

System description

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ABB Automation Technology Products AB

Arc Welding & Application Equipment

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Sverige

LIST OF CONTENTS

	Page
1 System description	5
1.1 General	5
1.2 Welding robot system	6
1.3 Robot with welding equipment	7
1.4 Control cabinet adapted to suit peripheral equipment	8
1.5 Integral welding power supply	10
1.6 Separate welding power supply	10
1.7 Operator's panel	11
1.8 Positioner IRBP	12
1.9 Travel track for robots	14
1.10 Personal safety equipment	15

1 System description

1.1 General

This document describes the standard range of arc welding robot systems supplied by ABB Automation Technology Products AB.

The document is included in the System Manual (binder) that is supplied together with our Welding Robot Systems. The system manual corresponds to the system ordered by the customer and includes detailed descriptions of the constituent products.

1.2 Welding robot system

The welding robot system is delivered in sections as standard. All the accessories included in the delivery scope are mounted on the respective sections.

All the constituent parts that can be included in a welding robot system are described below:

Figure 1 shows an example of what the system can look like:

- 1 Positioner
 - 2 Personal safety equipment
 - 3 Robot with safety bracket, wire feed, welding gun, and hose package mounted
 - 4 Welding power source
 - 5 Control cabinet
 - 6 Operator panel
 - 7 Travel track, (not shown in this figure, see Figure 7)
- Accessories: cooling unit, mechanical spatter cleaning device, wire cutter, unit to control TCP (Tool Centre Point), and seam finder

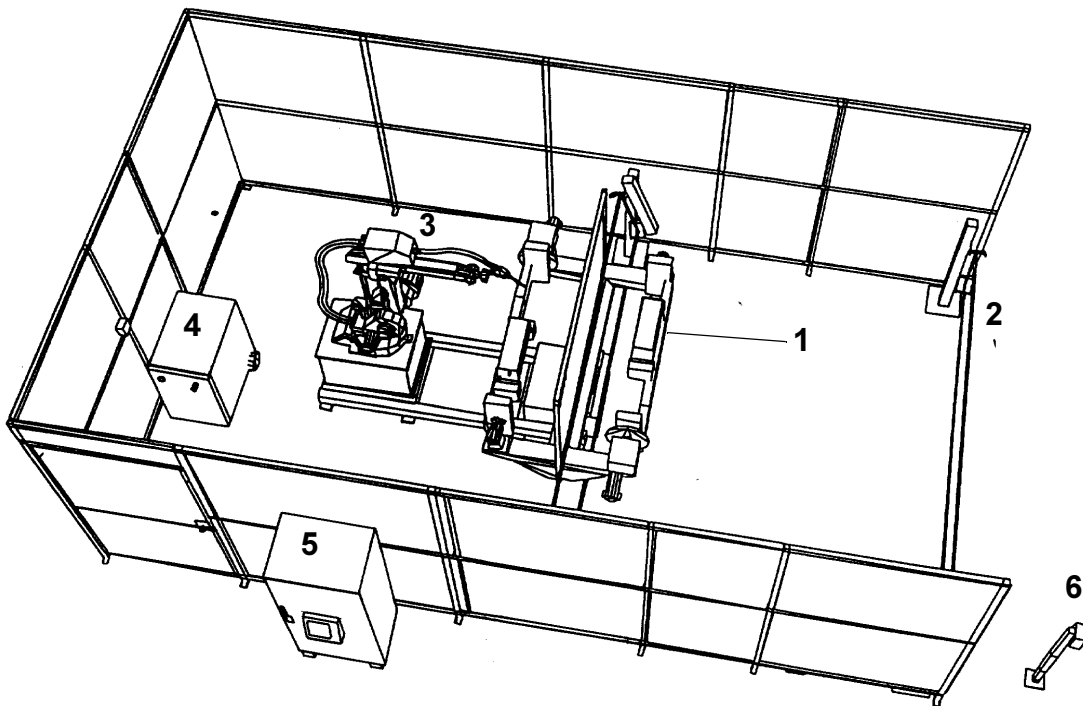


Figure 1 Complete welding robot system

1.3 Robot with welding equipment

Robots IRB1400 or IRB2400 are normally used in an arc welding robot system. See the description of the robot in the “Product manual IRB1400” or “Product manual IRB2400”. Other types of robot can be included in certain systems, for example for handling or machining.

In an arc welding robot system, the robot is equipped with welding equipment consisting of the following units:

- 1 Welding gun
- 2 Safety bracket
- 3 Wire feed equipment
- 4 Hose package
- 5 Welding power source

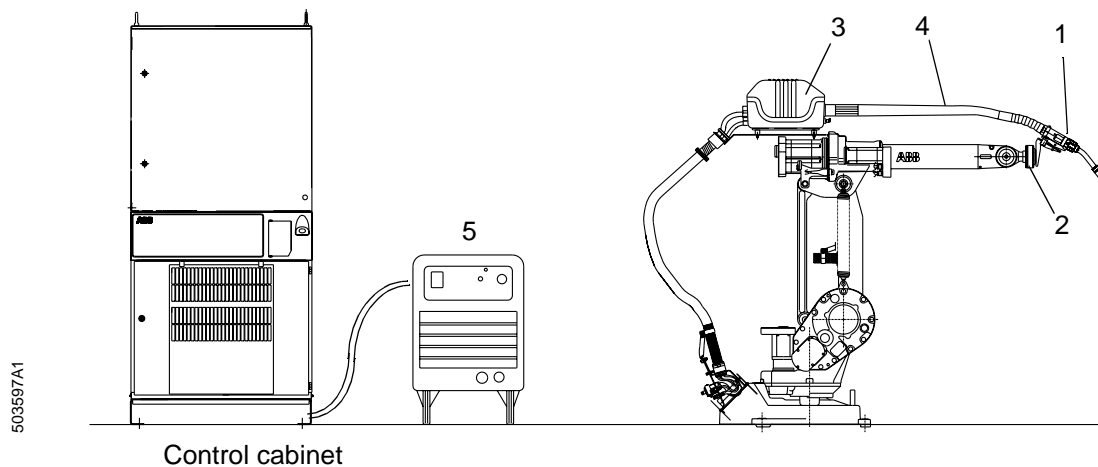


Figure 2 IRB1400 with welding equipment fitted

1.4 Control cabinet adapted to suit peripheral equipment

The control cabinet is used to control the robot, welding equipment, positioner, and all the other peripheral equipment. In certain applications there is a superordinate computer system that controls one or more robot systems. The control cabinet for the arc welding robot system comprises the following parts:

- 1 Control cabinet S4C-plus
- 2 Upper cabinet with adaptation modules for peripheral equipment

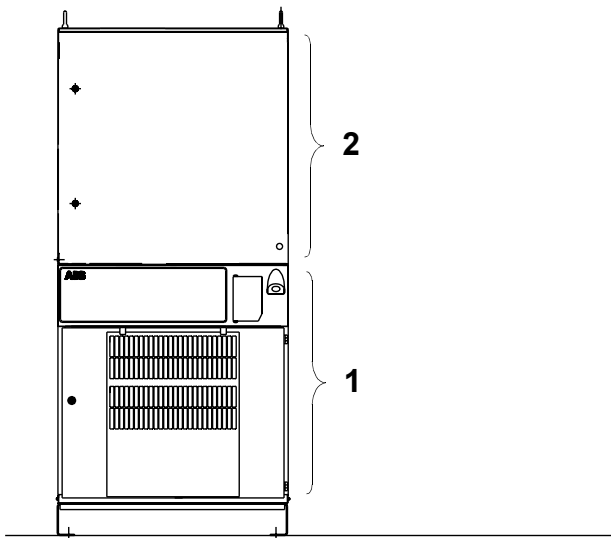


Figure 3 Control cabinet

An interface is included for connecting the peripheral equipment to the control cabinet. It has been designed and fitted into an encapsulation (upper cabinet) fitted on top of the control cabinet. The upper cabinet contains adaptation modules for:

- Positioner
- Welding equipment
- Operator communications
- Personal safety equipment

1.5 Integral welding power source

A welding power source that is mechanically integral with the control cabinet can be selected as a standard alternative.

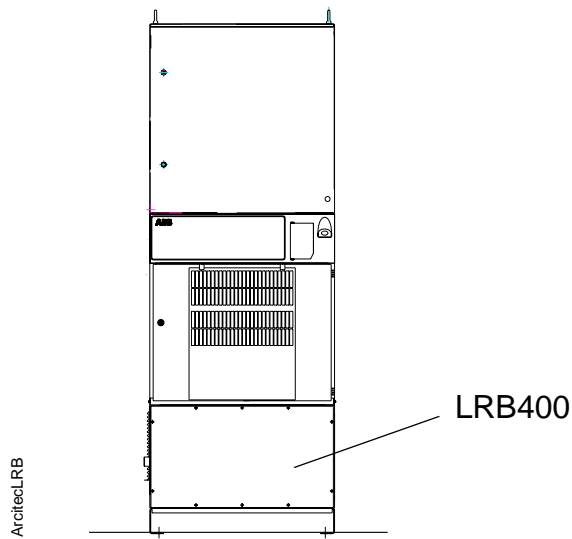


Figure 4 Control cabinet with power source LRB400

1.6 Separate welding power source

The following standard alternative power sources can be selected:

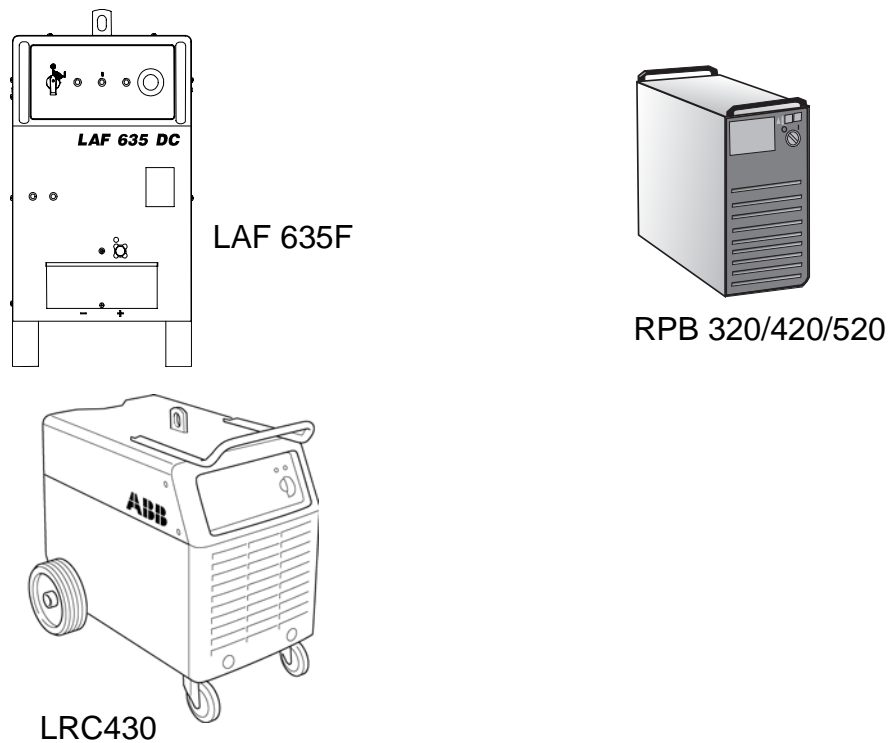
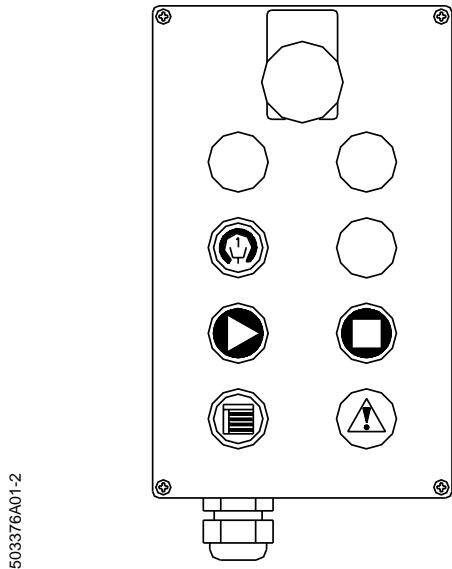


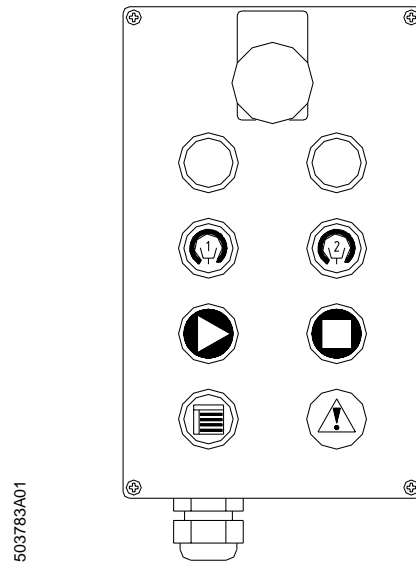
Figure 5 Power sources LAW, RPA, LRC

1.7 Operator panel

The operator communicates with the arc welding robot system via the operator panel on which there is a number of push-button functions. The following operator panels are available as standard options:



Operator panel 1 op ready



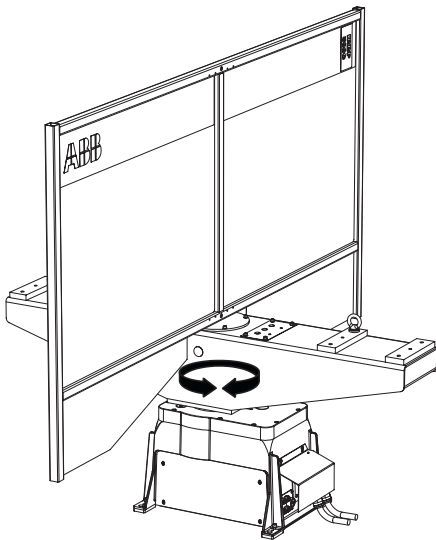
Operator panel 2 op ready

Figure 6 Operator panel

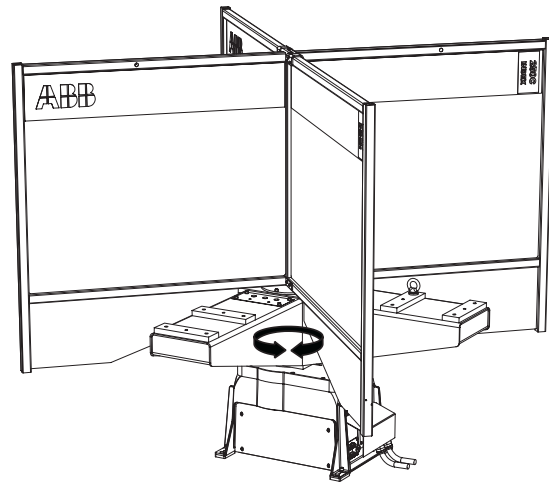
1.8 Positioner IRBP

A positioner is used to orientate the workpiece to an optimal position for the weld joint and the robot. The positioner IRBP is equipped with maintenance-free AC motors with electromechanical brakes.

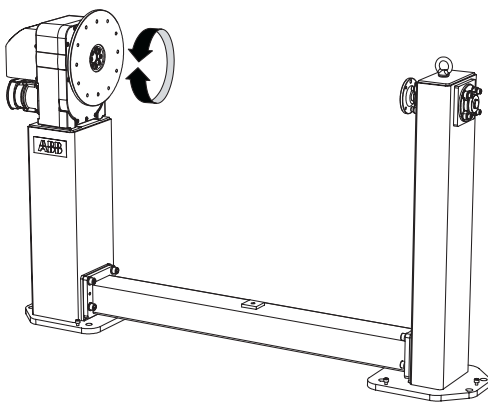
The following types of positioner are available as standard alternatives:



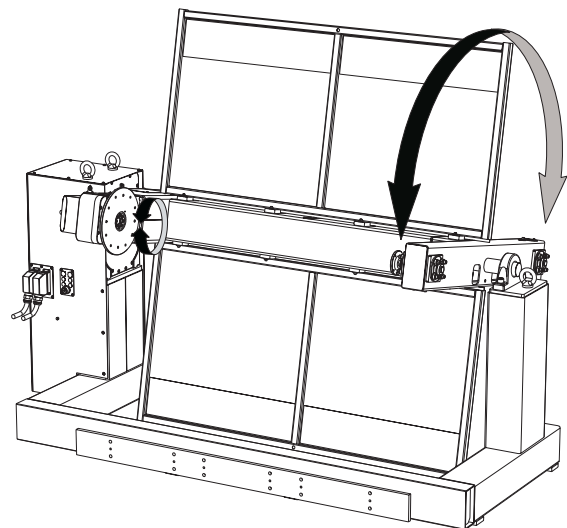
IRBP500/1000C



IRBP250/500C Index

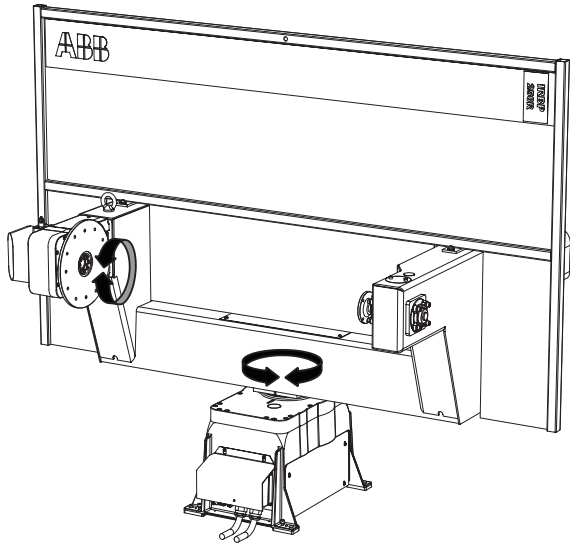


IRBP250/500/750/2000L

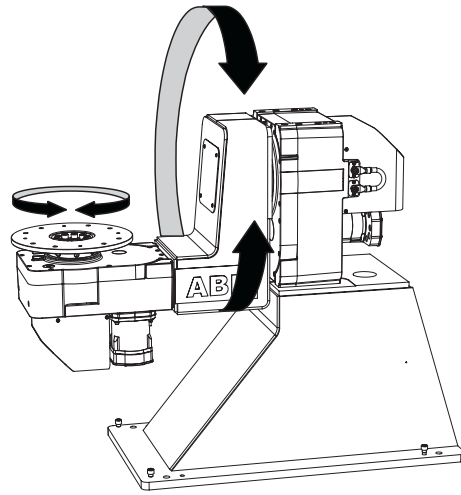


IRBP250/500/750K

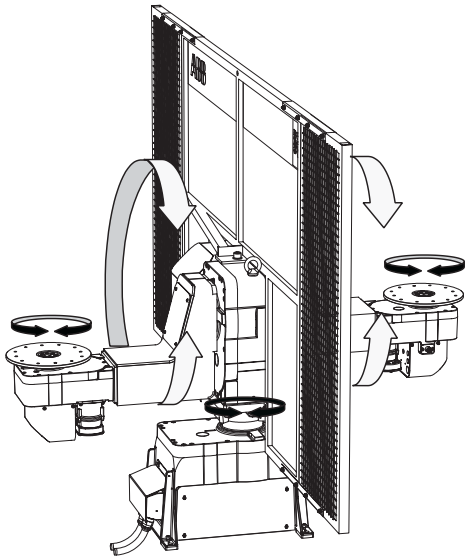
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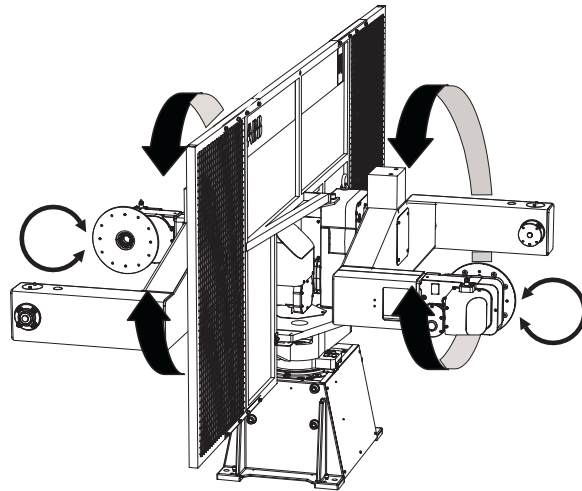
IRBP250/500/750R



IRBP250/500/750A



IRBP250/500/750B



IRBP250/500D

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1.9 Travel track for robots

To be able to position the robot between different workstations or inside a large working area, the robot can be mounted on a travel track.

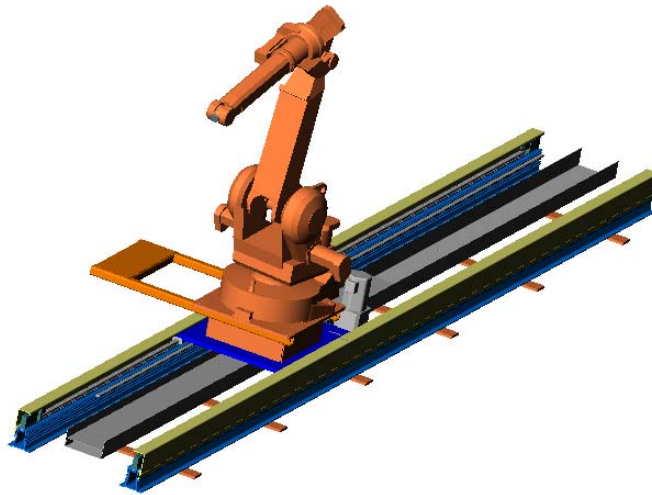


Figure 7 Travel track

The following lengths of travel track are available:

2.7m	8.7m
3.7m	9.7m
4.7m	10.7m
5.7m	11.7m
6.7m	12.7m
7.7m	

1.10 Safety equipment

In order for a person to work safely with an arc-welding robot station requires the system to be equipped with a number of safety components, which are integrated in to the control cabinet's safety system, see the "Product manual IRB Safety equipment".

The following safety components are available as standard options:

- Working area surveillance using light barriers
- Time resetting unit (gives safe resetting of the light barriers)
- Working area indication for
 - robot or conveyor
 - positioner
- Gate switch
- Time resetting unit for the gate switch
- Adapter unit (safety card SIB) for the safety equipment

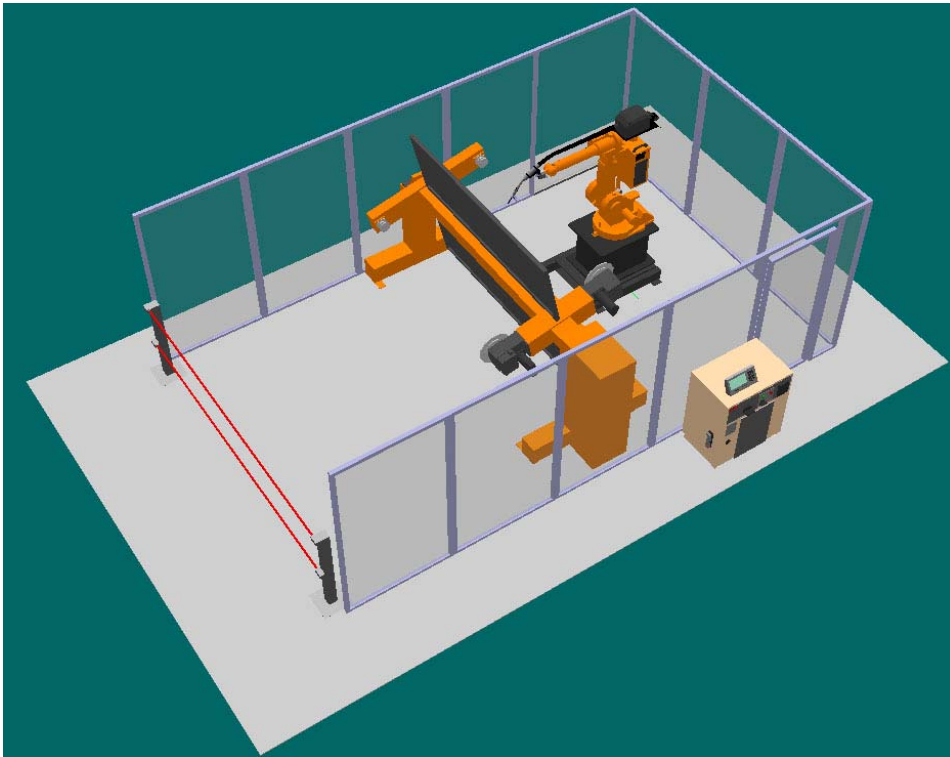


Figure 8 Welding robot station with the safety equipment

