnormalities, and provides maintenance records, queries, inputs, and other functions accordingly.



Energy Management

Overview of energy consumption and energy efficiency information, also providing analysis and risk warnings for abnormalities in consumption.



Intelligent Video Monitoring

Assist in checking abnormalities in production equipment's and review. Also providing virtual fence features, enabling faster alerts in response to any danger situations in the workshop.

Intelligent Workshop Digital Twin

Intelligent Workshop



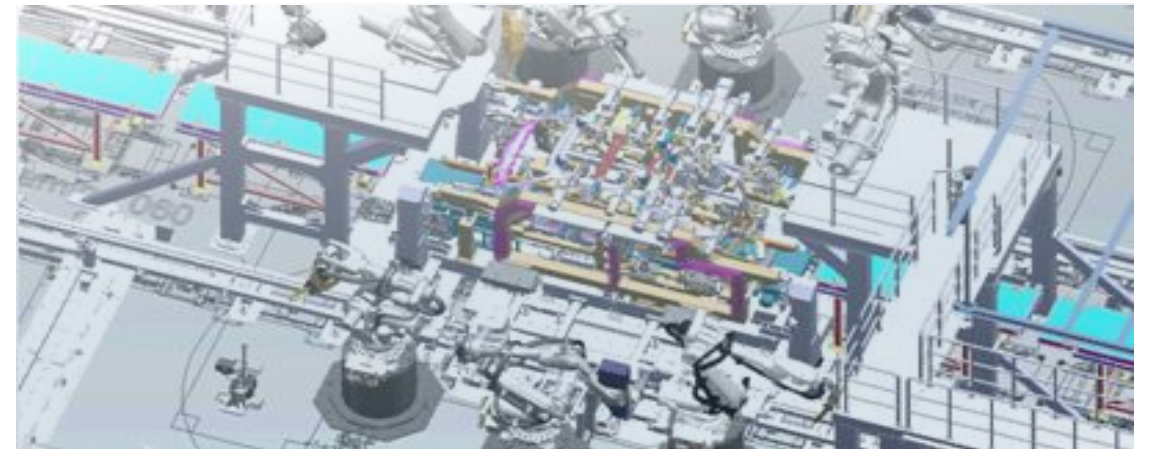
Function: Order management module | Equipment management module| B.I.W.
Quality control module

Visualization: Orders status, equipment failures, body joint parameters

Controllability: Order adjustments, optimize body joint parameters

Traceability: Records equipment status, technical parameters, grants each car a unique ID with data

Virtual Technology



Application: VR | VC | Virtual & Real synchronization | AR

Efficiency: Saving time in planning and on-site commission phases, convenient maintenance and troubleshooting

Foresight: Reducing risks in development, commissioning and production with full scenario deployment

Safety: Simulate real world scenario and investigate risks in the process

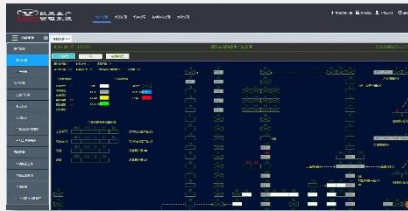
Intelligent Workshop case – Kaiyi Auto

Provide customized MES system for client workshop, monitor real-time production, welding and gluing quality. Through data and visual images, fault and historical data can be resolved in a timely manner and facilitate future review and analysis.

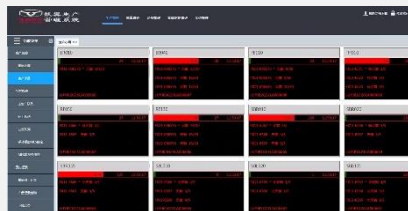
Production management module

- Monitoring:
 - ① Kanban monitoring through "Workshop" and "Production" screens, including robot working queues.
- Queue:
 - ① Main production queue management
 - ② Kickoff, queue checkpoints auto recording, MES binding feature
- History:
 - ① Auto input vehicle processing info and production output

Workshop Kanban



Production Kanban



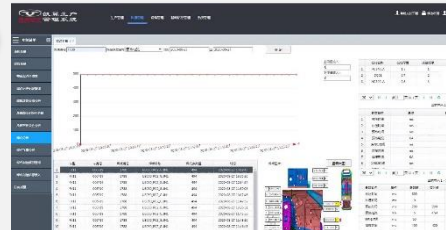
Quality management module

- Gluing quality:
 - ① Auto input, match, and label gluing information and visual-analysis photo
 - ② Collect and analyze data for each gluing metrics
 - ③ Fault types analysis & vehicle quality query
- Welding quality:
 - ① Collect welding points info, provide pass rate and history records.
 - ② Analyze fault types, frequency, and correlation.
 - ③ Welding analysis: images, metrics, and spatter.
- Engraving quality: Body-ID engraving record query

Gluing Info



Welding Quality



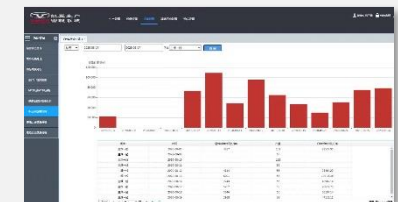
Equipment management module

- Alarm status:
 - ① Real-time alarm display and stoppage monitoring: equipment, stations, PLC areas, etc.
- Faults & stoppage:
 - ① Enables handling inputs of faults & stoppage.
 - ② Stoppage history query and analysis: uptime analysis of equipment, production line and area.
 - ③ Fault history query and analysis: fault trend, historical details, source, material consumption.
- Metrics data analysis:
 - ① Analysis of the completion rate of production plan, MTTR, MTBF, maintenance efficiency; R/1000 downtime

Fault cause input



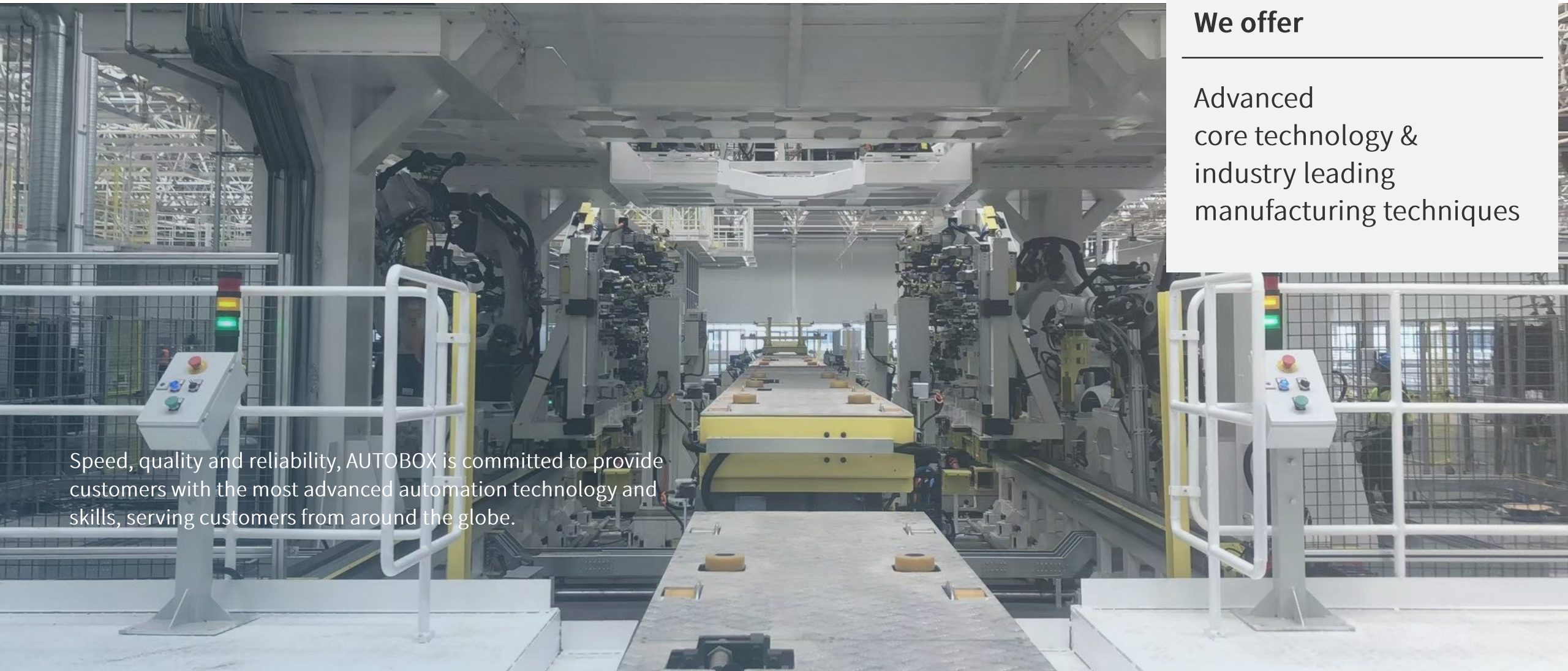
R/1000 downtime



AUTOBOX Systems & Technology

We offer

Advanced
core technology &
industry leading
manufacturing techniques



Speed, quality and reliability, AUTOBOX is committed to provide customers with the most advanced automation technology and skills, serving customers from around the globe.

AUTOBOX System - Intelligent Manufacturing

Customized workshop, efficient production

We integrate various cutting-edge technologies in the industry, customizes our standard products according to clients' needs, maximizing return on investment.

Advanced standardized products

Customized R&D concept

Digital twin workshop



Advanced Technology



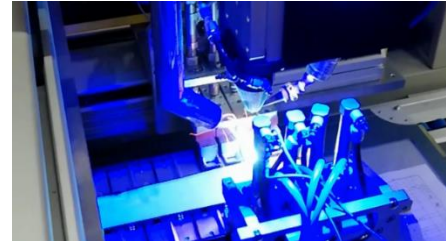
Door Hemming



Laser Welding



Laser Cutting



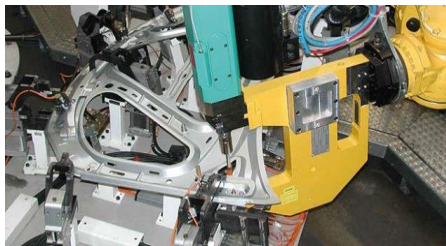
BUSBAR Welding



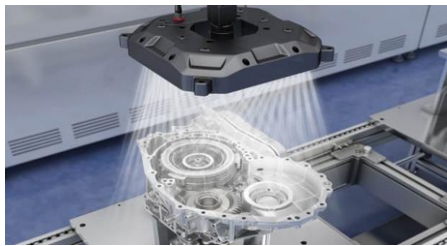
Magnets Insertion



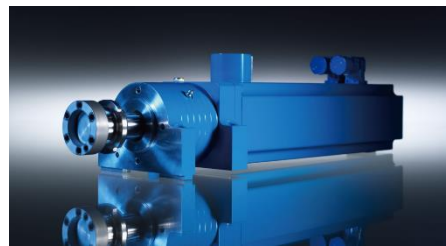
Tabletop Hemming



Self Piercing Riveting



Automatic Measuring



Adaptive Hemming



Magnetize & Testing



Aluminum Spot Welding



Friction Stir Welding



Flow Drill Screwing (FDS)



Tightening



High Pressure Testing

AUTOBOX - Core Competency

Technical Competency

With years of accumulation in the development of automation technology, we hold steady growth in the BiW welding business sector and push heavily into the new track of lithium battery manufacturing. Constantly polishing the technology and providing systematic, professional assembly and testing solutions for battery, motor, and electric control in the NEV industry.

Together we keep improving our industrial 4.0 software platform and developing our workshop digital twin technology: optimizing efficiency in R&D, manufacturing, and commissioning of NE projects, pushing higher delivery efficiency and ensuring delivery quality.

Market Development

We started with BiW welding and pay close attention to the current new energy wave. Using our vast knowledge, industry-leading technology, and resources, we provide integrated solutions and reliable project delivery to produce core EV components: battery, motor, electric control, speed reducer, etc.

Having completed the process of "0 to 1", we are aiming for swift growth from "1 to N". Relying on the continuous and rapid development of the new energy market, greater improvement in new technology innovation, production capacity matching, and delivery quality is expected.

Project Experience

AUTOBOX has delivered projects in 10+ countries, 300+ Global client delivery Cases. With rich project experience, and the support of TJASSET's powerful R&D system. Our solutions are innovative, highly automated, flexible, and digital, meeting the full range of demand diversity and production complexity.

Our delivery experience covers well-known domestic and foreign auto manufacturers such as Chery Jaguar Land Rover, Volvo, Lotus, Li Auto, Nio; Tier 1 giants such as Kasma and Gestamp.

Service Quality

AUTOBOX has rich project experience in serving large and medium-sized clients, providing high-quality service across the whole project.

In the early stage of the project, we keep close communication with clients and keep track of all information, understand the requirements for product design, providing complete design schemes for clients with a commitment to deliver a satisfactory product in the shortest possible time. After the pre-buyoff of the production line in our plant, we then arrange the delivery, staff training, and onsite commissioning process with feedback on the installation process. In addition, when the warranty period expires, we still provide rapid response to ensure quality service.

intelligence. making. future.