



A unified automation solution from Cell  
packs to ready-to laminate Strings for  
PV module line

Yingkou Jincheng Machinery Co., Ltd



# COMPANY CULTURE



## Original Intention

To Liberate People With Intelligent Manufacturing



## Vision

Becoming a World-class High-end Equipment Enterprise



## Mission

Supporting Sustainable Energy Development with Equipment



## Value

Focus·Innovation · Unity·Excellence · Integrity·Sharing

# COMPANY INTRODUCTION

Jinchen Corp (Stock code: 603396) is a national high-tech enterprise in China, an innovative company focusing on vacuum coating technology, automation technology, and equipment intelligent solutions. Jinchen's high-end intelligent equipment is widely used in Green energy and new material industries, providing industrial intelligent manufacturing solutions around the globe.

Jinchen keeps concentrating on technological innovation and industrial development, and has made major breakthroughs in high-efficiency solar cell PECVD equipment on both TOPCon and HJT technologies . Jinchen is one of the world's leaders in high-efficiency PV cell and module manufacturing equipment, and a strong practitioner on implementing China's national dual carbon goals, "carbon peak" and "carbon neutral" .

Jinchen has always continued to create value for customers with its innovative, cost-effective products and services. Adhere to the mission of "to liberate people with Intelligent manufacturing" , contributes its wisdom to the world and human society!



# 1996

- Predecessor of Jinchen: Yingkou Zhanqian District Aluminum Equipment Factory



# 2024

- Oversea installation of mass produced PERTOP cell line



# 2003

- Officially entered Solar industry
- Developed China's first solar module assembly corner locking machine
- Developed



# 2017

- Successfully listed on the Shanghai Stock Exchange



# 2007

- Developed China's first 100MW solar module fully-automatic production line -Q1 series(Q1 series)



## 1996

## 2003

## 2007

## 2011

## 2015

## 2017

## 2019

## 2020

## 2021

## 2022

## 2023

## 2024

- Predecessor of Jinchen: Yingkou Zhanqian District Aluminum Equipment Factory

- Developed China's first 100MW solar module fully-automatic production line -Q1 series(Q1 series)

- Developed world's first self-operating 200MW solar module production line - Q3 series, and was rated as an Intelligent Manufacturing Demonstration Project by the Ministry of Economy and Information Technology of China

- Developed China's first 150MW solar module fully-automatic production line -Q2 series
- Jinchen automatic solar module laminator was rated as National Key New Product

- Officially entered Solar industry
- Developed China's first solar module assembly corner locking machine
- Developed China's first solar module framing machine

- Successfully listed on the Shanghai Stock Exchange
- Developed 250MW solar module fully-automatic production line - Q4 series
- Developed solar cell automation equipment

- Developed 500MW super size solar module fully-automatic production line - Q5 series
- Developing PERTOP high-efficiency cell technology and supporting PECVD equipment
- Developing HJT high-efficiency cell technology and supporting PECVD equipment

- Full-scale start of research and development of next-generation module production lines

- Launch renewable energy and equipment R&D laboratory project
- Successfully developed PERTOP cell technology and supporting PECVD equipment

- A new generation of component production line clients running
- The first microcrystalline HJT PECVD mass production equipment was successfully delivered

- Pipe PE-POLY PERTOP equipment
- Pipe P-Front and Back devices arrive at the client start full sales

- Perovskite +HJT Tandem Cell Pilot line
- The world's first alkaline electrolyzer automatic manufacturing line launched
- Oversea installation of mass produced PERTOP cell line



FULLY AUTOMATIC

FULLYAUT

# Jinchen PV Module Equipment & Solutions



Set up 4 R&D centers:  
Beijing, Yingkou, Suzhou & Qinghuangdao



Invest ¥ 100,000,000+/y in R&D, accounting for about 8-10% of total revenue



2000+ Employees  
300+ people in R&D team, with 5 PhD, 40+ Masters

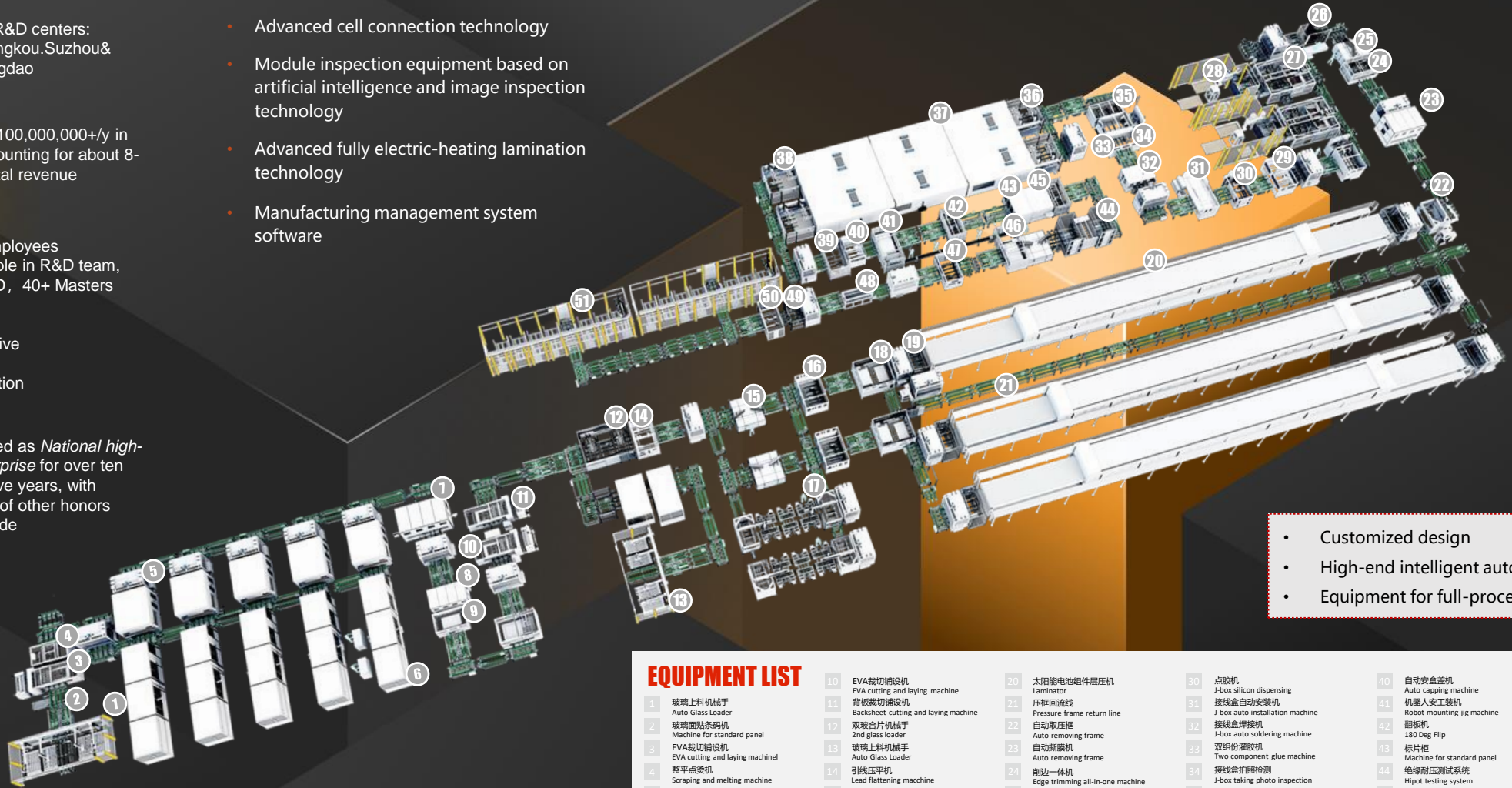


687 effective patents  
272 invention patents



Recognized as *National high-tech enterprise* for over ten consecutive years, with hundreds of other honors nationwide

- Advanced cell connection technology
- Module inspection equipment based on artificial intelligence and image inspection technology
- Advanced fully electric-heating lamination technology
- Manufacturing management system software



- Customized design
- High-end intelligent automation
- Equipment for full-process manufacturing

1200MW PV Module Manufacturing Turnkey Solution

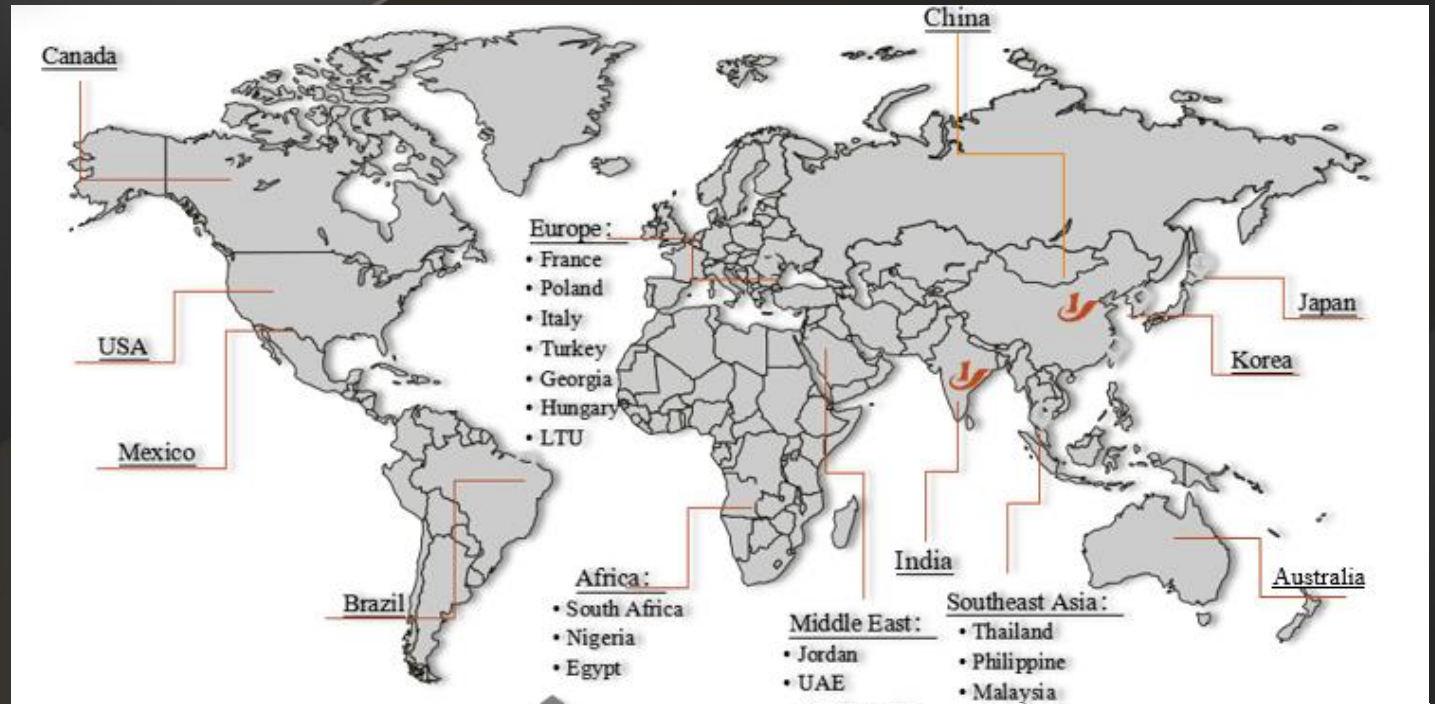
800MW PV Module Manufacturing Turnkey Solution

## EQUIPMENT LIST

1 玻璃上料机抓手 Auto Glass Loader	10 EVA裁切铺压机 EVA cutting and laying machine	20 太阳能电池组件层压机 Laminator	30 点胶机 J-box silicon dispensing	40 自动安全盖机 Auto capping machine	50 自动包角机 Corner cap guards machine
2 玻璃面贴条码机 Machine for standard panel	11 背板裁切铺压机 Backsheet cutting and laying machine	21 压框回流线 Pressure frame return line	31 接线盒自动安装机 J-box auto installation machine	41 机器人人工装架机 Robot mounting jig machine	51 分档机器人 Sorting robot
3 EVA裁切铺压机 EVA cutting and laying machine	12 双玻合片机抓手 2nd glass loader	22 自动取压框 Auto removing frame	32 接线盒焊接机 J-box auto soldering machine	42 翻板机 180 Deg Flip	
4 整平点烫机 Scraping and melting machine	13 玻璃上料机抓手 Auto Glass Loader	23 自动撕膜机 Auto removing frame	33 双组份灌胶机 Two component glue machine	43 标片柜 Machine for standard panel	
5 排板叠焊一体机 Layout and bussing machine	14 引线压平机 Lead flattening machine	24 削边一体机 Edge trimming all-in-one machine	34 接线盒拍照检测 J-box taking photo inspection	44 绝缘耐压测试系统 Hipot testing system	
6 多主栅光伏划焊机串焊机 Stringer	15 EL双面外观一体机 EL and bifacial AOI tester	25 EL测试单元 EL testing unit	35 边框安装孔视觉检测 Machine for frame inspection	45 IV测试单元 IV testing conveyor	
7 汇流带焊接机 Auto welding	16 双玻封边机 Edge sealing machine	26 层后翻转自压机 Visual inspection machine for 90° flip	36 固化线上下料机械手 Curing handler	46 机器人人工装架机 Robot removing jig machine	
8 背板材料机 EPE strip application	17 双玻返修机械手 Rework gantry machine for G-G laminates	27 自动装框机 Auto-Framing Machine	37 固化线 Curing line	47 自动贴标机 Auto labelling machine	
9 自动贴胶带机 Auto adhesive tape machine	18 自动上压框 Auto mounting frame	28 边框上料机器人 Frame loading robot	38 固化线上下料机械手 Curing handler	48 终检翻转单元 Machine for final flip inspection	
	19 升降机 1-axis lifter	29 引线整形机 Machine for busbar correction	39 修角机 Auto corner cleaning machine	49 三码校验机 Three code verification machine	

# Sales network

Partnership with Top Enterprises around the globe



Headquarter in Yingkou, China  
A wholly-owned subsidiary in India

serve **210+** enterprises globally

Cumulatively **600+GW** installed by 2025.03

- HQ: Yingkou, China
- Overseas technical & Service Center: India, US

# CONTENTS

- Cell Unpacking Machine
- SMBB Scribing & Welding and Stringing All in One Machine
- Auto Layup with Bussing integrated machine

# Overall layout of equipment

CSLB Automation Solution for PV module line



# Appearance of equipment

CUP-1200 Cell Unpacking Machine



- **Disassembly of single material package** 12S
- **Fragmentation rate** < 0.001‰ (cell count)
- **Visual Inspection** High Resolution Vision System
- **Other functions** Upgrading with automatic loading and unloading of EPE foam cutting module
- **Size and specifications** 182x182, 210x210, 182 and 210 half-cut cell

# Appearance of equipment

JC-CHYA10000 PV MBB/SMBB Scribing & Welding and Stringing All in One Machine

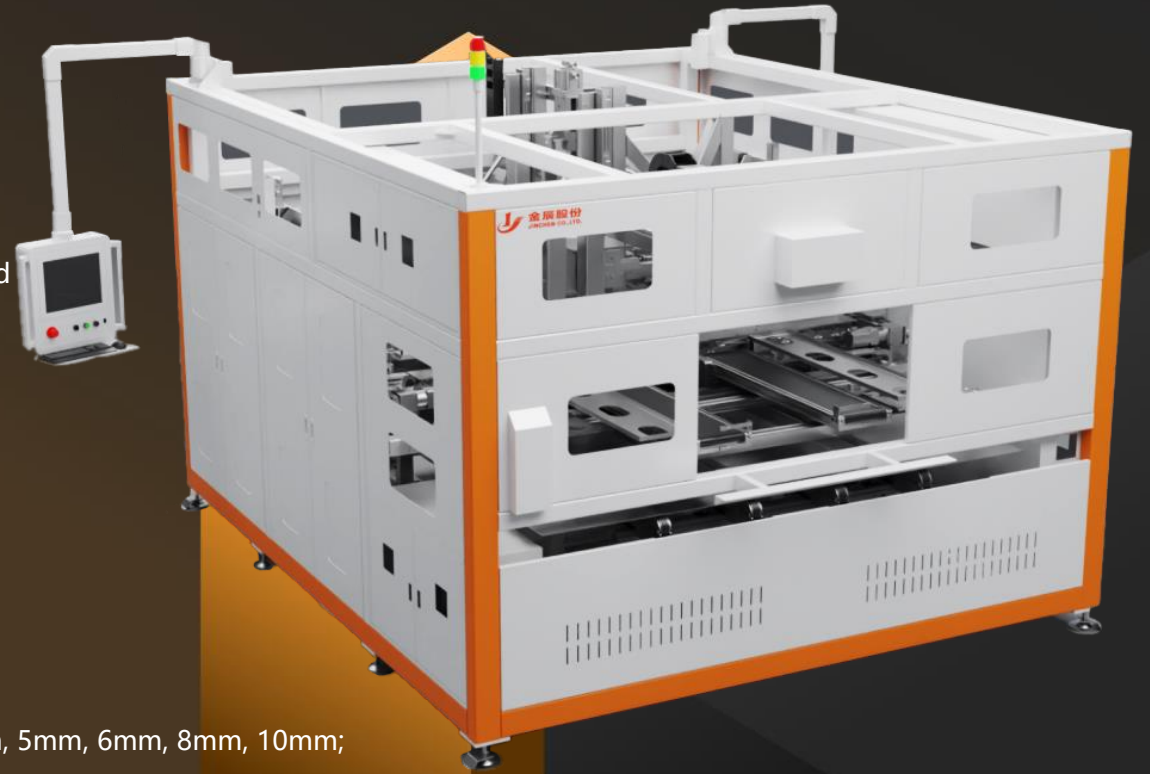


- **Uptime rate**  $\geq 95.5\%$
- **Capacity**  $\geq 10,800$  cells/hour
- **Fragmentation rate** Cells 125mm to 160mm: monocrystalline  $\leq 0.15\%$     Cells 160mm to 230mm: monocrystalline  $\leq 0.20$
- **Rework rate**  $\leq 1.5\%$
- **Flux mode** Welding ribbon immersion
- **Welding method** Infrared welding
- **Temperature control**  $\pm 7.5^\circ\text{C}$
- **Positioning accuracy** Positioning deviation:  $\leq \pm 0.05\text{mm}$     Angular deviation:  $\leq \pm 0.02^\circ$     Cutting precision:  $\leq \pm 0.1\text{mm}$

# Appearance of equipment



- **Cell alignment** CCD + servo
- **Layup method** Servo + precision ball screw
- **Cycle time** 36s
- **Welding method** Electromagnetic induction welding with down-side welding head
- **Post-weld tension**  $\geq 5\text{N/mm} \times \text{lead diameter}$
- **Fragmentation rate:**  $< 0.001\%$  (cell count)
- **Flux spray system:** Optional
- **Size and specifications** 156-230 half-cut Cell
- **Number of main busbars** 6 String\*9 half-cut\*2, 6 String\*10 half-cut\*2, 6 String\*12\*half-cut\*2, 6 String\*13\*half-cut\*2, Cell spacing 0-4mm, String spacing 1-6mm
- **Bus bar specification:** Roll feeding, auto cutting, thickness: 0.18 - 0.40mm, width: 4mm, 5mm, 6mm, 8mm, 10mm;  
Roll core diameter  $\geq 16\text{mm}$ , outer diameter  $\leq 250\text{mm}$  50mm  $\leq$  thickness  $\leq 150\text{mm}$ , weight  $\leq 30\text{Kg}$



**ALDC-13 Auto layup with bussing integrated machine**

# Competitive Advantages



**High  
Efficiency**

**01**

A unified automation solution and seamless workflow, Labor cost saving, Throughput-Optimized and high production capacity

**CapEx  
Reduction**

**02**

AGV/Conveyor Integrated instead of manual handling  
The equipment features a compact size, flexible layout, and minimal footprint occupation

**Low  
Damage  
Rate**

**03**

Eliminate inter-process handling, reducing fragmentation risk and boosting OEE

**Widely  
Compatible**

**04**

Supports busbar-free (OBB) and multi-busbar (MBB) technologies, offering wide range of compatibility to meet evolving industry demands





Thank you

धन्यवाद