FlexArc® – Robotic Arc-Welding Cells
Modular solutions to meet your requirements
A new dimension in Robotic Arc Welding

Optimal productivity requires equipment that combines effective operation with maximum cost-efficiency. Modular, standardized robot cells are an established way of providing this type of solution.

FlexArc® - A New Generation of Welding Cells
FlexArc® is a new generation of standardized welding cells, which are designed to deliver cost-effective, state-of-the-art robotic welding operations. All cells deliver maximum performance whilst making optimum use of available space. The basic options feature either a single robot, or two robots with Multi-Move, a choice of ABB positioners from our extensive range and welding equipment to suit your needs.
All equipment is installed on the common platform which provides for easy relocation within the production facilities. The cells are equipped with centralized power distribution - all components such as robots, positioners, welding equipment, lighting and other peripheral devices are supplied from one source; this means that only one power supply cable for the whole cell is necessary.

FlexArc® Advantages
- Low investment cost
- Intuitive graphical user interface for operators
- Reduced downtime thanks to improved error handling
- Higher quality through automatic production and process monitoring
- Improved cost-efficiency thanks to global standardization
- Short delivery times
- Proven two-station principle (loading and welding)
- Off-line programming for fast and easy implementation
- Improved workspace safety

Boosting your workflow
FlexArc® features the FlexPendant graphical user interface, which not only provides operators with an overview of the status of the cell, but also important quality and production data. The interface allows the operator to communicate effectively with all of the functions within a cell and access all information regarding cell performance, including the status of the robot and controller along with other functions such as roll-down door control.
With minimum training, the user can organize the welding operation into a series of work steps. The operator has all the information necessary to keep track of the number of parts produced, cycle times, the number of welds produced and the individual weld length.
Easy implementation makes the FlexArc® standard approach the natural choice for “plug-and-produce” operations.

FlexArc® is the Most Effective Solution in your industry
- General industry:
  - Door modules, grids, switch boards, printing units, steel furniture, shopping carts, racks, compressors, lawnmowers, two wheelers and construction and agricultural equipment components
- Automotive industry:
  - Cross members, engine cradles, door modules, exhaust systems, brake components, car seats, wheels, axles, dash boards and more
Virtual FlexArc: The ultimate productivity tool

A virtual replica of each FlexArc cell is available for free at www.abb.com/robotics

Virtual FlexArc® Advantages
- Train operators on the virtual cell without losing valuable production time on the real cell
- Generate programs off-line before your new system arrives
- Generate programs for new parts while the real cell continues to produce uninterrupted
- Design the weld fixture around an optimized robot welding program
- Verify that tooling provides proper weld torch access to the weld seam prior to building the weld fixture

Tools for Quality and Increased Uptime

BullsEye® - Tool Calibration and Automated Check
The patented BullsEye® allows accurate definition and automatic updating of the Tool Center Point (TCP) and the torch angle. The BullsEye® operates in two modes – “Set up mode” (to define a new tool in the system) and “quick check” (a periodic check of the tool – the frequency of checking is specified within the program and automatically updated when a deviation is found). These checks/updates result in an improvement in the quality of welded parts and a significant increase in productivity of the cell.

TCP = Tool Center Point - a reference point where the welding wire should touch the workpiece. The programmed path is the path of the TCP

Production Monitoring
The robot system automatically monitors weld lengths and number of welds made on a component and reports with a screen message and a warning light if a part was not produced according to the original specification. This enables the operator to take immediate action to repair or reject the faulty component.

Navigator
The Navigator functionality includes cell calibration for off-line generated programs, tooling calibration (including integrated co-ordinated measurement functionality) and cell self-diagnostics.

Integrated Error Resolution
There is no need to enter the cell when a weld error occurs. At the push of a button the robot will go to the service pocket in the guard, where the operator can service the welding gun e.g. changing the contact tip etc. This saves valuable production time and gives an increase in productivity.
Standard models of FlexArc cells

### Cells based on R-type positioners

<table>
<thead>
<tr>
<th>FlexArc</th>
<th>Version</th>
<th>Robot</th>
<th>Positioner</th>
<th>Payload</th>
<th>Distance in mm (between head and tailstock)</th>
<th>Max. turning diameter in mm</th>
<th>Station footprint (L x W x H) with a light curtain</th>
<th>Station footprint (L x W x H) with a roll-down door</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-300</td>
<td>Single/Multi</td>
<td>1,2</td>
<td>IRBP R-300</td>
<td>300 kg</td>
<td>1600</td>
<td>1000</td>
<td>6200 x 2800 x 2200</td>
<td>5600 x 2800 x 2200</td>
</tr>
<tr>
<td>R-600</td>
<td>Single/Multi</td>
<td>1,2</td>
<td>IRBP R-600</td>
<td>600 kg</td>
<td>3900</td>
<td>1200</td>
<td>6800 x 2800 x 2200</td>
<td>5600 x 2800 x 2200</td>
</tr>
<tr>
<td>R-1000</td>
<td>Single/Multi</td>
<td>1,2</td>
<td>IRBP R-1000</td>
<td>1000 kg</td>
<td>5200</td>
<td>1200</td>
<td>8000 x 3500 x 2200</td>
<td>5600 x 2800 x 2200</td>
</tr>
</tbody>
</table>

### Cells based on K-type positioners

<table>
<thead>
<tr>
<th>FlexArc</th>
<th>Version</th>
<th>Robot</th>
<th>Positioner</th>
<th>Payload</th>
<th>Distance in mm (between head and tailstock)</th>
<th>Max. turning diameter in mm</th>
<th>Station footprint (L x W x H) with a light curtain</th>
<th>Station footprint (L x W x H) with a roll-down door</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-300</td>
<td>Single/Multi</td>
<td>1,2</td>
<td>IRBP K-300</td>
<td>300 kg</td>
<td>4000</td>
<td>1200</td>
<td>6500 x 4200-5700 x 2200</td>
<td>4900 x 4200-5700 x 2200</td>
</tr>
<tr>
<td>K-600</td>
<td>Single/Multi</td>
<td>1,2</td>
<td>IRBP K-600</td>
<td>600 kg</td>
<td>4000</td>
<td>1600</td>
<td>6200 x 4800 x 2200</td>
<td>4900 x 5200 x 4800</td>
</tr>
<tr>
<td>K-1000</td>
<td>Single/Multi</td>
<td>1,2</td>
<td>IRBP K-1000</td>
<td>1000 kg</td>
<td>8000</td>
<td>1600</td>
<td>6500 x 6000 x 2200</td>
<td>4900 x 5200 x 6000</td>
</tr>
<tr>
<td>K-1500</td>
<td>Triple</td>
<td>3</td>
<td>IRBP K-1500</td>
<td>1000 kg</td>
<td>8000</td>
<td>1600</td>
<td>7000 x 6000 x 2200</td>
<td>4900 x 5200 x 6000</td>
</tr>
</tbody>
</table>

### Cells based on C-type positioners

<table>
<thead>
<tr>
<th>FlexArc</th>
<th>Version</th>
<th>Robot</th>
<th>Positioner</th>
<th>Payload</th>
<th>Distance in mm (between head and tailstock)</th>
<th>Max. turning diameter in mm</th>
<th>Station footprint (L x W x H) with a light curtain</th>
<th>Station footprint (L x W x H) with a roll-down door</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-500</td>
<td>Single/Multi</td>
<td>1,2</td>
<td>IRBP C-500</td>
<td>500 kg</td>
<td>1000</td>
<td>500</td>
<td>6000 x 2800 x 2200</td>
<td>5300 x 2800 x 2200</td>
</tr>
<tr>
<td>C-1000</td>
<td>Single/Multi</td>
<td>1,2</td>
<td>IRBP C-1000</td>
<td>1000 kg</td>
<td>1000</td>
<td>1000</td>
<td>6800 x 3500 x 2200</td>
<td>5300 x 2800 x 2200</td>
</tr>
</tbody>
</table>

### Cells based on B-type positioners

<table>
<thead>
<tr>
<th>FlexArc</th>
<th>Version</th>
<th>Robot</th>
<th>Positioner</th>
<th>Payload</th>
<th>Distance in mm (between head and tailstock)</th>
<th>Max. turning diameter in mm</th>
<th>Station footprint (L x W x H) with a light curtain</th>
<th>Station footprint (L x W x H) with a roll-down door</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-250</td>
<td>Single</td>
<td>1</td>
<td>IRBP B-250</td>
<td>250 kg</td>
<td>900</td>
<td>1000</td>
<td>6700 x 2320 x 2200</td>
<td>On request</td>
</tr>
<tr>
<td>B-500</td>
<td>Single</td>
<td>1</td>
<td>IRBP B-500</td>
<td>500 kg</td>
<td>1000</td>
<td>1450</td>
<td>7700 x 4400 x 2200</td>
<td>6900 x 4400 x 2200</td>
</tr>
<tr>
<td>B-750</td>
<td>Single/Multi</td>
<td>1,2</td>
<td>IRBP B-750</td>
<td>750 kg</td>
<td>1000</td>
<td>1450</td>
<td>7700 x 4400 x 2200</td>
<td>6900 x 4400 x 2200</td>
</tr>
</tbody>
</table>

### Cells based on D-type positioners

<table>
<thead>
<tr>
<th>FlexArc</th>
<th>Version</th>
<th>Robot</th>
<th>Positioner</th>
<th>Payload</th>
<th>Distance in mm (between head and tailstock)</th>
<th>Max. turning diameter in mm</th>
<th>Station footprint (L x W x H) with a light curtain</th>
<th>Station footprint (L x W x H) with a roll-down door</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-300</td>
<td>Single</td>
<td>1</td>
<td>IRBP D-300</td>
<td>300 kg</td>
<td>1600</td>
<td>1200</td>
<td>6800 x 4200 x 2200</td>
<td>4900 x 4200 x 2200</td>
</tr>
<tr>
<td>D-500</td>
<td>Single</td>
<td>1</td>
<td>IRBP D-500</td>
<td>600 kg</td>
<td>2000</td>
<td>1200</td>
<td>7400 x 4800 x 2200</td>
<td>4900 x 4200 x 2200</td>
</tr>
</tbody>
</table>

**FlexAarc® - A New Generation of Welding Cells**

**Fle XA r c ® A d va n t a g e s**

- Short delivery times
- Improved cost-efficiency thanks to global standardization
- Higher quality through automatic production and process
- Reduced downtime thanks to improved error handling
- Intuitive graphical user interface for operators

**FlexAarc® features the FlexPendant graphical user interface,** which not only provides operators with an overview of the status of the cell, but also important quality and production data. The interface allows the operator to communicate effectively with the robot system, which automatically monitors weld lengths and number of welds made on a component and reports with a screen. The robot system automatically monitors seam prior to building the weld fixture and robot subsequence. The interface also gives an increase in productivity.

**Production Monitoring**

- To tool Center Point - a reference point where the welding torch should touch the workpiece. The programmed path is the wire should touch the workpiece. The programmed path is the wire should touch the workpiece. The programmed path is the wire should touch the workpiece.
- Error handling through improved error handling.
- Door modules, grids, switch boards, printing units, steel furniture, shopping carts, racks, compressors, lawnmowers, two wheelers and more.
- Higher quality through automatic production and process.

**FlexAarc® - An Advanced Approach**

- Easy implementation makes the FlexAarc® standard approach the natural choice for “plug-and-produce” operations.
- Of line programming for fast and easy implementation.
- Proven two-station principle (loading and welding).

**Boosting your work flow**

- With minimum training, the user can organize the welding operation.
- Generate programs for new parts while the real cell continues to run.
- Reducing downtime thanks to improved error handling.
- Door modules, grids, switch boards, printing units, steel furniture, shopping carts, racks, compressors, lawnmowers, two wheelers and more.

**Fle XA r c ® Fe at u res**

- FlexAarc® features the FlexPendant graphical user interface, which not only provides operators with an overview of the status of the cell, but also important quality and production data.
- Improved workspace safety
- Off-line programming for fast and easy implementation
- Proven two-station principle (loading and welding)
- General industry:
## Standard configuration

| Platform, Fencing with the torch service window, service door, robots, pedestals, positioner, controllers, power distribution panel |
| Welding torch |
| Operator panel |
| Safety equipment PNOZ Multi including Vertical Light Curtains |

## Optional configuration

| Robot |
| IRB 1600, 1600 ID, 2600, 2600 ID, 4600 |
| Welding power sources |
| According to end-user requirements |
| Welding torches |
| According to end-user requirements |
| Software |
| FlexPendant - Graphical User Interface for operators |

## Safety

| Horizontal light curtains |
| Roll-down door, Two-Hand control |

## Tool service

| Service center for torches |
| Torch cleaner |

## Others

| PLC, OP Panels |
| Manual Jog |
| Full Air and Gas distribution panel |

## Production monitoring

| Full floor coverage |
| Programming platform |

## Coverage

| Coverage of welding station only |
| Coverage of welding station and load/unload station |
Flex Arc® – Robotic Arc-welding Cells
Modular solutions to meet your requirements

Contact us

ABB, s.r.o.
Stetkova 1638/18
140 00 Praha 4
E-mail: FlexArc@cz.abb.com
www.abb.com

Standard configuration
- Platform, Fencing with the torch service window, service door, robots, pedestals, positioner, controller, power distribution panel
- Welding power source
- Welding torch
- Operator panel
- Safety equipment PNOZ Multi including Vertical Light Curtains
- Software
  - FlexPendant - Graphical User Interface for operators
  - Welding error handler
  - Production monitoring
  - Production manager
  - Navigator

Optional configuration
- Robot
  - IRB 1600, 1600 ID, 2600, 2600 ID, 4600
- Welding power sources
  - According to end-user requirements
- Welding torches
  - According to end-user requirements
- Others
  - PLC, OP Panels
  - Manual Jog
  - Full Air and Gas distribution panel
  - Full floor coverage
  - Programming platform

Safety
- Horizontal light curtains
- Roll-down door, Two-Hand control
- Tool service
- Service center for torches
- Torch cleaner
- BullsEye®: TCP calibration
- Wire cutter
- Seam Finding
- Smart Arc, WeldGuide III
- Fume extraction hoods
- Coverage of welding station only
- Coverage of welding station and load/unload station