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# Collaborative welding upgrade Unlock new heights in the manufacturing industry

## RI COBOT

Welding collaborative robot workstation

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## TRADITIONAL WELDING VS COLLABORATIVE ROBOT WELDING

| User·pain·points | Collaborative Welding Robot Solution |
| --- | --- |
| The quality of manual-Welding is unstable | High precision repetitive tasks |
| High risk environment (smoke/arc·light) | Dangerous operations are replaced by robots |
| Frequent demand for flexible production | Multi task free switching |
| Large equipment has high land occupation costs | Lightweight-and compact design |
| Long training cycle for professional welders | **Extremely simplified operation** |

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Part 1 Trolley type

Part 2 Table type

## FLEXIBLE ADAPTATION IN ALL SCENE

From "single station breakthrough" to "whole line intelligent manufacturing" accurate matching

Part 3 Single table with shell

Part 4 Double table with shell

## 01 CAR-TYPE COLLABORATIVE ROBOT

Spatial cost double liberation (size can be customized)

Configuration: minimalist mobile cart + secondary separation

Scene : Suitable for small and medium-sized enterprises or production lines that need to be flexibly adjusted. It can quickly switch tasks and reduce equipment investment and space occupancy.

Advantage:

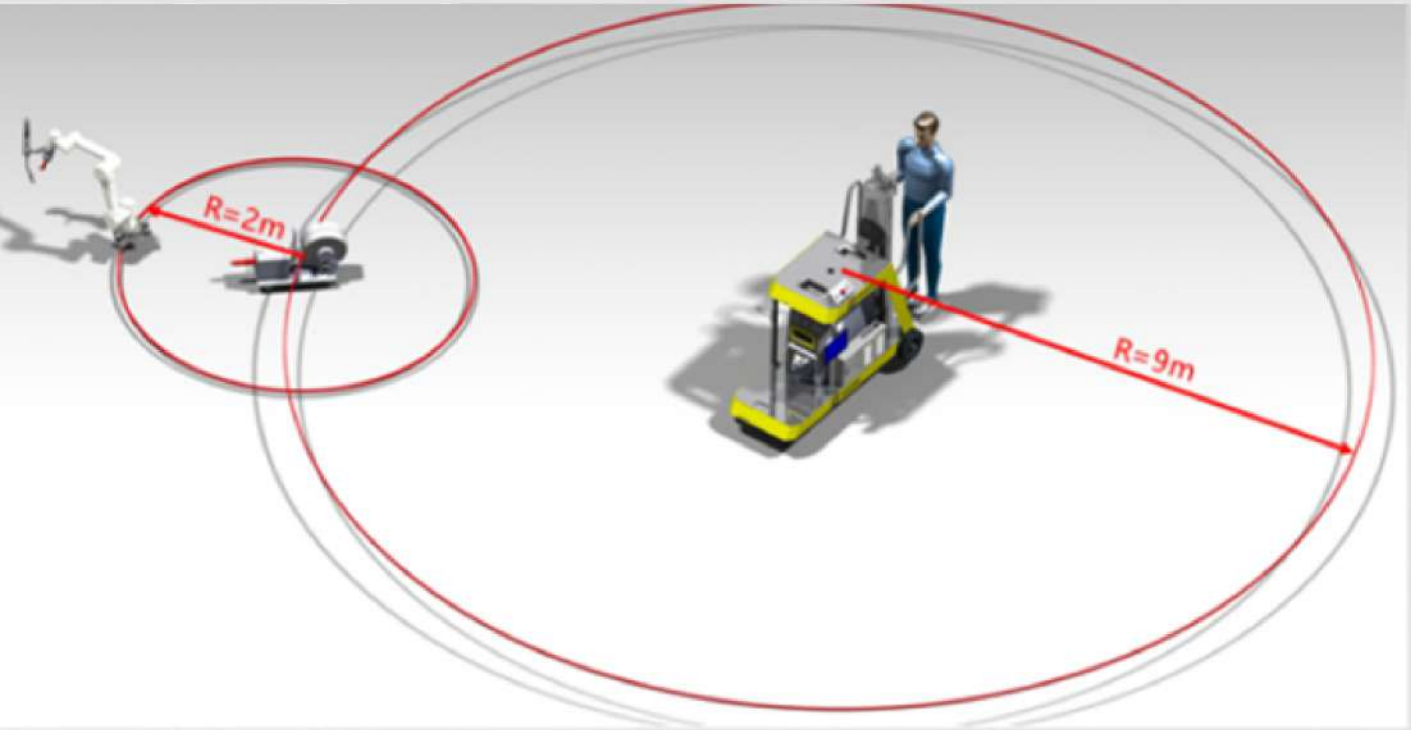
Maximum working radius 11 meters (wire feeder 9m + mechanical arm 2m), covering large workpiece welding

Minimalist Trolley design 240kg, with wheels can quickly switch work positions

RI-WD_TR minimalist small car collaborative robot welding system can deal with complex working conditions, simple, practical, durable and light features, convenient and quick to move to the welding station, at the same time, remove unnecessary accessories, panels, etc., to achieve the most optimized cost.

## 11 M OF OVER-THE-RANGE COVERAGE

## Easy to deploy




**The maximum working radius of RI-WD_TR is 11 meters**

The wire feeder is separated from the robot arm (the wire feeder is 9m + the robot arm is 2m, the wire feeder can be 9m away from the trolley, and the robot can be 2 meters away from the wire feeder), which can be customized according to customer needs.

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## SWITCH THE STATION EVERY 5 MINUTES

Flexible movement

The pulley design, 240kg minimalist mobile station, can be transported by car, quick switching of work stations, flexible shuttle in the workshop with limited ground, convenient and flexible!

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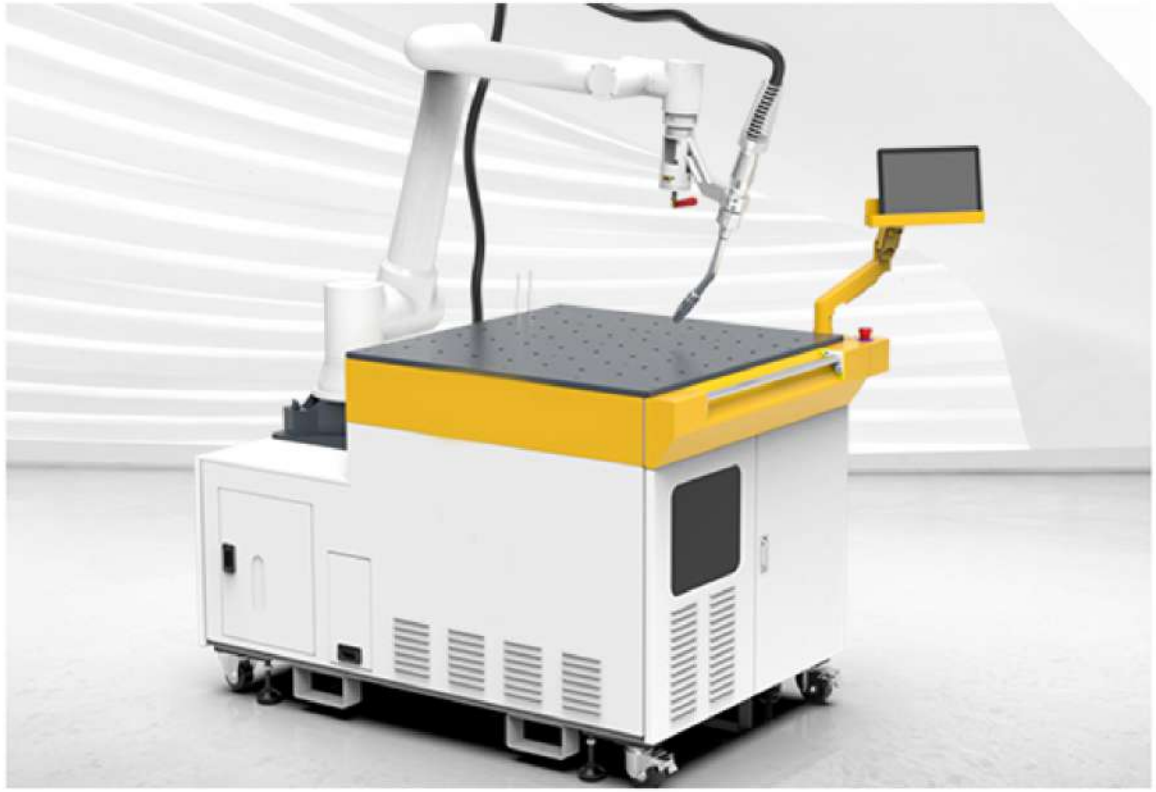
## 02 DESKTOP OPEN COLLABORATION WORKSTATION

Flexible deployment (size can be customized)



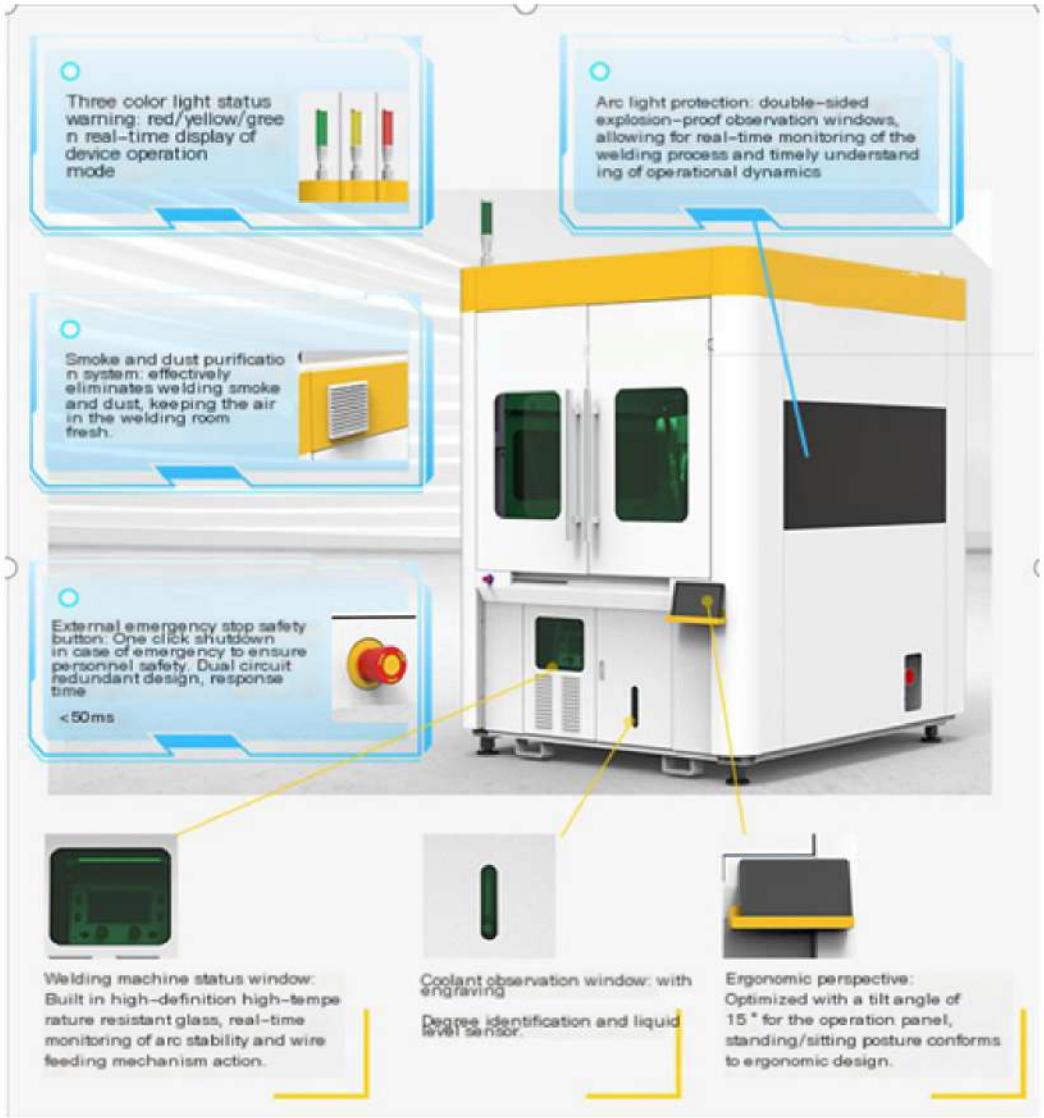
Configuration: mobile cart (1.4 x 0.95 x 0.9m) + quick disassembly welding unit
Scene : multiple varieties and small batches, multi-station rotation in the workshop, equipment maintenance site

Core advantage:

Flexible layout: The desktop is open, compact and lightweight, flexible and mobile. It is suitable for small space and multi-station switching. The tabletop only weighs 260KG, 170KG less than the first generation, and can easily adapt to the needs of small space and multi-station.

10-minute quick deployment: equipped with omnidirectional casters and self-locking mechanism, zero time for workstation switching.

Open collaboration: Support manual near-field operation, especially suitable for rapid repair of non-standard parts, and promote efficient human-machine collaboration.




## 03 SINGLE STATION SYSTEM WITH SHELL

Environmental protection dust removal, safety protection (size can be customized)

Configuration: independent welding room (1.7 x 1.9×2.4m) + double door design + arc light filtering system
Scenario: environment with high environmental protection requirements, strong dust removal requirements and high safety protection level

Core advantage:

Safety single station: closed single station, specially designed for precision welding, providing all-round safety protection.

OD16 level safety cabin: ensure "zero risk" for high-risk operations.
Panoramic visualization design with "no blind area" throughout the process.
Multiple security interlocks.

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## 04 CLOSED DUAL STATION SYSTEM (GROUNDED)

Capacity doubled (size can be customized)

Configuration: dual workstations (2.7 x 1.9 x 2.4m) + single sliding door
Scenario: continuous welding of medium and thick plates, double-sided welding of automobile chassis parts, and improvement of production line beat

Core advantage:

Dual station efficiency: alternating human-machine operation, efficiency doubled, and the beat time is shortened by 35%.

Flexible collaboration: human and machine work synchronously without interference, improving system flexibility and production efficiency.

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## 05 CLOSED DOUBLE STATION SYSTEM (INVERTED)

No dead corners in welding

Configuration: inverted robot (2.7 x 1.9 x 2.4m) + top walking track
Scenario: large structural parts welding, multi-angle complex welds, workshop with limited ground space

Core advantage:
Space master: double working position inverted design, save space, suitable for complex workpiece welding.

Efficiency doubling: alternating human-machine operation to improve operation efficiency and increase the utilization rate of three-dimensional space by 40%.

All-round welding: whether vertical, inclined or complex curved surface, stable output of high quality welding effect, no fear of tricky angles.

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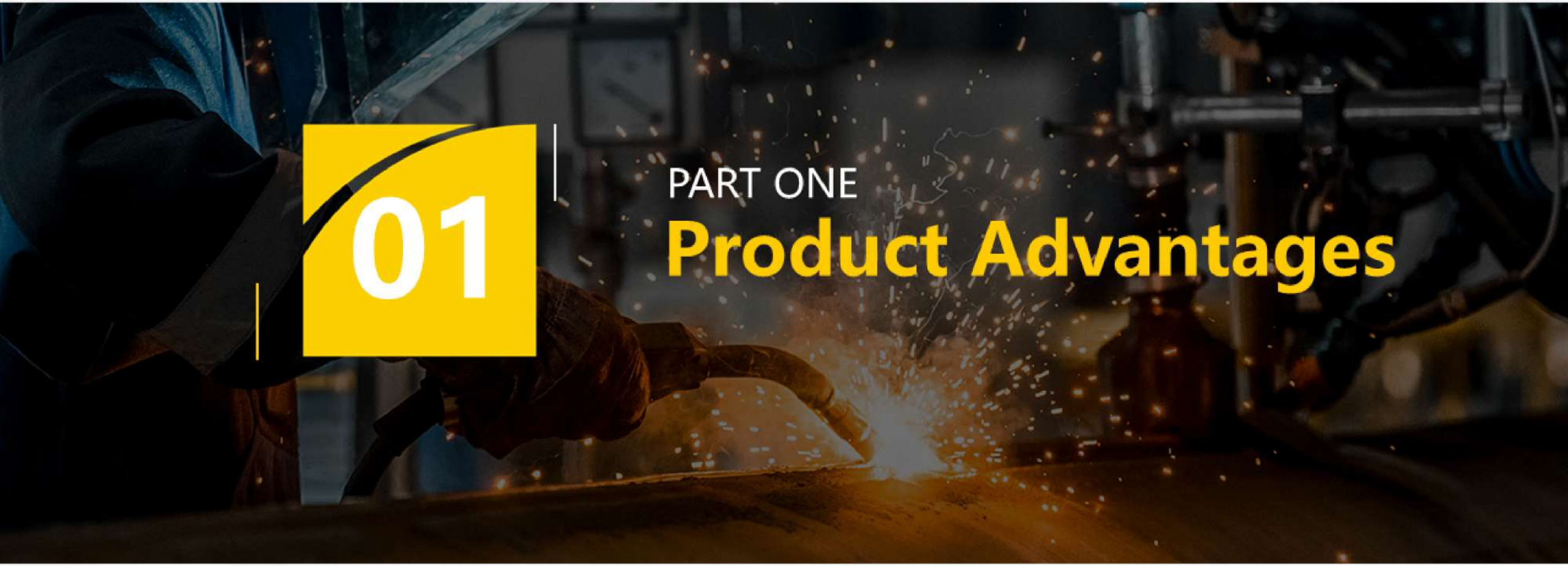


01

PART ONE

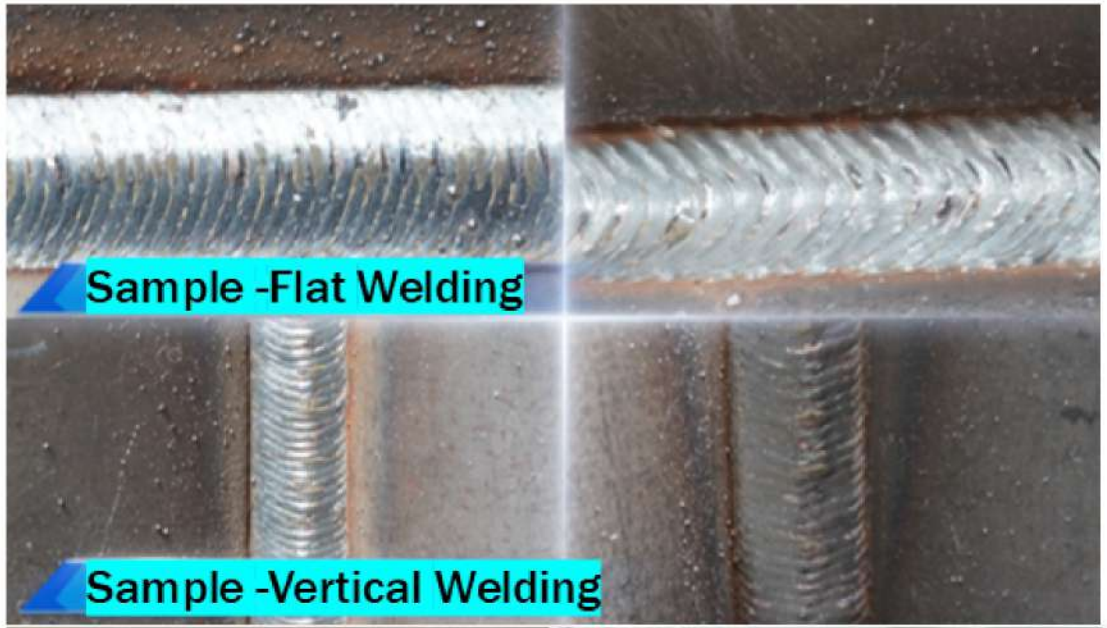
# Product Advantages

- Integrated upgrade of the interface: quick plug of the gas line + integrated electric control to achieve single point docking, 10 seconds power on, farewell to messy cables.
- Sensor handle upgrade: high resolution six-dimensional force/torque sensor for accurate positioning.
- Welding channel planning and upgrading: intelligent calculation of groove trajectory, compatible with a variety of non-standard grooves.
- Welding type upgrade: all types of welding are available, simple and complex welding can be easily handled.
- Upgrade of weld arrangement: automatic stratification planning, parameters can be set at will.
- Gun posture control upgrade: automatically correct the welding gun Angle and offset to ensure the best welding quality.
- Human-machine collaborative upgrade: one-click standard welding, quickly complete small batch repetitive welding tasks.
- Flexible adaptation and upgrade of the whole scene: from single station to whole line intelligent manufacturing, accurately matching the production scene.

## SIX DIMENSION TECHNOLOGY

Foldable handle

- Equipped with high resolution six-dimensional force/torque sensor (positioning accuracy up to ±0.05mm).
- Zero programming drag and teach is realized. The operator can directly pull the robot arm to complete trajectory calibration through the foldable handle. It is used for welding complex surfaces and narrow Spaces.

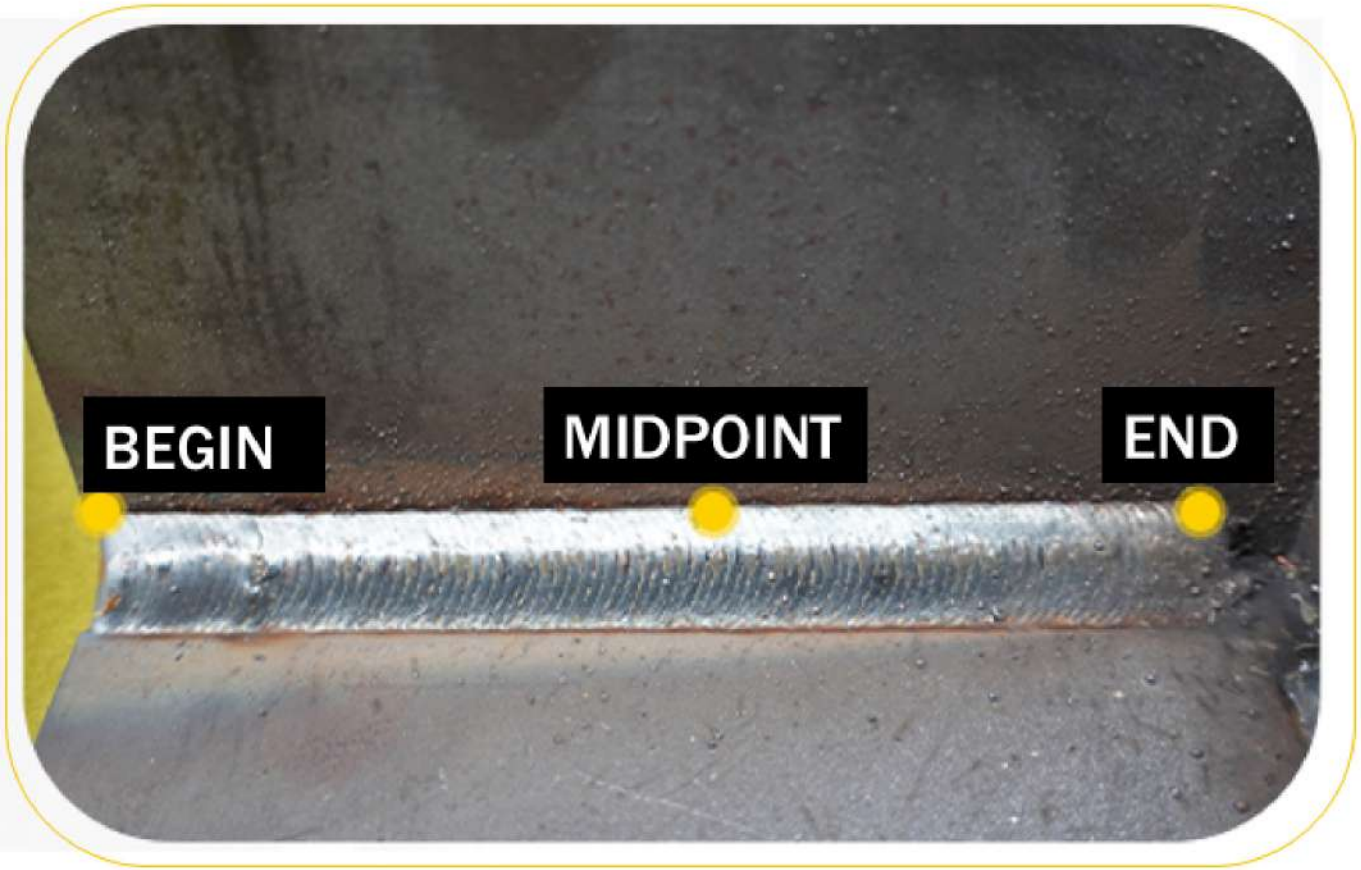



## FULL WELD TYPE IS UNIVERSAL

Simple and complex welding is easy to deal with

Supports a variety of types such as straight weld, arc weld, corner weld and splicing weld.
It can be combined with a variety of oscillating welding methods to easily deal with various welding tasks.




## INTELLIGENT WELD PLANNING

The three-point positioning is used to overcome the welding of medium and thick plates, and the bevel error is compatible with strong

Three - Point Positioning Adaptation

Intelligently calculates bevel trajectory using start, middle, and end points.
Non - Standard Bevel Compatibility

Seamlessly adapts to non - standard bevels (flame/plasma/manual carbon planing).

# Multi layer and multi pass fillet weld (without bevel)

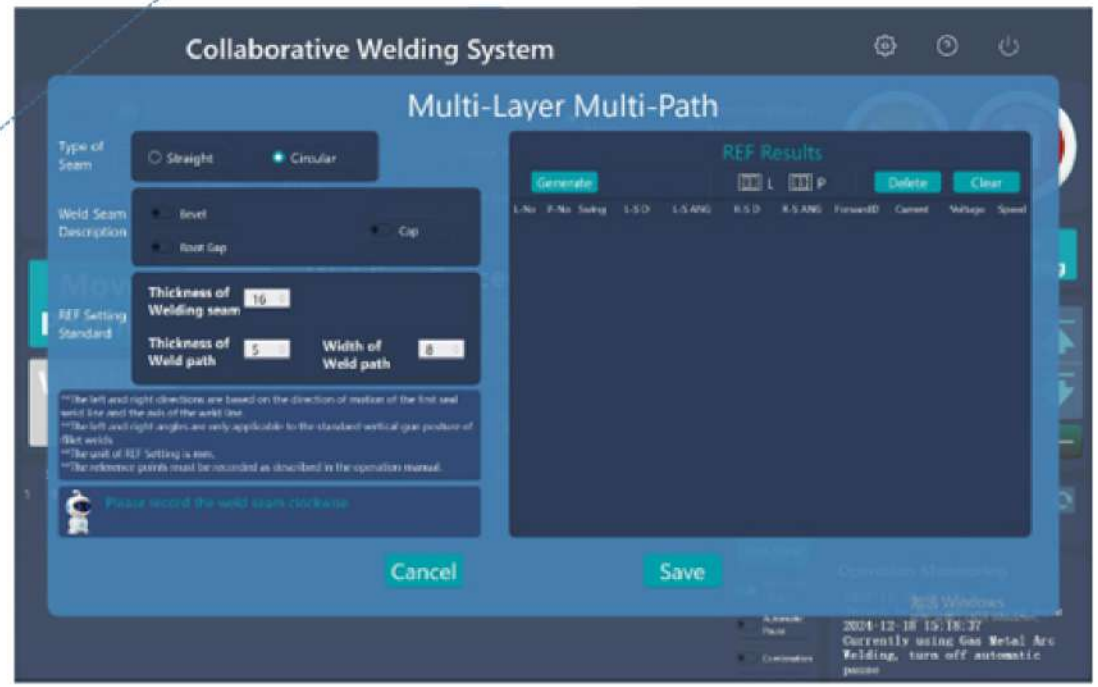
**Teaching points:**

1. Starting point of arc
2. Arc extinguishing point
3. Reference point

# Multi layer and multi pass fillet weld (single-sided groove)

**Teaching points:**

1. Starting point (root of groove)
2. Arc extinguishing point (root of groove)
3. Reference point



# Multi layer and multi pass butt welds (double V-groove)

Teaching points:

1. Starting point (center of the root of the arc plate groove)
2. Arc extinguishing point (center of the root of the arc starting plate groove)
3. Reference point (on the inclined surface of the workpiece groove)

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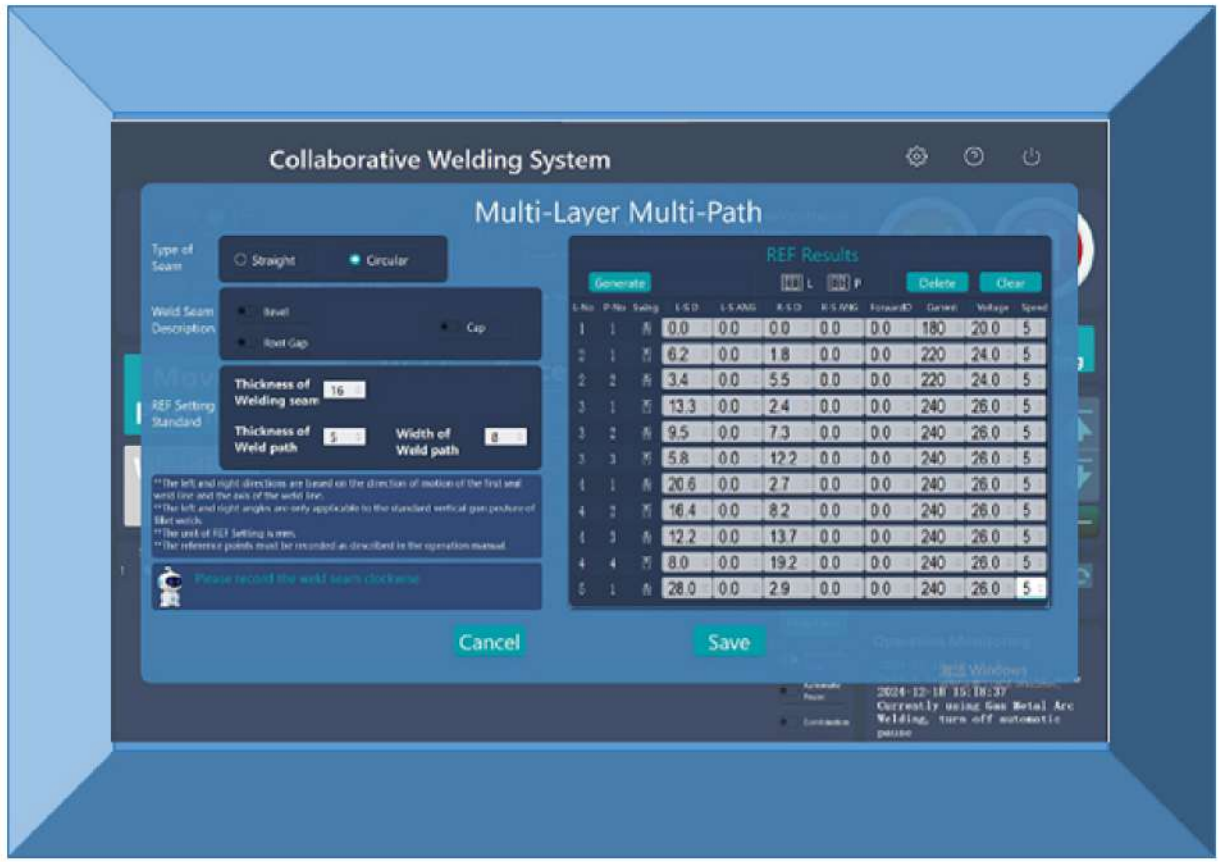



## AUTOMATIC INTELLIGENT WELDING SEAM ARRANGEMENT

Parameters are customizable

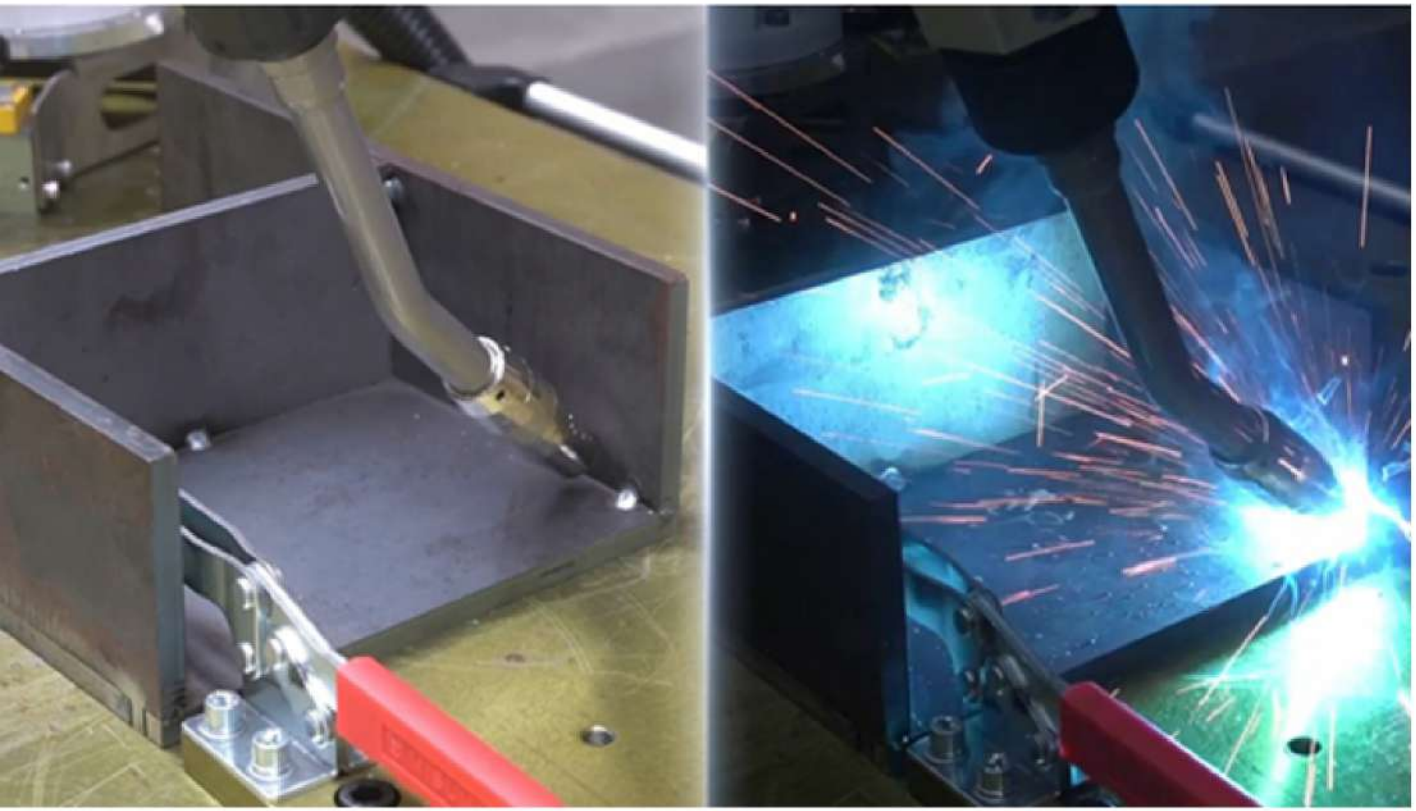
Support automatic layering planning for straight lines/arcs/fillet welds.

Supports multi-layer and multi pass welding of straight line welds, circular arc welds, and groove welds

Customizable weld spacing, swing amplitude, bevel angle, etc.

Supports automatic and manual routing of multi-layer and multi pass welds.

Support intelligent weld bead planning through key parameters.

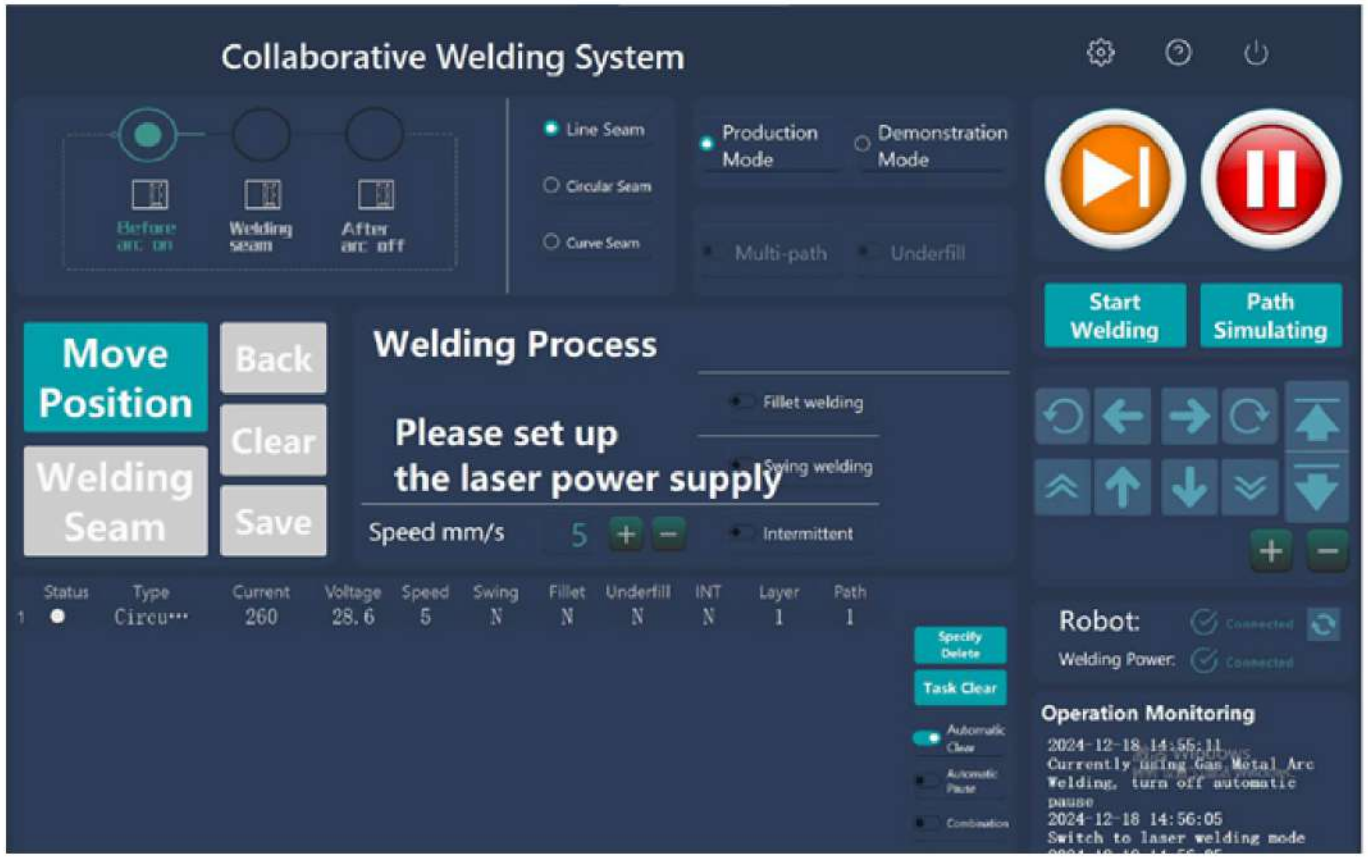


## GUN POSTURE SELF COMPENSATION TECHNOLOGY

Accurate control of offset angle

**Automatic Welding Gun Adjustment**
The system automatically adjusts the welding gun's angle and offset for precise positioning.

**Precision Control via Patented Algorithm**
Original algorithm ensures optimal gun posture and offset, guaranteeing high-quality welding results.




## HUMAN COMPUTER COLLABORATIVE OPERATING SYSTEM

10 minute training, seamlessly connecting complex working conditions

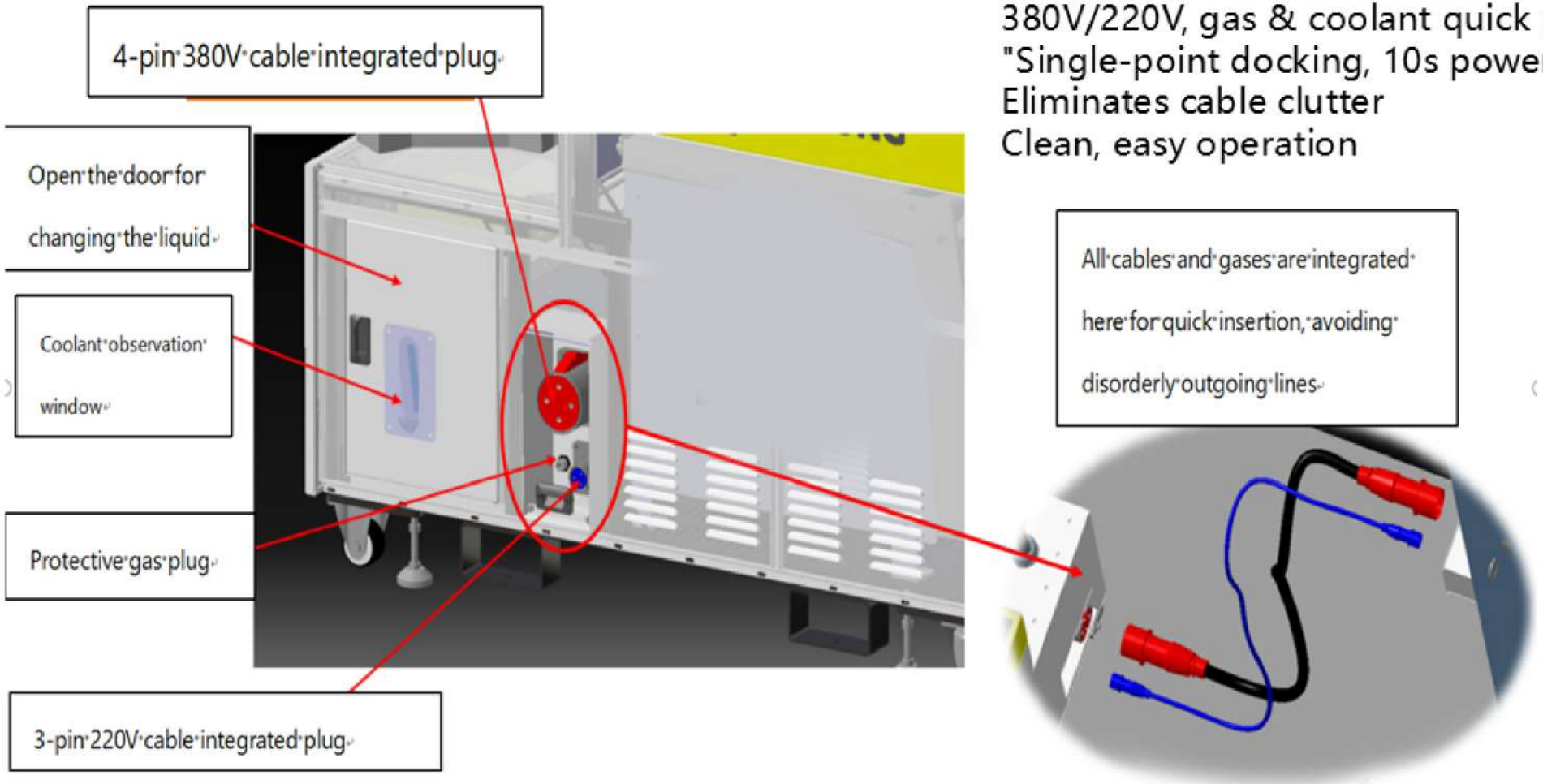
**One - Click Standard Welding**
Enable quick completion of small - batch repetitive welding tasks with just one click.

**Standardization & Inheritance of Welding Processes**
Establish standardized WPS for effective management and utilization of welding processes.

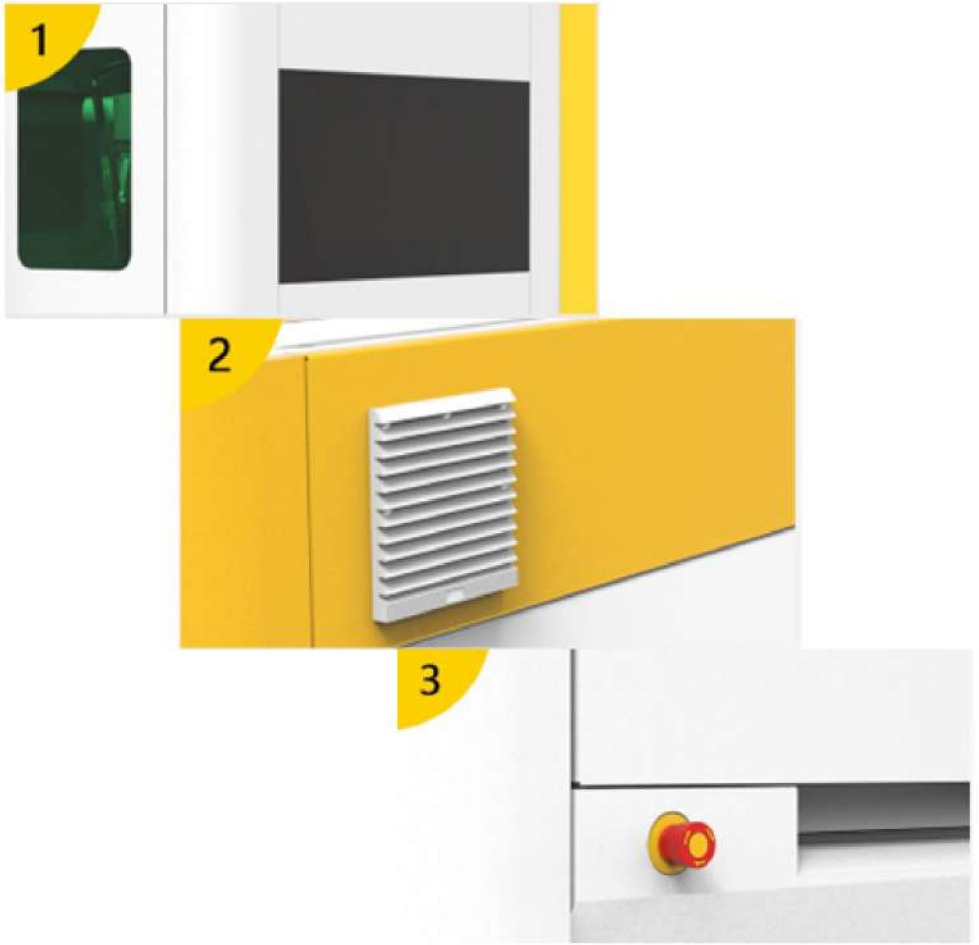
**WPS Process Library with Flexible Parameter**
Built - in expert parameter library for materials like carbon steel, stainless steel, and aluminum alloy, offering reliable welding parameter references.

# AIR CIRCUIT QUICK PLUG + ELECTRONIC

Say goodbye to the chaotic scene




Integrated Power & Quick Connect
380V/220V, gas & coolant quick plug
"Single-point docking, 10s power on"
Eliminates cable clutter
Clean, easy operation



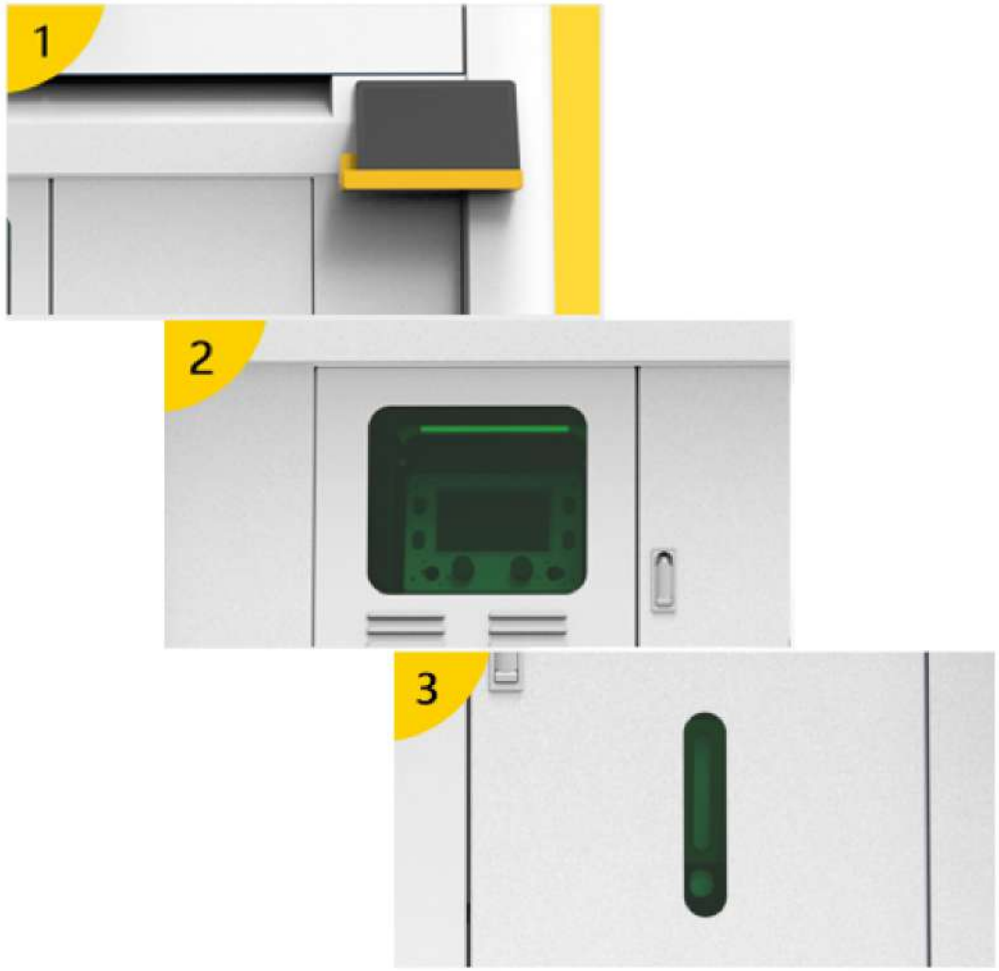

# OD16 level safety cabin

Ensure Full protection for high-risk operations

① Arc protection: double-sided explosion-proof observation windows, allowing for real-time monitoring of the welding process and timely understanding of the operation status.

② Smoke and dust purification system: effectively eliminates welding smoke and dust, keeping the air in the welding room fresh.

③ External emergency stop safety button: One click shutdown in case of emergency to ensure personnel safety.



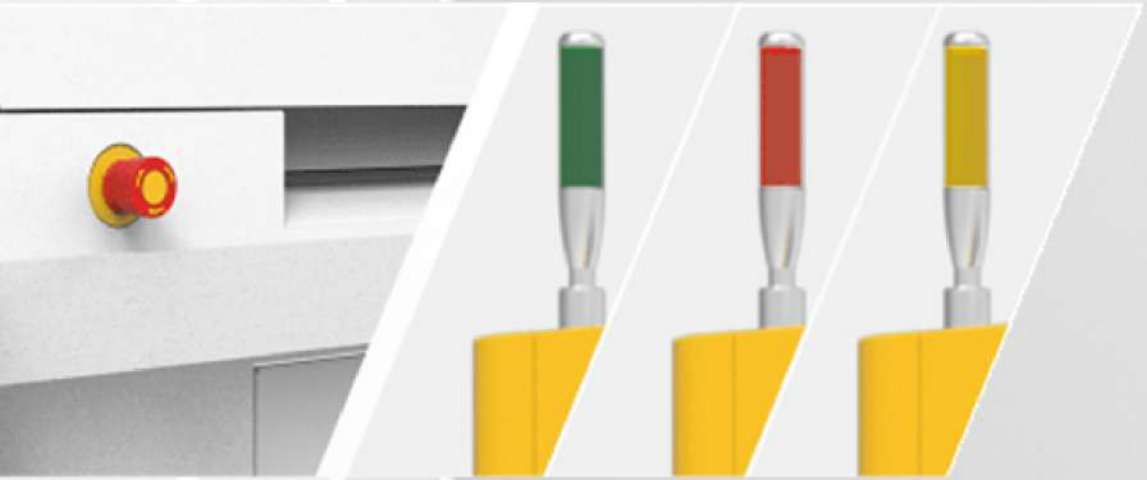

# Panoramic visualization design

The entire process has no blind spots

① Ergonomic Perspective: Optimized with a 15 ° tilt angle for the control panel, standing/sitting posture conforms to ergonomic design

② Welding machine status window: Built in high-definition high-temperature resistant glass, real-time monitoring of arc stability and wire feeding mechanism action

③ Coolant observation window: with scale markings and level sensor



# Multiple safety interlocks

① External emergency stop button
Double circuit design with over 10000 units, response time<50MS)

② Three color light status warning
(Real time display of device operation mode in red/yellow/green)

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# Strong compatibility-
# Meet welding/cutting requirements

Multiple professional welding equipment such as gas shielded welding, Single/double pulse gas shielded welding, Argon arc welding, laser welding, plasma cutting machine, etc. can be selected to meet the diverse needs of different industries and application scenarios, achieving a one-stop professional welding solution.

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02

PART TWO

# Product Parameters

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# RI COBOT ROBOT SERIES WELDING COLLABORATIVE ROBOT WORKSTATION

Minimalist car style collaborative robot

## Technical parameters of robotic arm

| Model | RI-WD_TR | RI-WD_TR |
|---|---|---|
| Robot arm model | RI3 | RI5 |
| Weight of arm | 15KG | 22KG |
| Operating radius | ≤622mm | ≤922mm |
| Maximum load capacity | 3KG | 5KG |
| Repeatability | ±0.02 | ±0.02 |
| Typical TCP speed | 1m/s | 1m/s |
| Number of motion axes | 6axes | 6axes |
| Operation temperature | 0-45℃ | 0-45℃ |
| Basic functions | Circumferential welding; Swing welding;Intermittent welding; Fillet welding, multi-pass welding | |

Technical parameters of workbench

| Model | Small car collaborative robot |
|---|---|
| Workbench weight | 240KG (Excluding gas cylinders) |
| Dimensions (m) | 1.6*0.6*0.9*1.7(Height of gas cylinder included) |
| Maximum homework radius | 9+2=11m |
| Six-dimension force sensor | It can significantly enhance its perception ability, operational accuracy, and adaptability, making it perform more flexible and tactile feedback similar to human arms in complex tasks, greatly improving human-machine collaboration efficiency |

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# RI COBOT ROBOT series welding collaborative robot workstation

•Technical parameters of robotic arm

| Model | | | | |
|---|---|---|---|---|
| Robot arm model | RI3 | RI5 | RI16 | RI10 |
| The weight of the | 15KG | 22KG | 40KG | 40KG |
| Operating radius | ≤622m | ≤922m | ≤1034m | ≤1400m |
| Maximum load | 3KG | 5KG | 16KG | 10KG |
| Oepeatability | ±0.02 | ±0.02 | ±0.03 | ±0.05 |
| Typical TCP speed | 1m/s | 1m/s | 1m/s | 1.5m/s |
| Number of motion | 6-axis | 6-axis | 6-axis | 6-axis |
| Operation | 0-45℃ | 0-45℃ | 0-45℃ | 0-45℃ |
| Basic functions | Circumferential welding; Swing welding; Intermittent welding; Fillet welding; | | | |

•Welding machine technical parameters

| Model | |
|---|---|
| Procedure | CO2/MIG/MAG |
| CURRENT | 350A/500A/630A |
| Welding material | Carbon steel, low alloy steel |
| Adapt to board | ≥3mm |
| Weld Type | Flat corner weld/vertical corner weld/lap corner weld/butt groove weld/corner |
| Welding wire type | Solid core welding wire/flux cored welding wire (drum/plate) |
| welding wire | 0.8/1.0/1.2/1.6mm |

•Technical parameters of workbench

| Model | RI-WD_V2 | RI-WD_1CF | RI-WD_2CF | RI-WD_2CH |
|---|---|---|---|---|
| Whole machine | 500KG | 1.3T | 2.5T | 3T |
| Overall dimensions | 1.4*0.95*0.9 | 1.68*1.66*2.71 | 2.66*1.97*3.62 | 2.66*1.97*3.62 |
| Welding platform | 0.85*0.84 | 1.54*0.99 | 1.19*0.97 | 1.19*0.97 |
| Operating height | 0.9m | 0.9m | 0.9m | 0.9m |
| Panel operation | 1.25m | 1.25m/0.72m | 1.5m | 1.5m |
| six-dimension force sensor | It can significantly improve its perception ability, operational accuracy, and adaptability, enabling it to perform in complex tasks.Closer to the flexibility and | | | |
| Multi joint panel bracket | Highly flexible adjustability, supporting height, tilt angle Multi directional adjustments such as horizontal rotation and forward/backward extension make it easier to adjust the screen to the optimal viewing angle | | | |

## Overview

The RI COBOT welding collaborative robot workstation perfectly integrates collaborative robot technology with intelligent welding processes, bringing a revolutionary change to the manufacturing industry. It provides a new, efficient, flexible, and safe automated welding solution, helping enterprises reach new heights in intelligent manufacturing.

## Standard

- Intelligent welding system controller
- Special welding gun (with 5-meter cable)
- Wire feeder (with 5-meter cable)
- Six axis collaborative robot
- Welding power source
- Special control board
- Portable permanent magnet base
- Multi joint panel bracket
- Water cooler

## Optional

- Gas shielded welding
- Single pulse gas shielded welding
- Double pulse gas shielded welding
- Laser welding
- argon arc welding
- Plasma cutting machine
- Other models are quoted based on customer defined models

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03

PART THREE

# Application Scene

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# Widely used Expand application boundaries

Usage Scenarios

Manufacturer: Equipment maker
Material: Q235 steel (12-16mm), plasma cut, spot/fillet welded

Training: Masters weld in 10 mins
Quality: Passes QC (fillet/vertical/multi-pass)
Efficiency: 3-hour daily work, less strain

# Widely Applicable - Easy to operate

**Actual Usage Scene**

Manufacturer: Equipment producer

Material: Q235 steel plate (12 - 16mm), plasma - cut, spot - welded, fillet - welded

Learning Time: Masters start welding within 10 minutes

Weld Quality: Fillet, vertical, multi - layer/multi - pass welds pass QC

Efficiency: Master craftsmen finish daily work in 3 hours, reducing work intensity and health risks

# Widely Applicable - Easy to operate

**Bridge Steel Structure Laminates Welding**

Material: Q235 steel plate (12mm), laser-cut

Process: Cutting, spot welding, fillet welding

Training: Workers start in 10 minutes

Weld Types: Fillet, flat, vertical welds

Quality Check: Process quality dept. inspects

Efficiency: 1 worker handles 3 machines

Application: Used inside bridge boxes/layers, reduces heavy lifting and speeds up production

# Application Scenario - Welding efficiency human-machine collaboration+human-machine separation

**Welding efficiency analysis**

Weld seams 1 and 2 are vertical welding, swinging, with a welding speed of 6 centimeters per minute; Weld seam 3 is a flat weld with a welding speed of 30 centimeters per minute;

Total length of single-sided weld seam;

15 * 2+80=110 centimeters

Robot welding time: 30/6+80/30=7.7 minutes

Manual drag teaching time: 1.5 minutes

Robot moving time: 2 minutes (the time for moving and positioning can be significantly reduced by using a specific car) Per capita can operate 2 robots.

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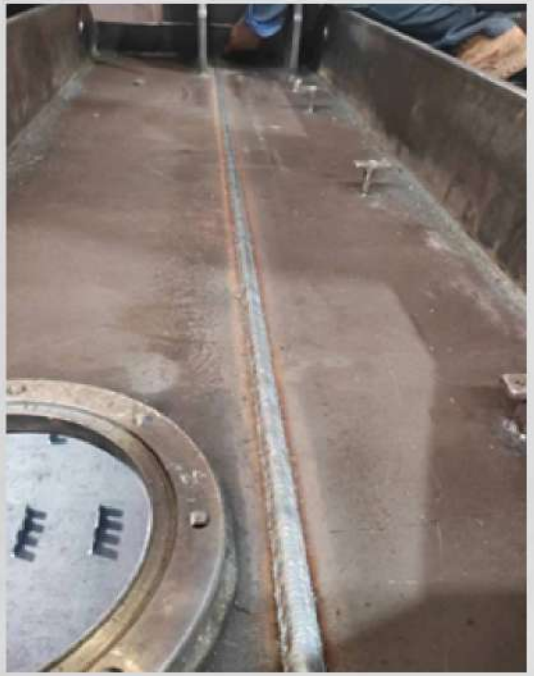
# Application Scenario - Single pass welding

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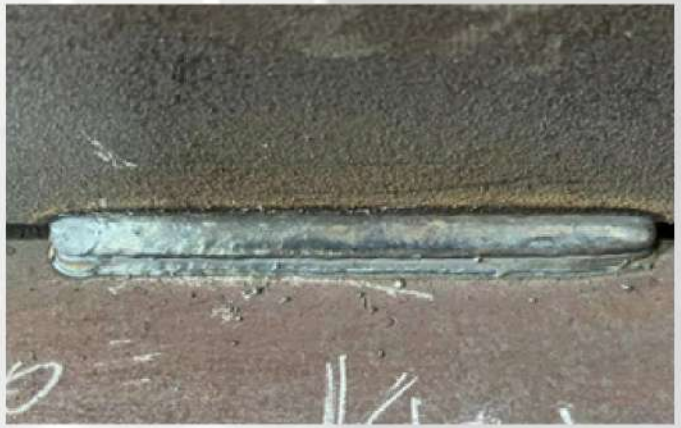
# Application scenario -
# Welding quality (multi-layer and multi pass welding)




# Application Scenarios - Typical Cases

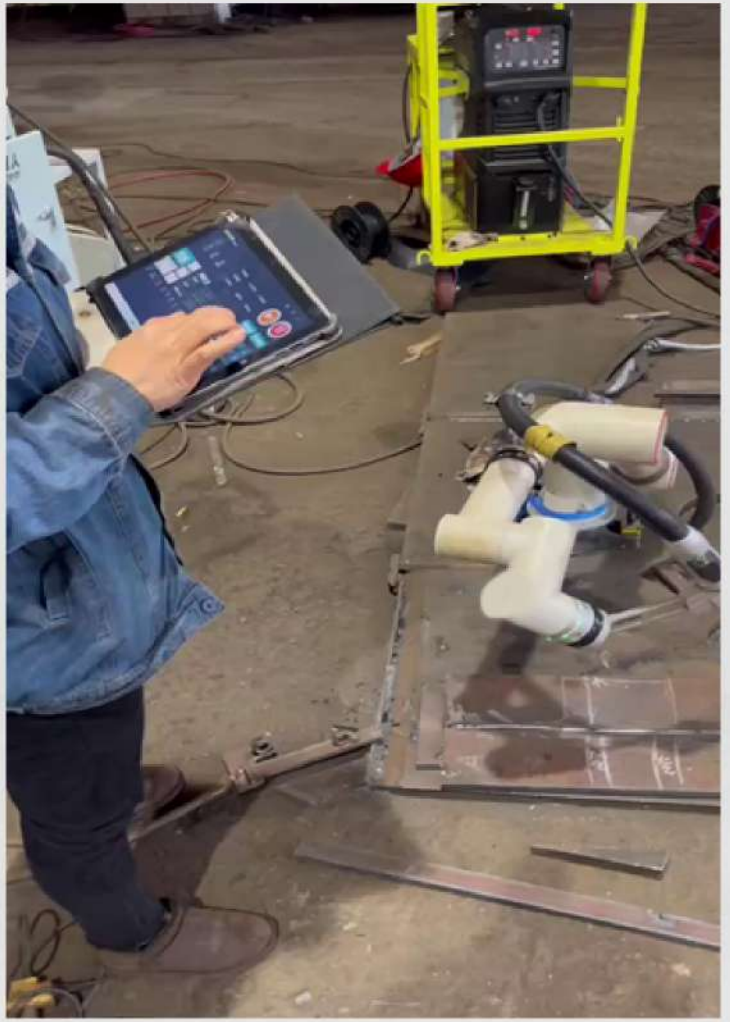
Groove weld seam (air gouging+manual polishing)

Test weld seam(base+fill+cover, solid core welding wire)


Test weld seam (UT inspection OK)

# Application Scenarios - Typical Cases

Multi layer and multi pass welding of butt welds



# Application Scenarios - Typical Cases

Multi layer and multi pass welding of fillet welds with inner and outer corners

Multi layer and multi pass welding of intersecting line welds with a 30 degree climbing slope

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robotindustries.com

sales@robotindustries.com