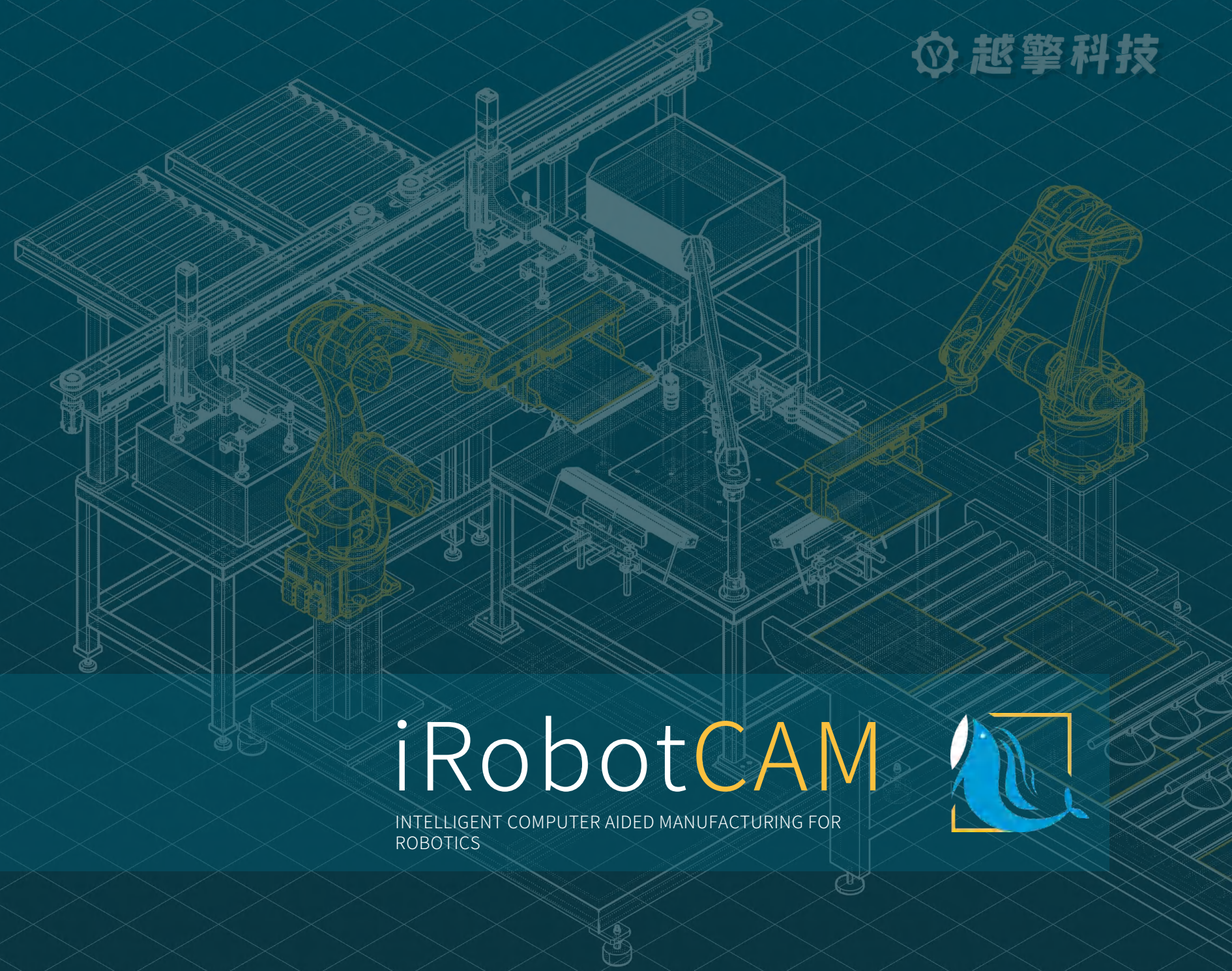
越擎科技



iRobotCAM

INTELLIGENT COMPUTER AIDED MANUFACTURING FOR ROBOTICS

Outline

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- Team
- Development

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- Product Advantage
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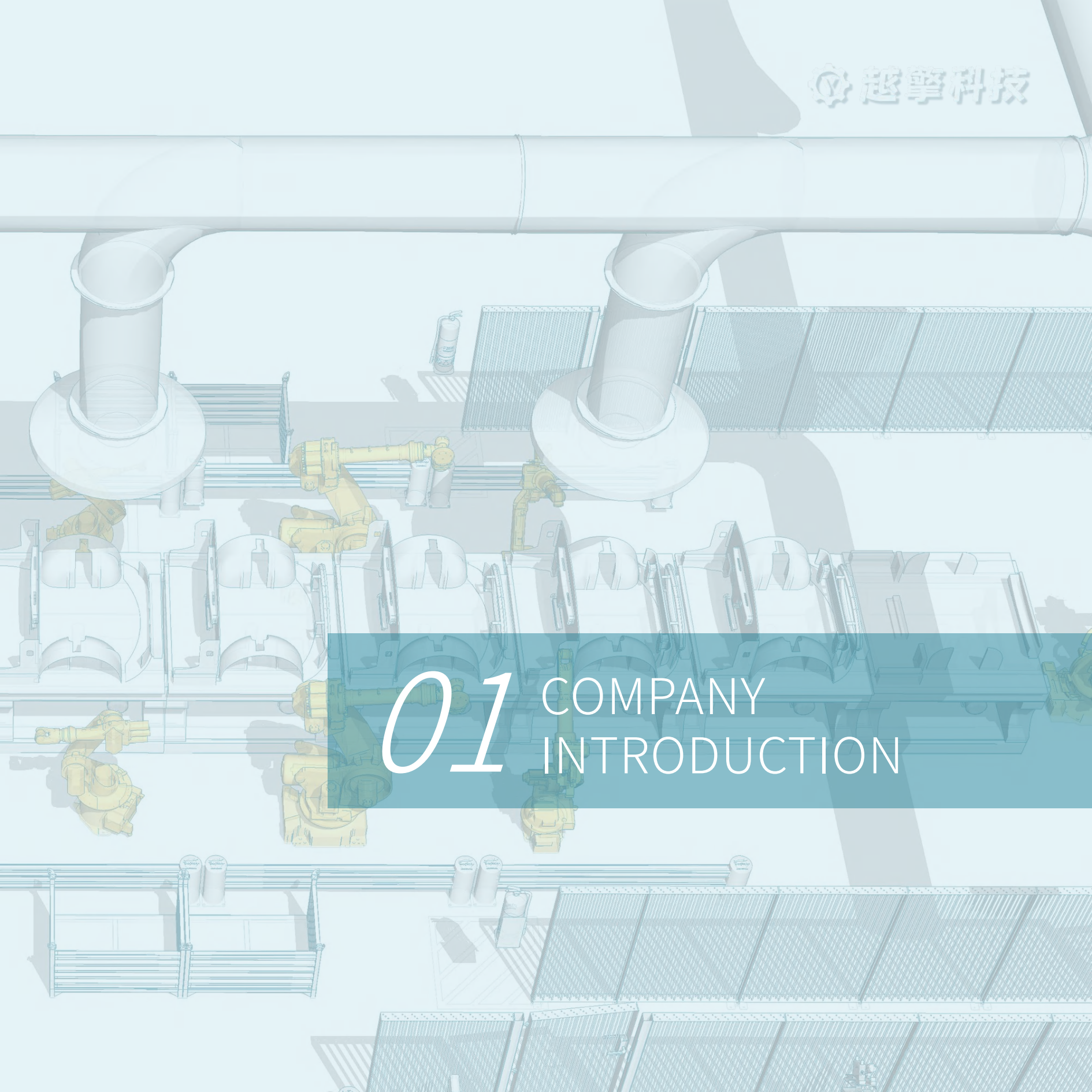
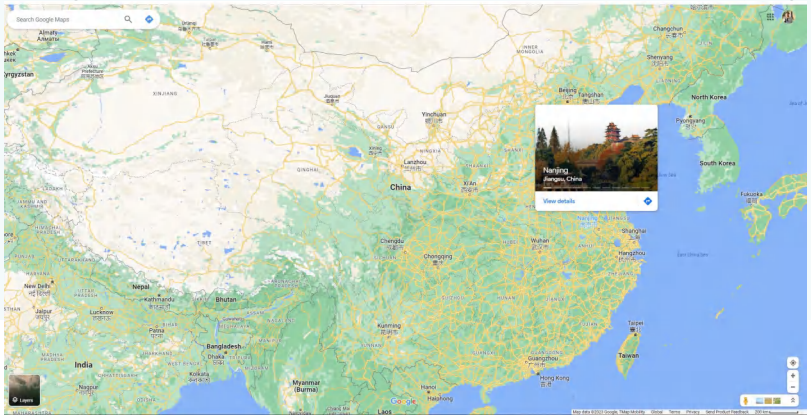
- Education Equipment
- Laser cutting applications
- Sculption application
- Southeast University Robot Painting
- SPRAYING ROBOT Painting Application



01 COMPANY INTRODUCTION

Brief

Yueqing Technology was founded in 2020 and located in Nanjing, JianSu Province.



Team

The company's R&D team focuses on industrial robot programming simulation and digital twin technology. The independently developed iRobotCAM robot offline programming and simulation software has overcome key technologies such as robot kinematics algorithms and physics engine simulation. It supports robot modeling for dozens of brands including Guangzhou CNC, Turing, ABB, and KUKA, and seamlessly integrates CAD native data based on the ZW3D kernel.

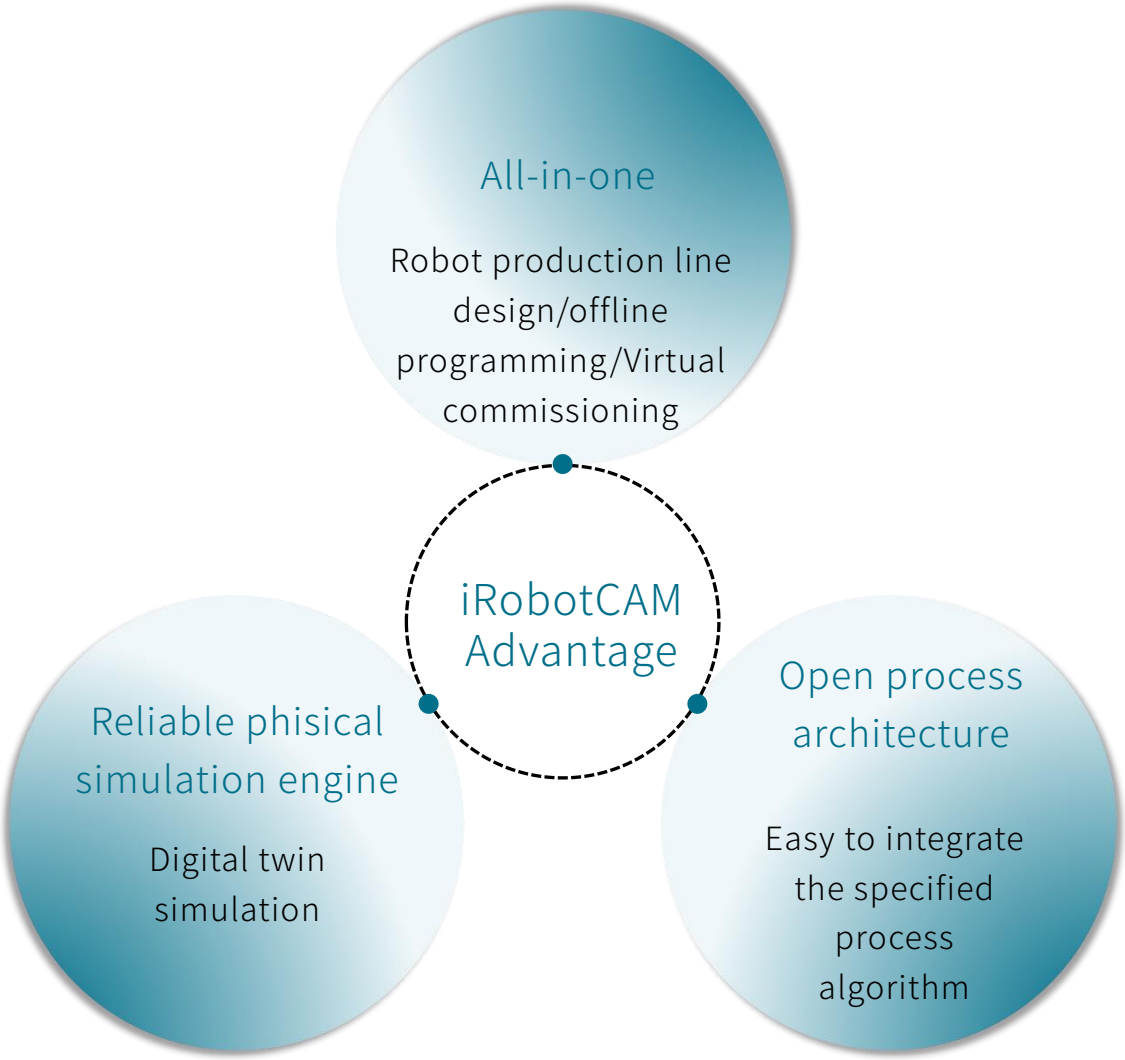
History

- **2020** Yueqing Technology was founded, started the development for iRobotCAM, with the collaobraiton with SouthEast University.
- **2021** iRobotCAM Preview was released, started to collaboate with ZWSOFT.
- **2023** iRobotCAM V1.0 was officially released.
- **2025** A new generation of robot modeling and simulation platform that meets the needs of robot offline programming and Virtual commissioning, robot modeling and training simulation.

02 PRODUCT INTRODUCTION

iRobotCAM Product architecture

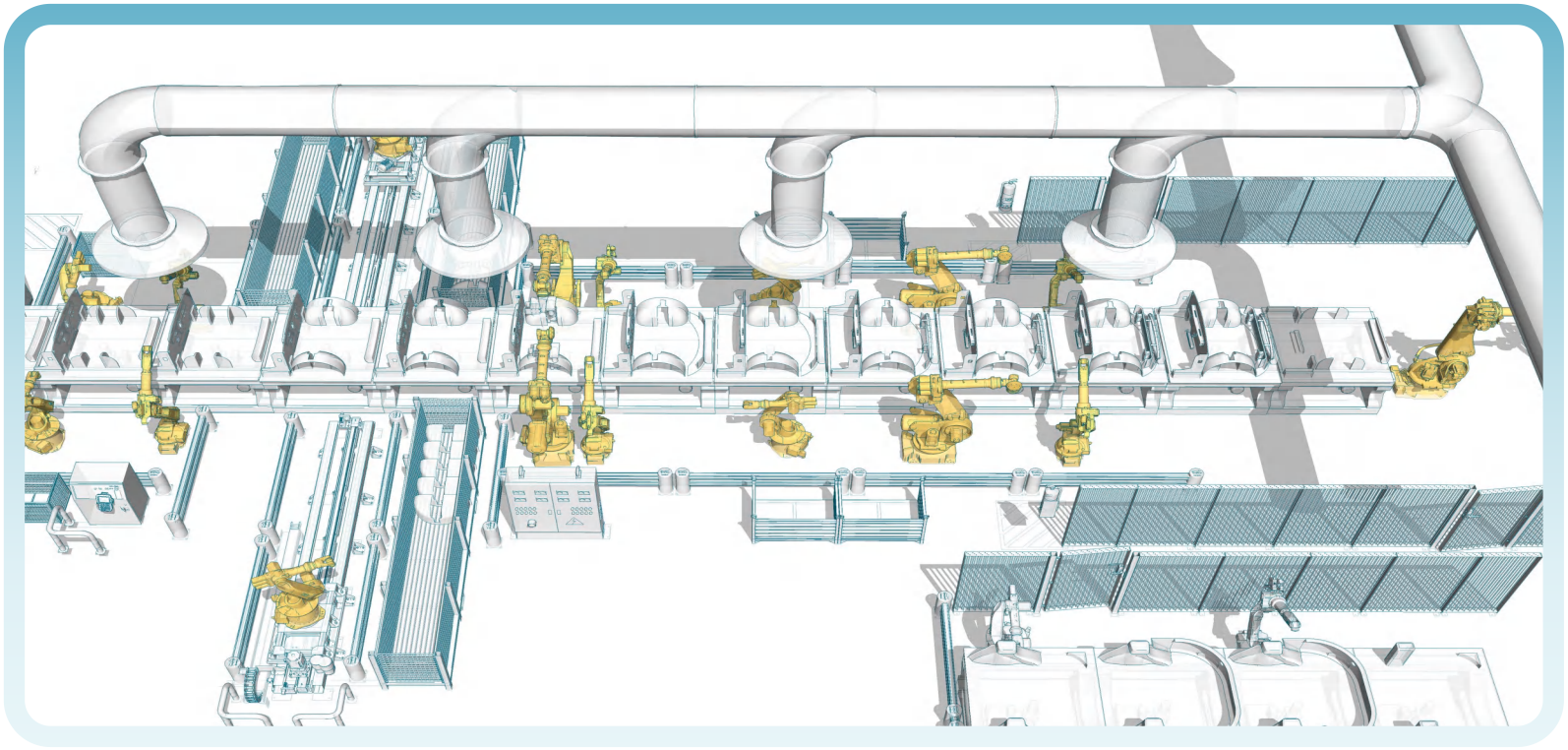
Application Level	Platform Level	Core Engine
Welding,Polish Spraying,Engrave Virtual debuggin Additive machining Assembly simulation	iRobotCAM Digital Machining Platform	Geometry Modeling Phisical motion engine Robot Tragetory Algorithm Robot motion simulation



iRobotCAM Functions

Robot production line design

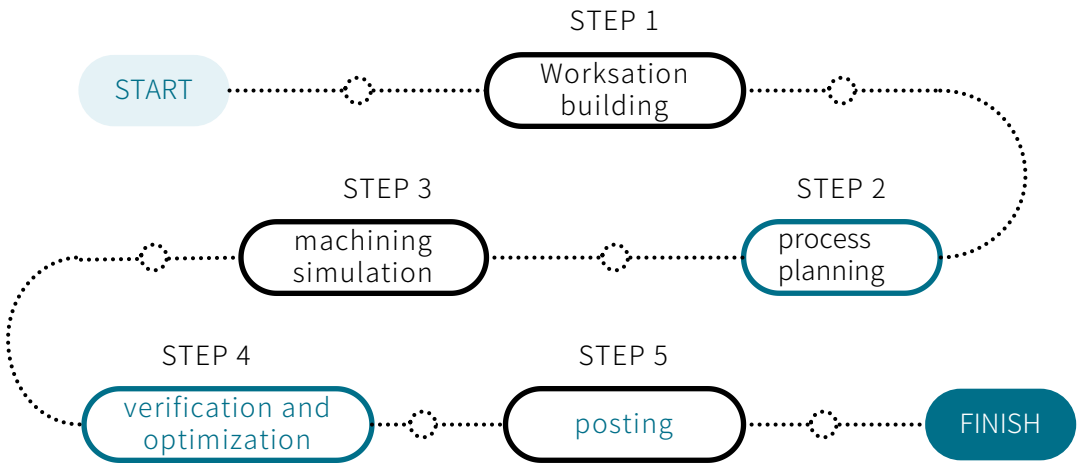
With the parametric design capablity to fulfill the robot workstation or production line design



Robot offline programming

programming process:
Robot import-->process planning-->machining simulation-->workstation optimization-->posting

verification:
program decompilation, verification and optimization

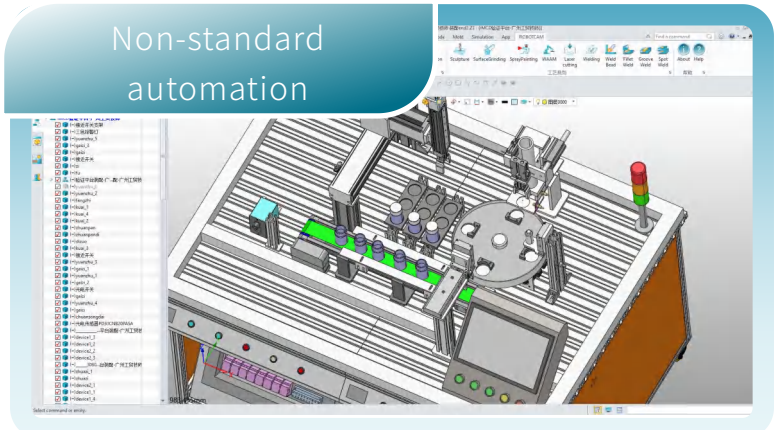


iRobotCAM Functions

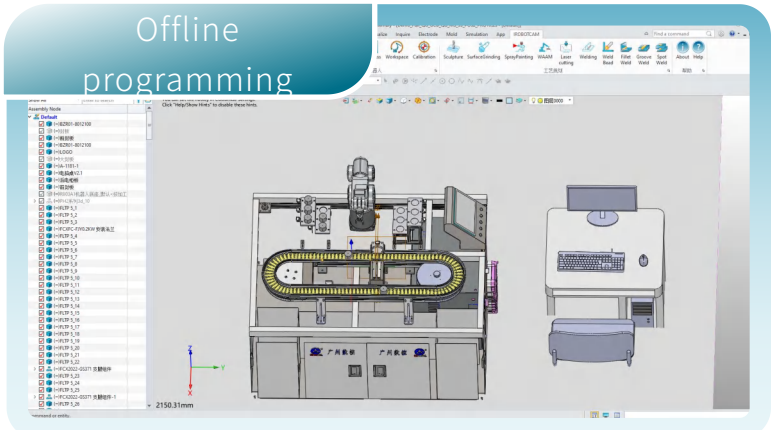
Robot offline programming

Multi-step processing

Non-standard automation



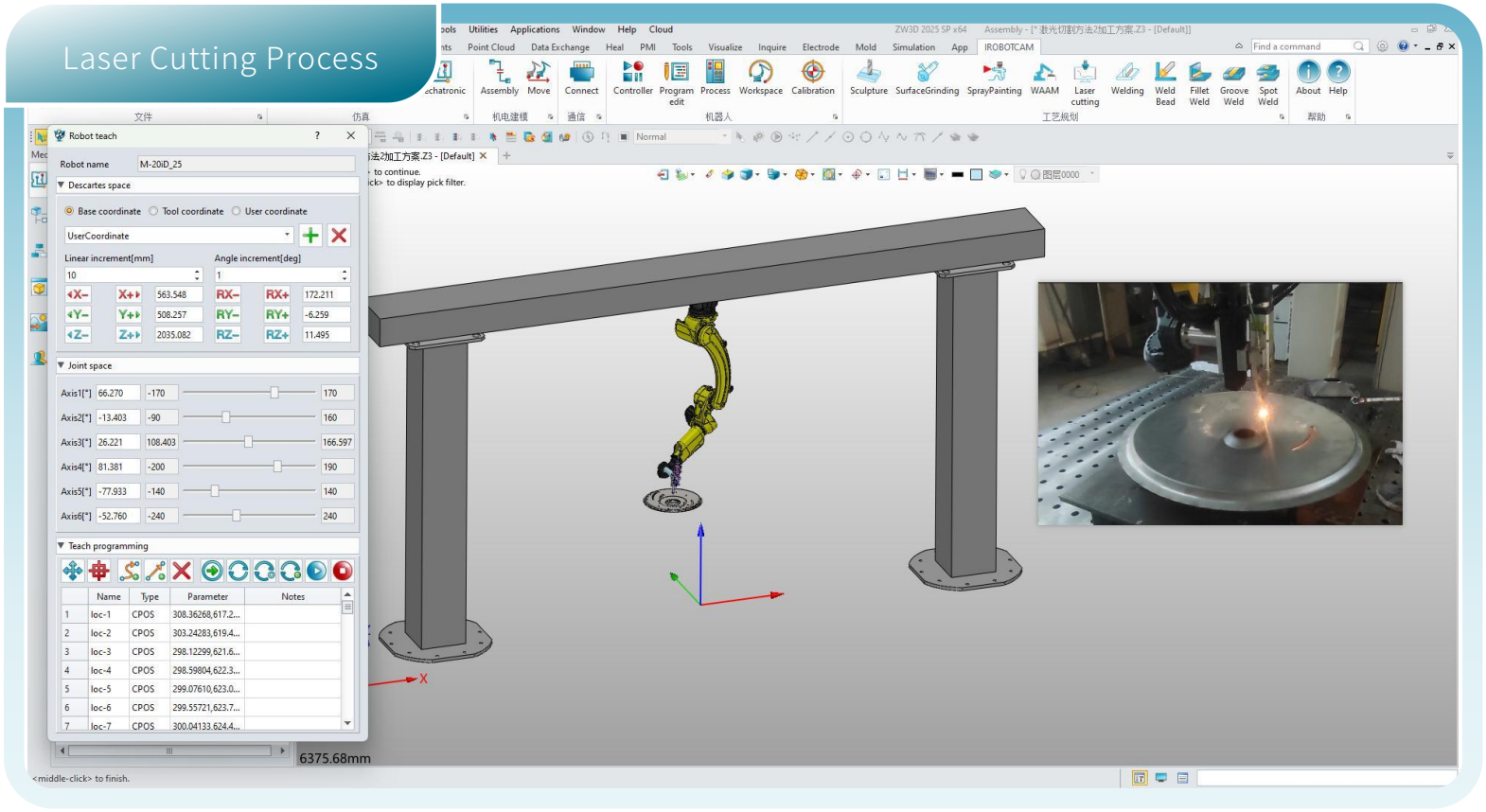
Offline programming



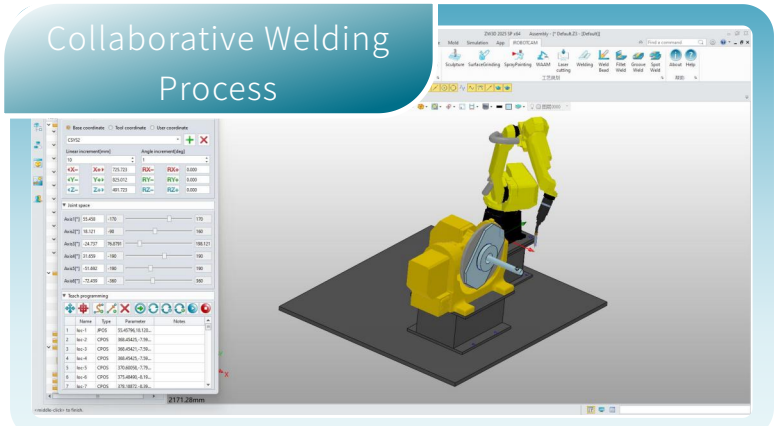
iRobotCAM Functions

Process Module

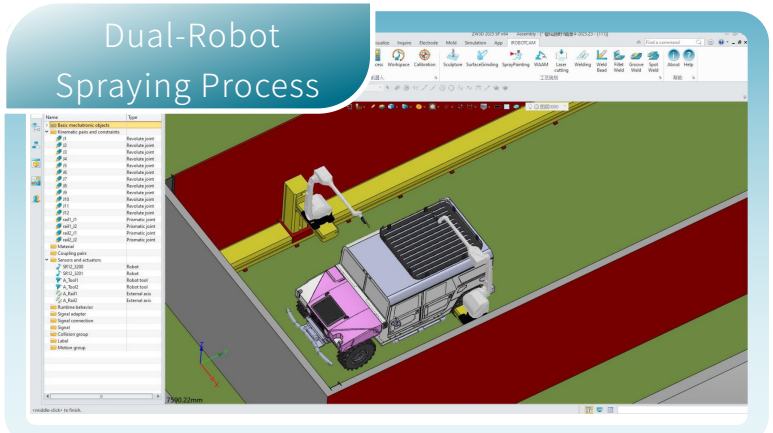
Laser Cutting Process



Collaborative Welding Process



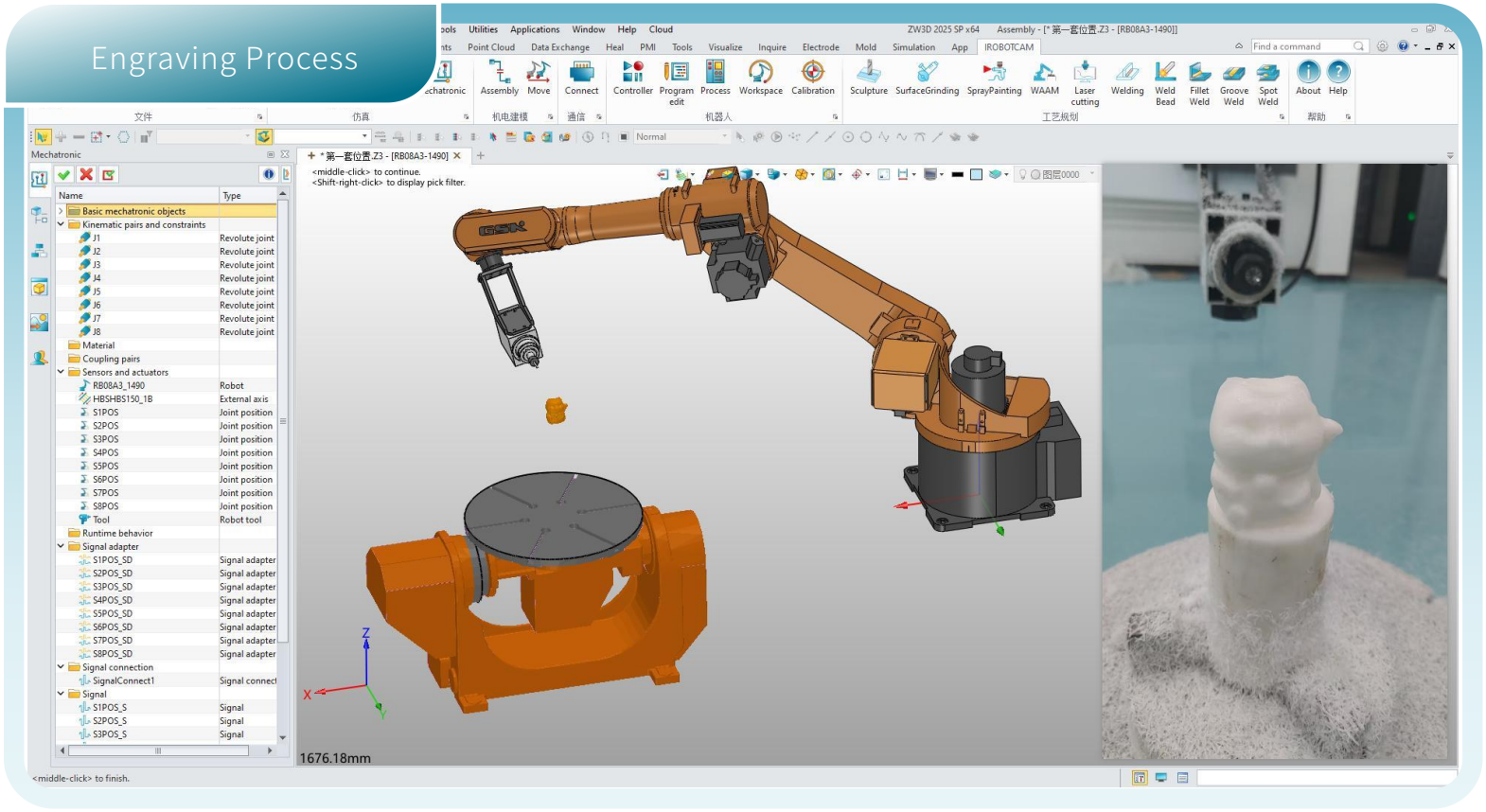
Dual-Robot Spraying Process



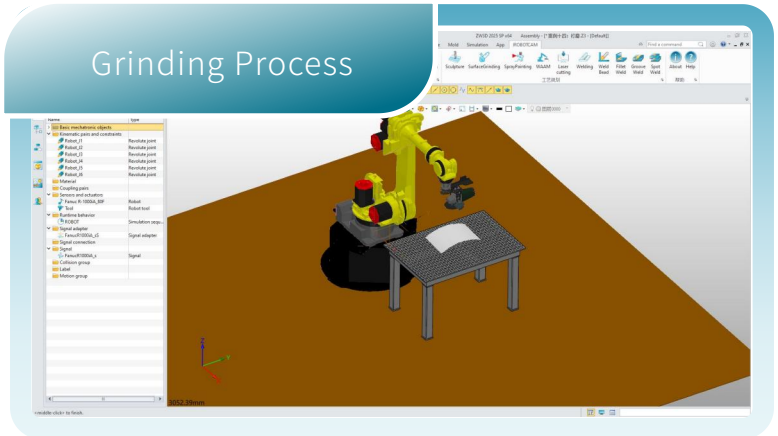
iRobotCAM Functions

Process Module

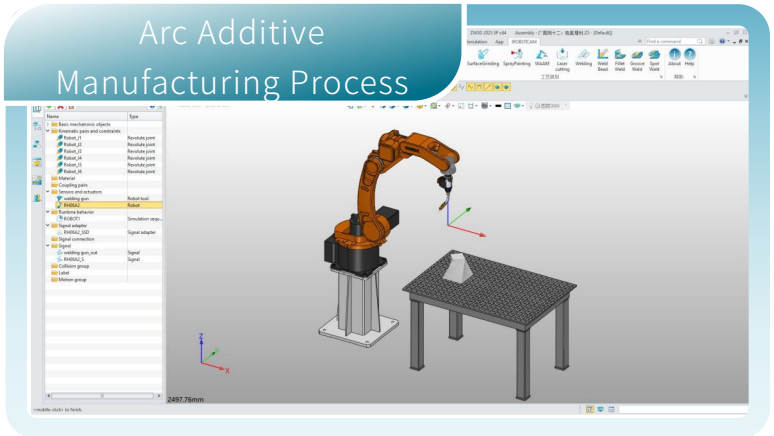
Engraving Process



Grinding Process



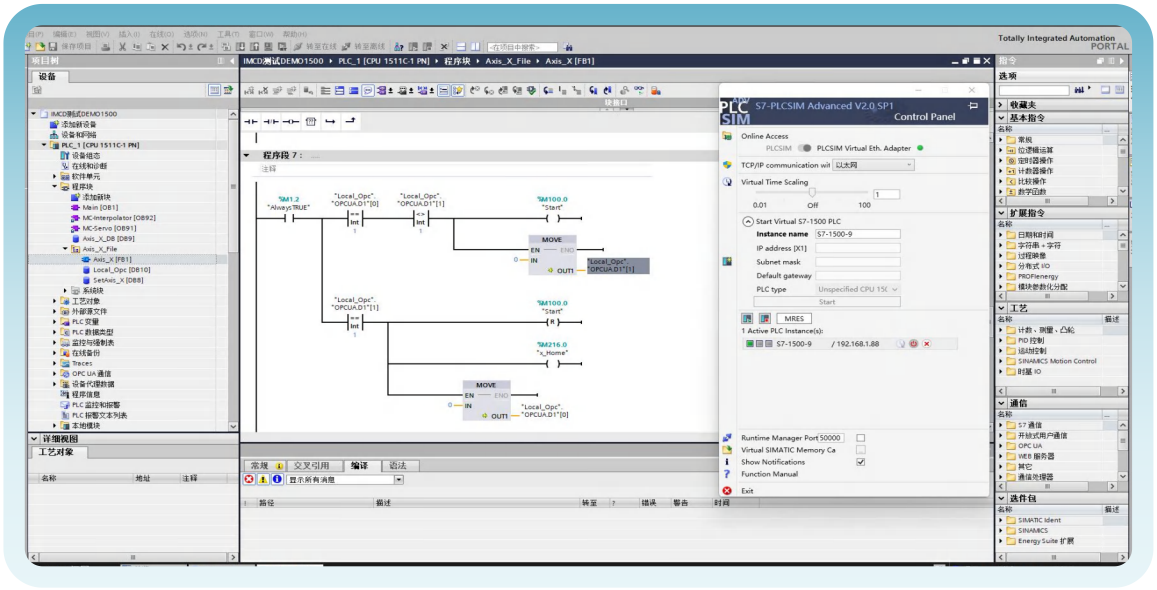
Arc Additive Manufacturing Process

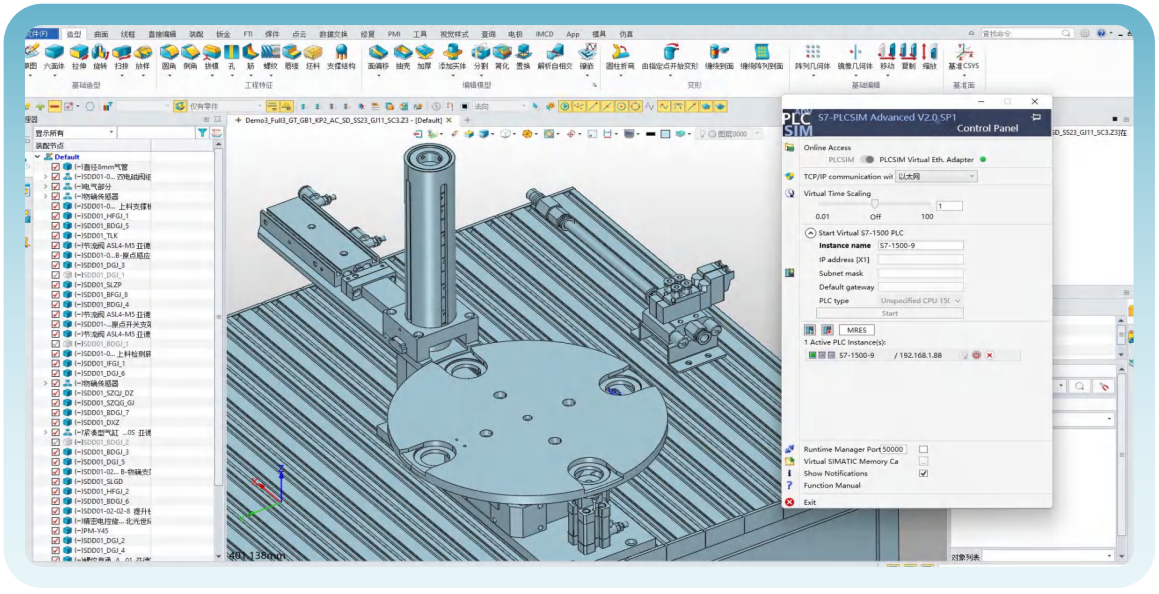


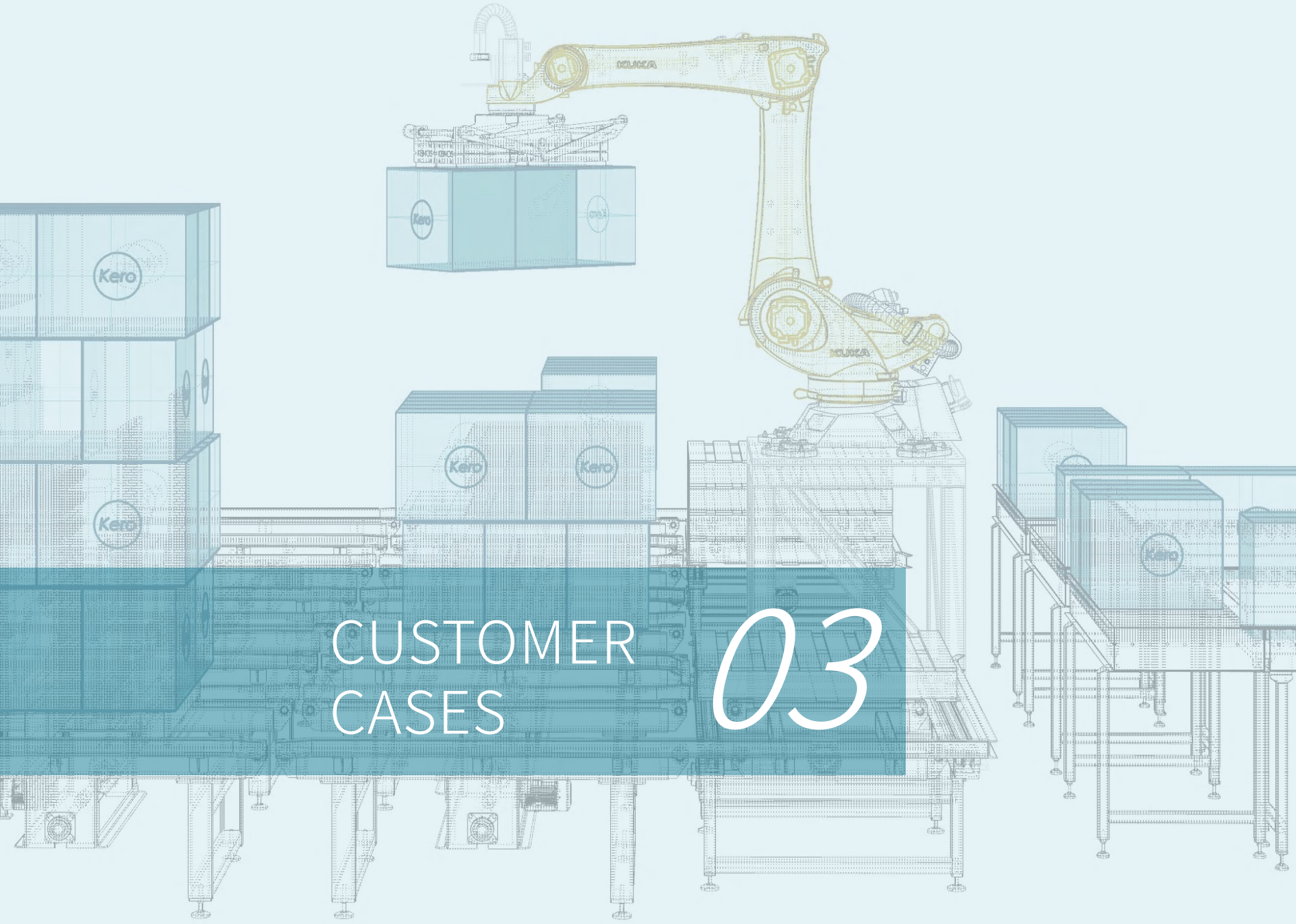
iRobotCAM Functions

Virtual commissioning

Virtual commissioning and virtual monitoring by digital-twin; supports multi-machine IO communication simulation, multi-robot synchronization, and multi-axis linkage planning of robots.







CUSTOMER CASES 03

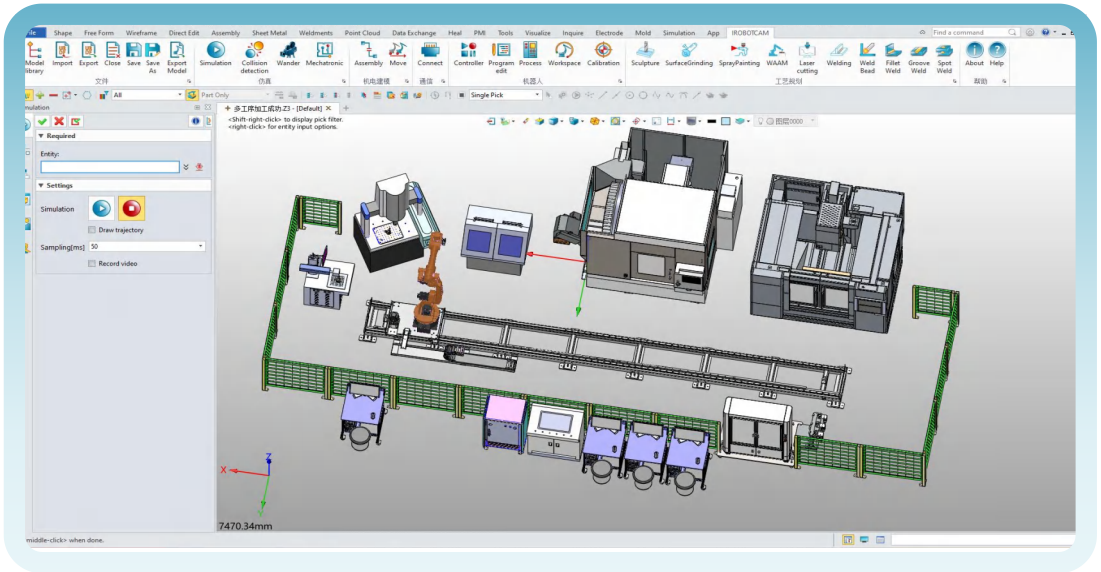
Numerical Control Equipment | GSK

Mechatronics design and Virtual commissioning platform

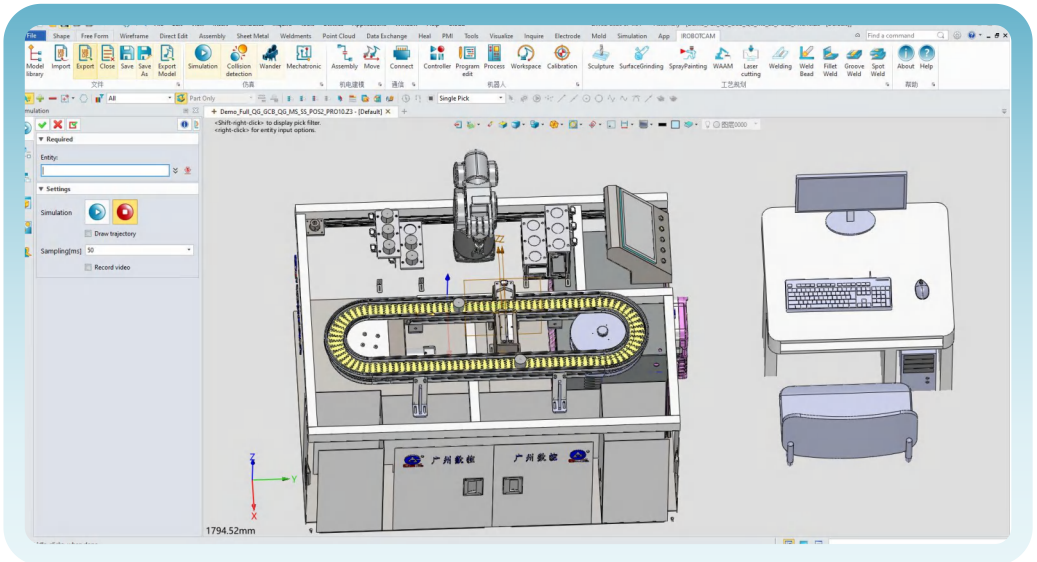
Robots, processing equipment (machining centers, injection molding machines, etc.)

Definition and control of motion mechanisms such as positioners, conveyor belts, and cylinders

Supports sensor modeling with the built-in library



Teaching



Robot interpolation algorithms, including several basic interpolation algorithms such as straight lines, arcs, joints, etc.

Achieve multiple programming mode selections for industrial robots, such as hand-held tool and hand-held workpiece modes.

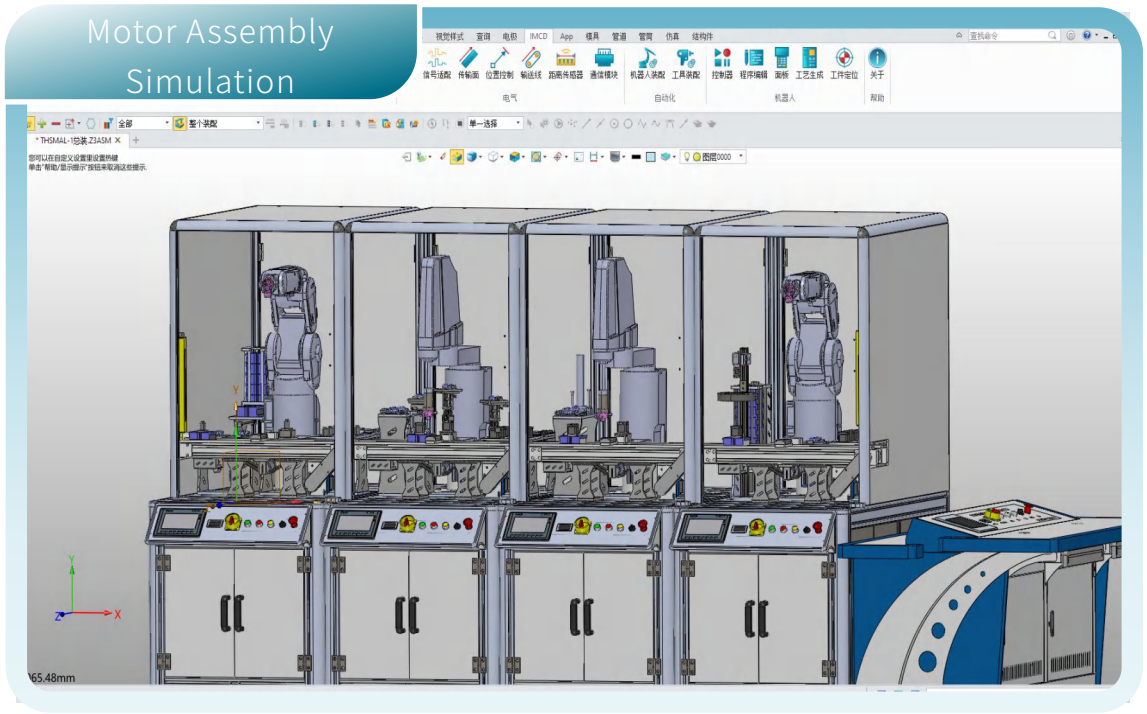
Education equipment

Motor assembly simulation, including robots, quick-change devices, conveyor lines, and various sensors

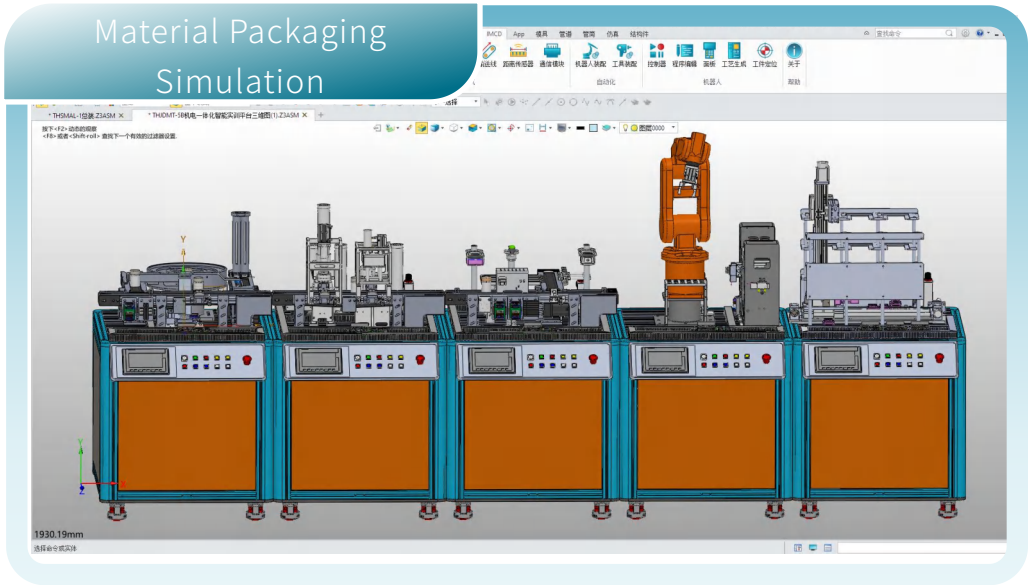
Digital twin simulation, collect production line data, and map motion controller data and PLC data to the simulation system

Leverages the CAD architecture based on a 3D geometric kernel to enable interconnection between the physical and virtual worlds

Motor Assembly Simulation



Material Packaging Simulation



Material packaging simulation, including vibrating plates, multiple conveyor lines, robots, motor drives, material assembly, material transportation, and material warehousing

With data collection, data mapping, materials and motion equipment information, achive digital-twin Virtual commissioning in both of hardware and software

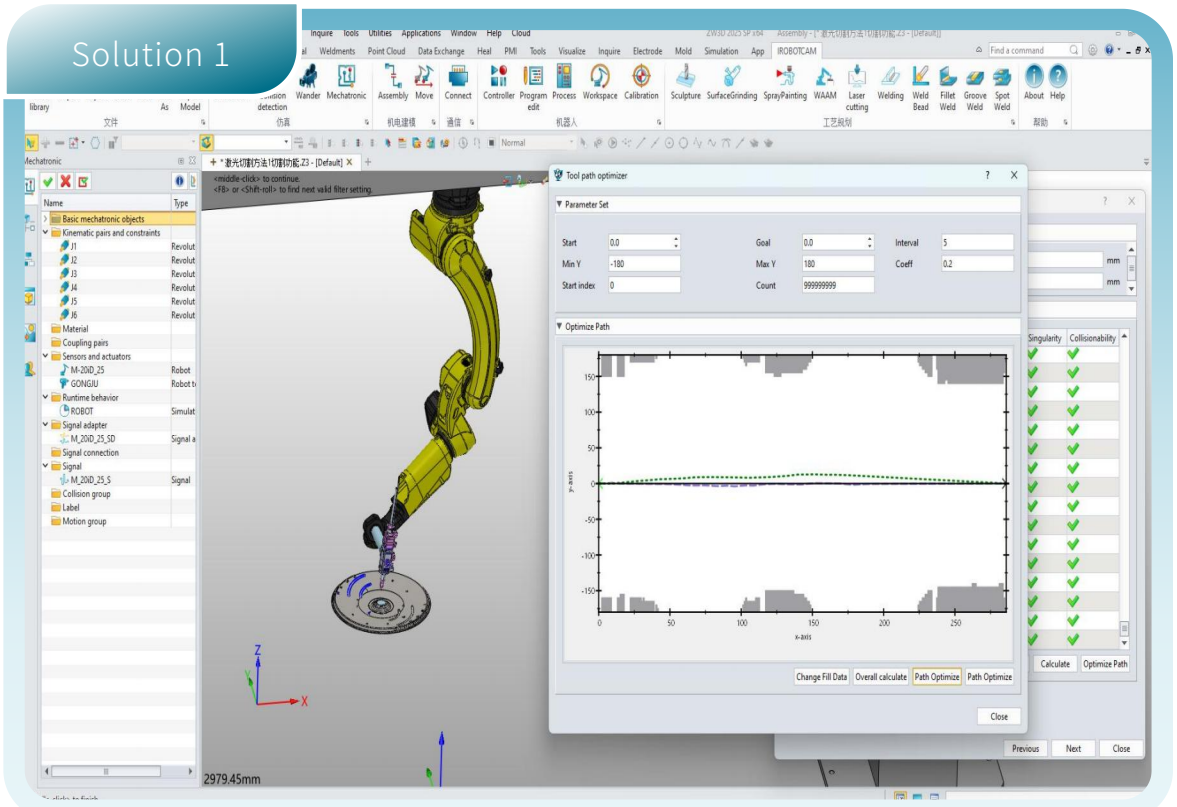
Laser Cutting Process Application

Traditional programming methods struggle to handle complex factors, making it difficult to adjust parameters in real time and ensure high-precision cutting.

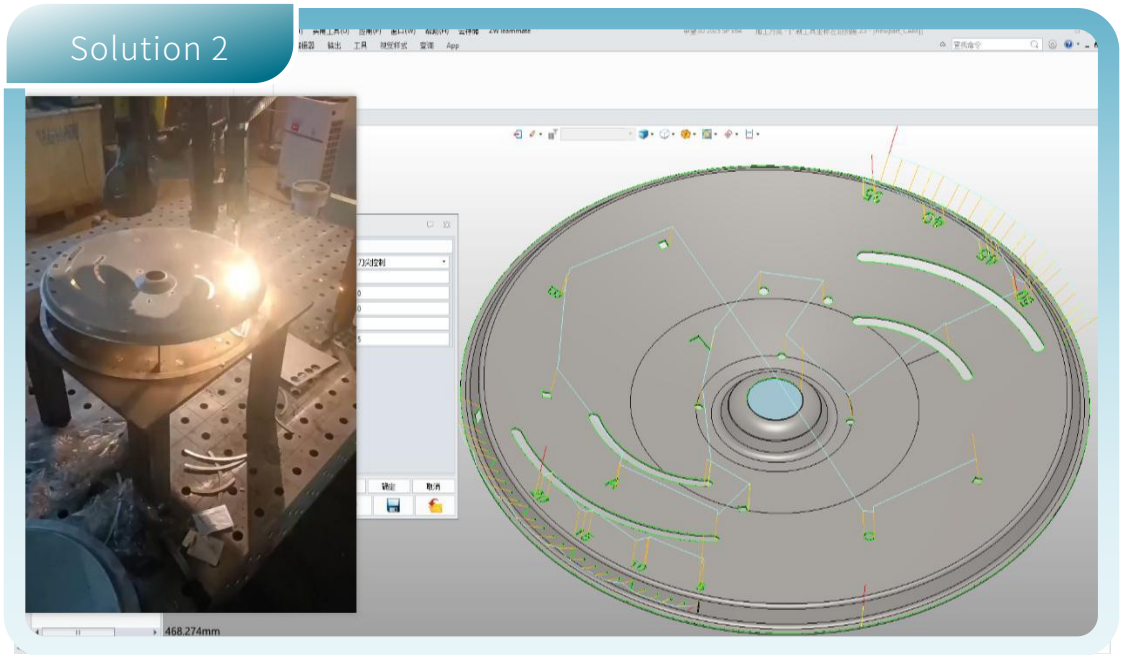
1.Precise Path Planning Algorithm
2.Real-Time Parameter Coordination
3.Virtual Simulation Preview & Optimization

iRobotCAM's independently developed technology deeply integrates with high-end robots and laser equipment to generate optimized cutting paths, which are verified and adjusted multiple times through virtual simulation.

Solution 1



Solution 2



Uses processing solutions to quickly generate high-precision cutting trajectories, verify through physical processing simulation, import CL programs to convert into robot processing points, and optimize paths.

Achieves one-time high-precision cutting in actual processing, with mold dimensional accuracy and surface finish reaching extremely high standards, reducing subsequent processes and improving production efficiency and product quality.

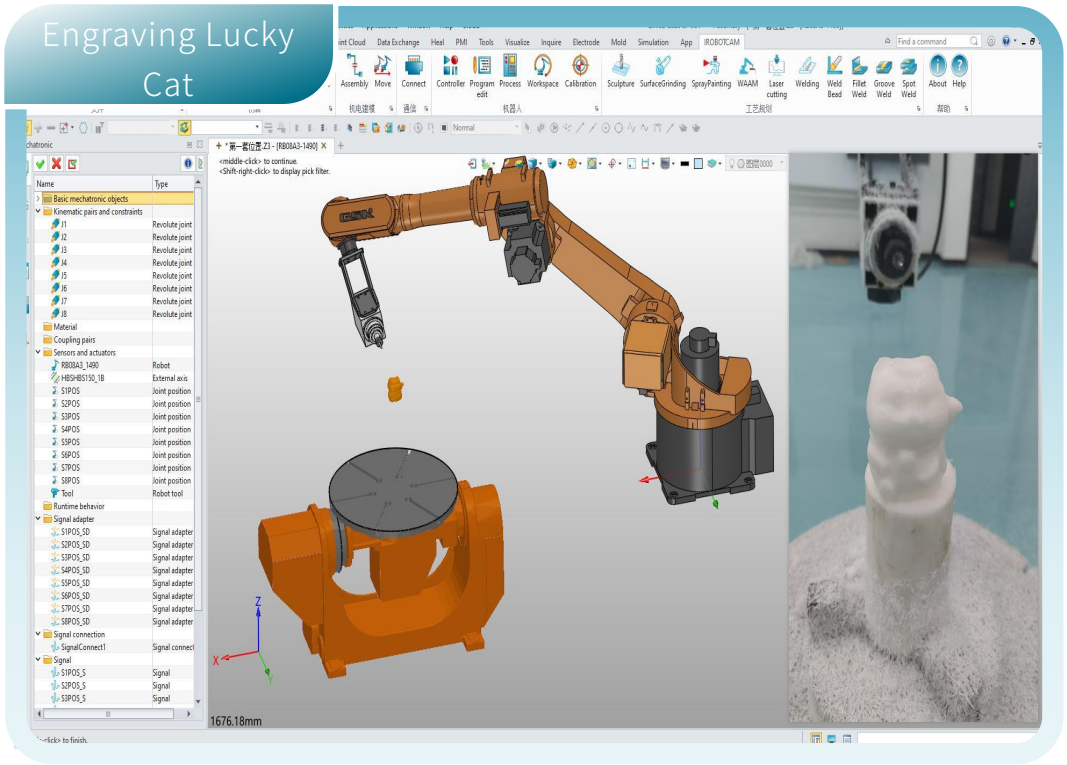
Engraving Process Application

The iRobotCAM robot library enables easy import or customization of robot models, while quickly establishing a digital model environment for workpieces, fixtures, and other components.

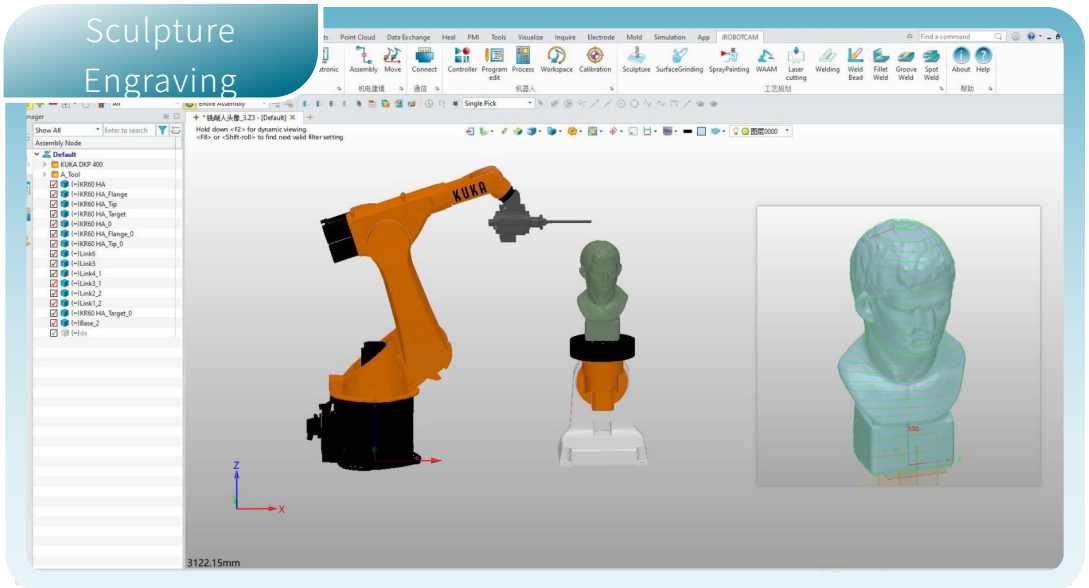
Developed on a 3D CAD platform, leveraging the high-precision characteristics of CAD to achieve architectural advantages in robot applications, ensuring efficient collaboration between model updates and trajectory generation.

Generates roughing and finishing trajectories for models in multiple formats, ensuring precise control over processing accuracy.

Engraving Lucky Cat



Sculpture Engraving



Rich robot trajectory processing algorithms quickly convert 5-axis and other machining trajectories into robot language, enabling comprehensive engraving trajectory planning.

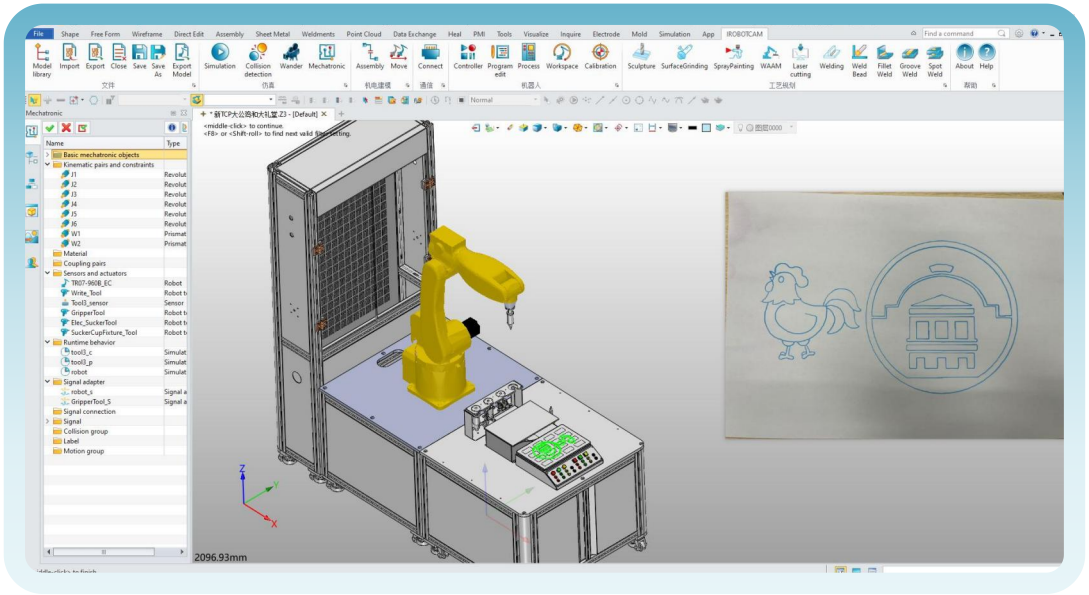
Intuitively visualize robot trajectory and detect collisions through simulation to ensure precision in complex surface engraving

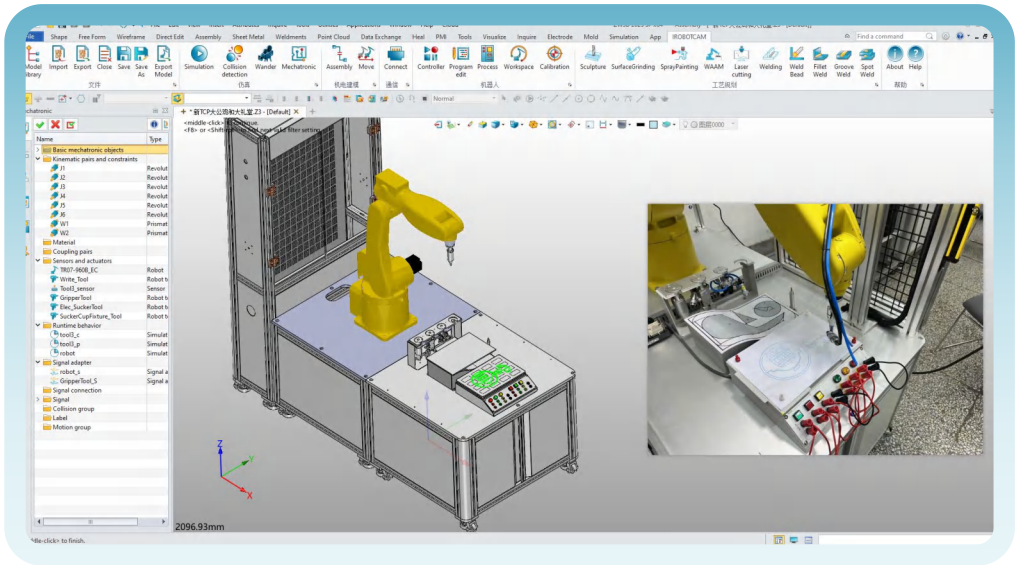
Southeast University Robot Painting Project

Achieves workpiece positioning in all working conditions based on CAD features

Automatically generates painting paths through algorithms

Supports trajectory optimization and collision detection





Visually simulates robot trajectory operation, real-time detection of path accessibility, singularity, and collision risks.

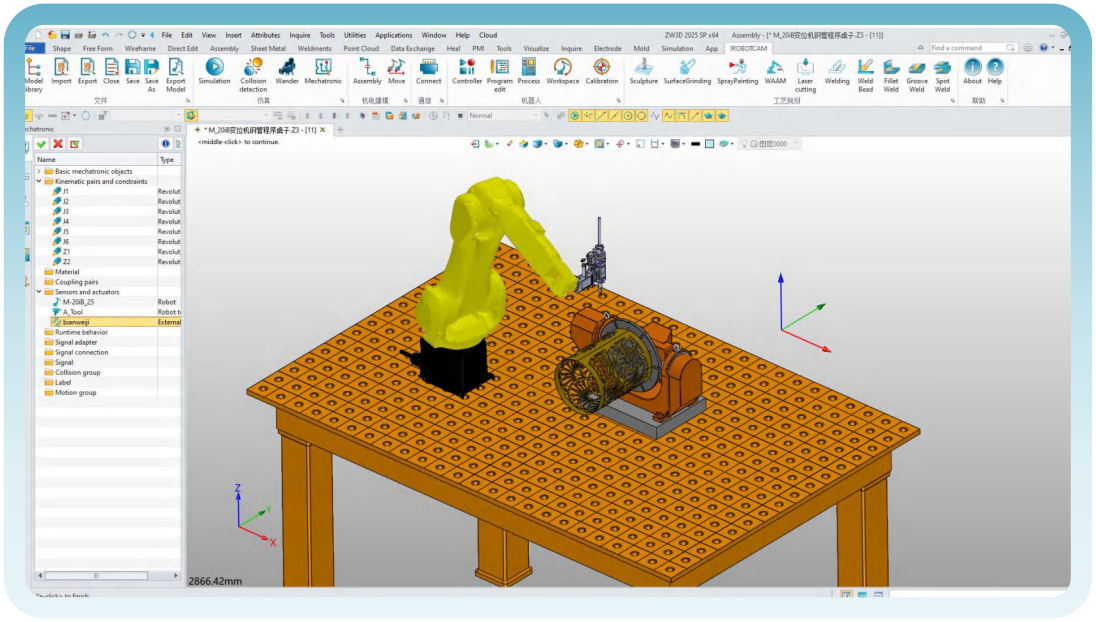
Rapidly adapts to changes in workpiece models and processing requirements, updating robot programs without reprogramming, significantly saving time and effort.

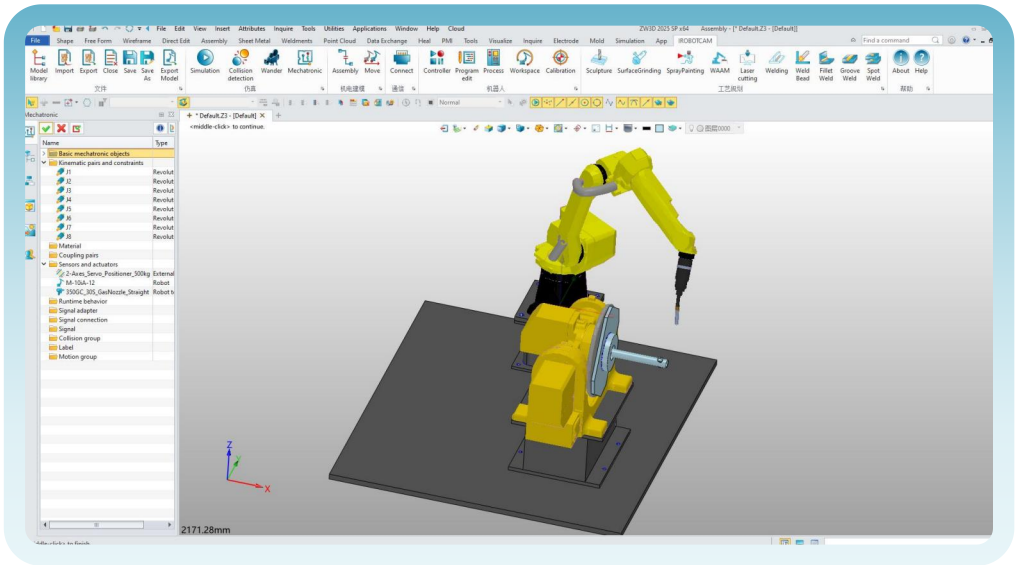
Robot - Positioner Collaboration

Leverages the ZW3D kernel to quickly digitize equipment and processes

Supporting post-processing adaptation for multi-brand robots (FANUC, ABB, KUKA, GSK, etc.)

Achieves workpiece positioning in complex conditions based on CAD features





Uses CAD features for workpiece positioning, automatically generates multi-axis machining trajectories, and supports complex engraving applications for robots with 7+ axes.

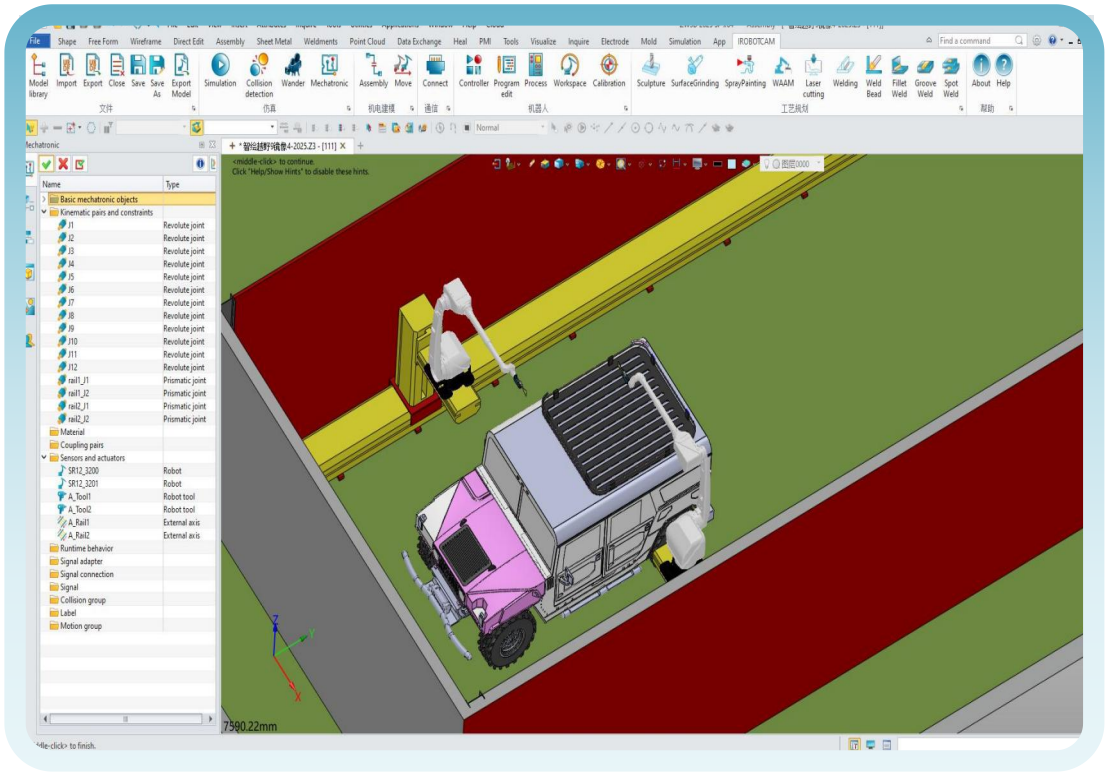
Proactively detects robot motion interference, singularity, accessibility, and path errors to ensure safe and efficient actual production.

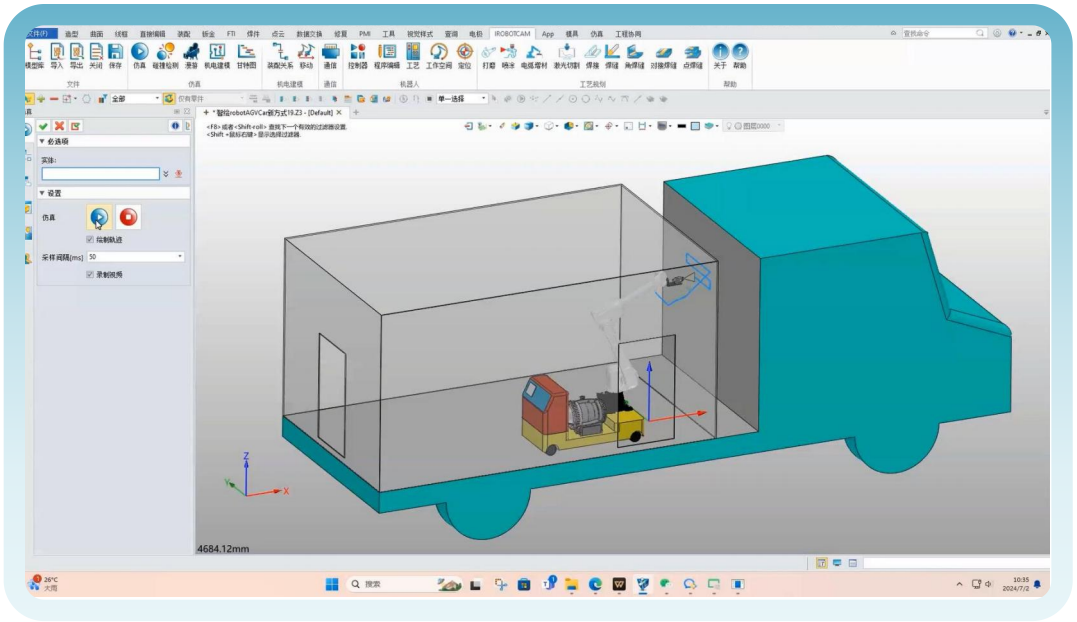
SPRAYING ROBOT Painting Application

Leveraging iRobotCAM's integrated solution, the automation and intelligent optimization of painting path planning were successfully achieved.

Ensures uniform and precise painting quality for complex curved workpieces, significantly improving programming efficiency and production flexibility.

Benefits from an open process architecture and a robust physics engine to enable seamless integration between painting simulation and actual commissioning.

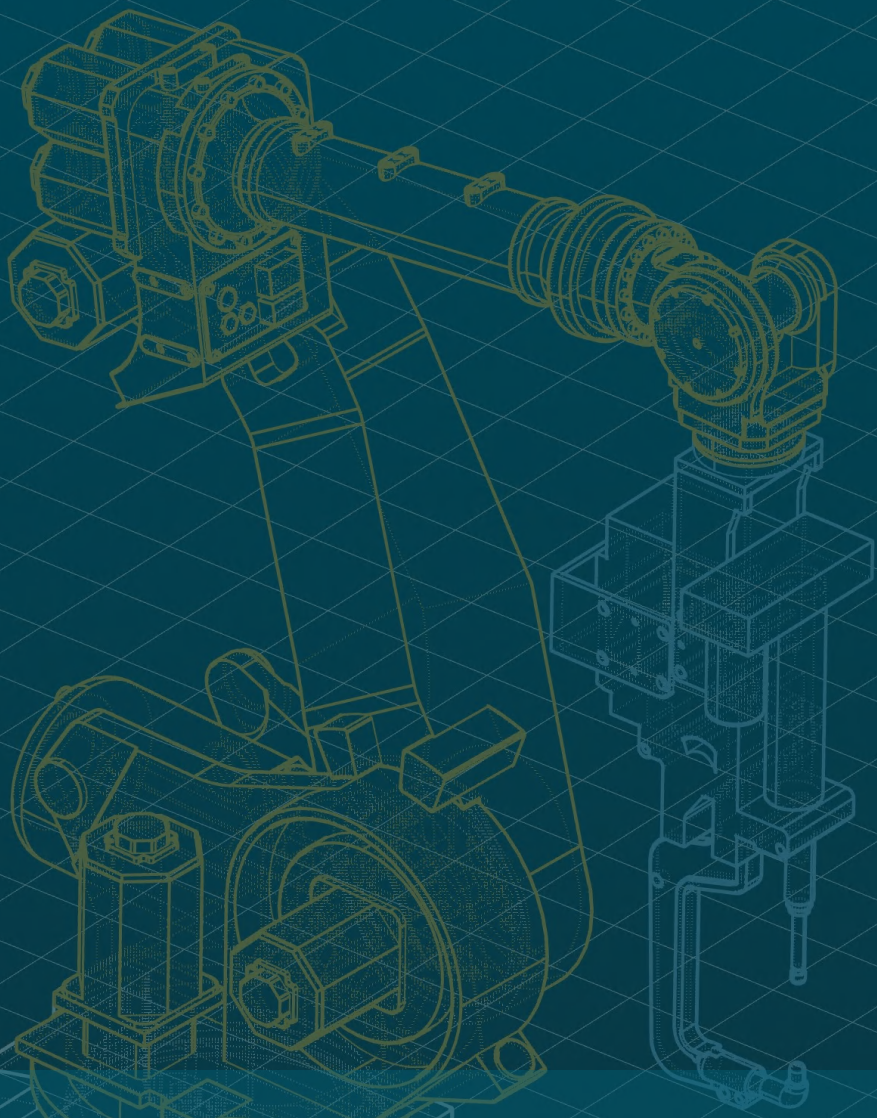




Deep collaboration with SPRAYING ROBOT significantly reduces debugging time and costs, ensuring high precision and consistency in painting processes.

Combining iRobotCAM's technical expertise in offline programming and virtual commissioning, a proprietary offline programming solution for high-end painting equipment production lines was co-developed, covering the entire process from path design, process optimization, to production line joint debugging.

越擎科技



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