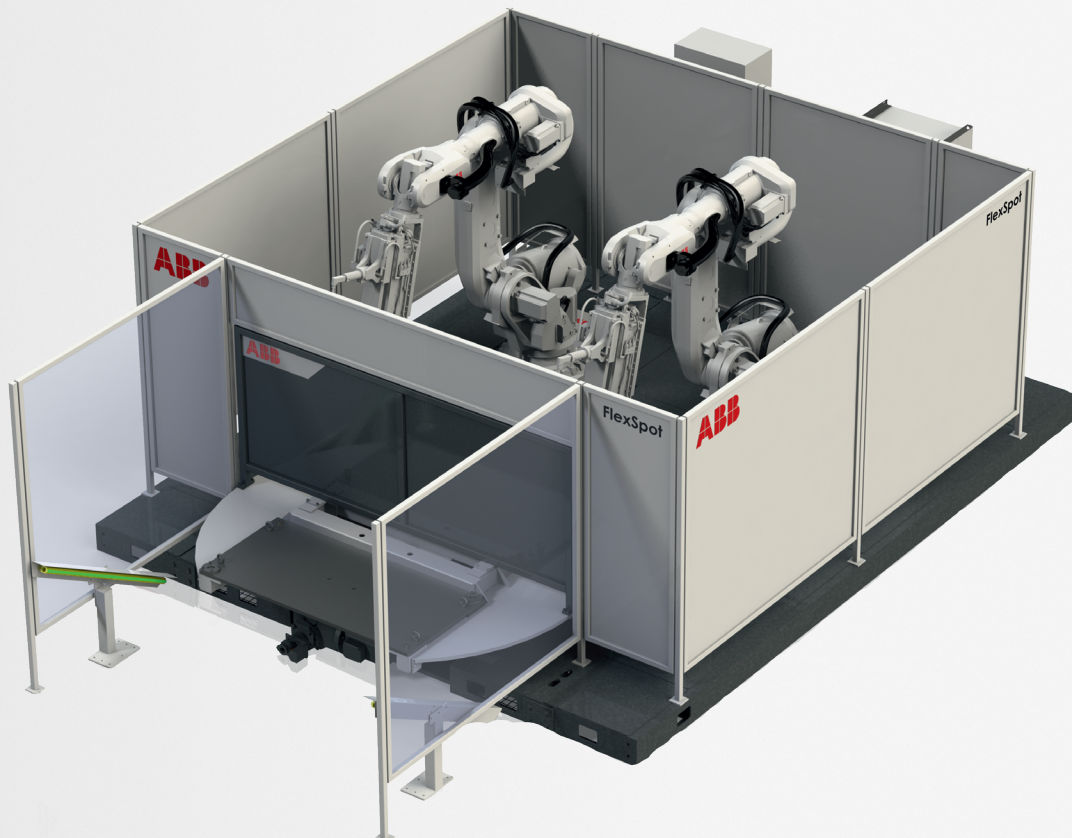


ROBOTICS

# FlexSpot

Modular robotic spot-welding cells



# FlexSpot

## A new dimension in robotic spot-welding

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

### FlexSpot – a new generation of spot welding cells

FlexSpot is a new generation of standardized spot welding cells, which are designed to deliver cost-effective, state-of-the-art robotic spot 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, a choice of a standard turntable or any of the ABB positioners from our extensive range and spot welding equipment to suit your needs.

All equipment is installed on the common platform integrating all cables, which provides for easy relocation within the production facilities. The cells are equipped with centralized power distribution: all components such as robots, positioners, spot 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. In the same way, centralized fluids panel is provided and then only one single supply for air and water is needed.

Composed with modular equipment, the production FlexSpot cells can be used independently or combined together to build up an assembly line, mini-assembly zones or a complete workshop.

### Boosting your production

FlexSpot 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 the functions within a cell an access all the information regarding the 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.

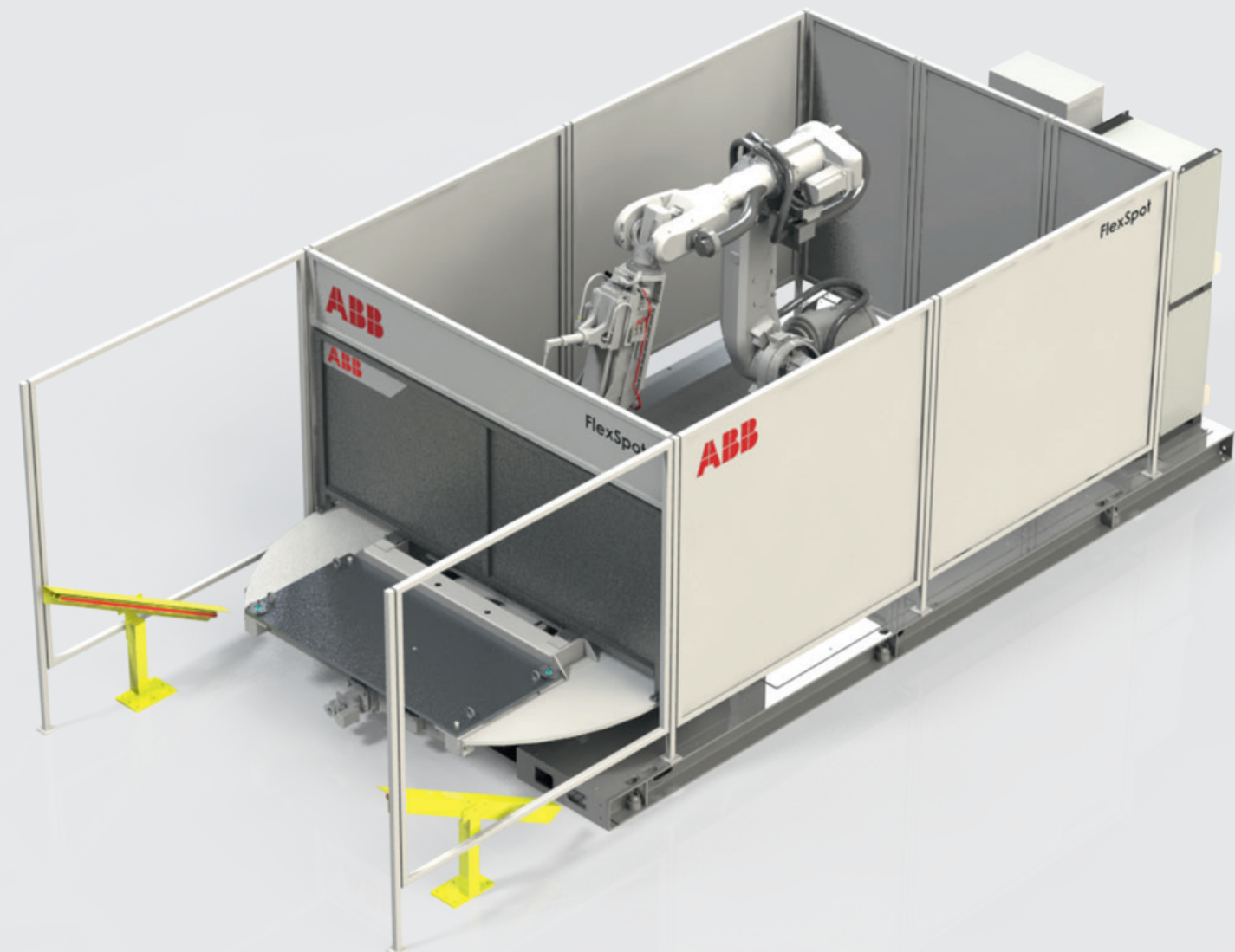
The operator has all the information necessary to keep track of the number of parts produced, cycle times and weld results. In the same way, the jigs control and definition Wizard allows the operator to define and adjust all the operational sequences with no need of any PLC programming skills. As it is made of modular equipment, 100% of your FlexSpot investment, except jigs, can be re-used for the production of other parts. The solution can also be used for short batches production due to the quick tooling change fixture (less than 5 min).

### Advantages

- Low investment cost
- Intuitive graphical interface for the operator
- Reduced down time with improved error handling
- High level of reliability
- Reutilization for different projects and parts
- Reduced start up and commissioning time
- Improved cost-efficiency thanks to global standardization
- Short delivery time
- Powerful jigs control & operation definition Wizard
- Proven 2/4-station principle (operator & robot)
- Off-line programming for fast and easy implementation
- Improved workspace safety
- Comprehensive range of optional equipment

### MODULARIZATION

FlexSpot is a new generation of standardized spot welding cells, which are designed to deliver cost-effective, state-of-the-art robotic spot welding operations.





# Modular tools for quality and increased uptime

— 01 Dual FlexSpot  
 — 02 IRB 6700 robot  
 — 03 SpotPack DressPack for spot welding robots

## Virtual FlexArc®: The ultimate productivity tool

The using of RobotStudio allows to work with a virtual robot from the very beginning whit no need to wait until receiving the real unit at your workshop, which means you can start to program your work-pieces from the day you decide on the investment. All your programs will be ready to be tested on real production equipment just after installing FlexSpot cell in your factory.

## RobotStudio® 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 Welding Gun access to the each spot weld prior to building the weld fixture.

## BullsEye™ – tool calibration and automated check

The patented BullsEye allows an accurate definition and automatic updating of the Tool Center Point (TCP) and the Welding gun arm orientation.

The BullsEye operates in two modes - “Set up mode” (to define 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 continuous well known Welding Cap position and so, it means an improvement in the quality of welded parts and a significant increase in productivity of the cell.

## Tip Dresser

By means of the Tip Dresser the system keeps the Welding Cap surface and shape in perfect conditions for the spot welding process. Every certain amount of welds, depending on the spot welding parameters, surface conditions, and work-piece positioning, the system should perform a mechanical caps grinding. The result is a new look condition for the caps and the process can continue under optimal welding conditions.

## Tip Changer

Due to the mechanical grinding of the welding caps, they will become useless, that is the time to change them but instead of losing time by stopping the cell, coming inside, changing them manually, taking the risk of incorrect setting and so; the system can do it automatically by robot programmed movement to the Tip Changer and then completes the process quicker and safer.

## Marking Machine

The automotive industry is asking for top quality standards and one of them consists of the capacity to trace all the produced parts along the time. One of the most popular way to do make your produced parts traceable is to mark information on them. That function can be done by Marking Machines fully integrated in to the system. Those machines are available to mark process by scratching or painting.

## Services

All the integrated FlexSpot system has to be any-way transported, installed, commissioned, programmed, adjusted and so, from ABB, we are pleased to offer a complete wide of service range in order to fulfill your needs.



— 01



— 02



— 03





# FlexSpot cell configuration

## FlexSpot standard configuration

- Single and Dual concept
- Optional 3rd MH or SW Module
- Welding Timer
- Welding Gun
- Operator panel
- Fluids Panel
- Platform, fencing, service door, robots, turning table, controller, power distribution
- Electrical cabinet for PLC, safety, & global control
- Electrical and pneumatical connector plugs up to jigs placement
- Safety equipment PNOZ Multi including vertical light curtains

## Standard software

- TeachPendant graphical user interface
- Welding error handler
- Spot Welding software for robots
- RobotWare - Spot
- Fixturing sequence & control definition wizard

## Optional configuration

Robot	IRB 6620, IRB 6700, IRB 6700ID
Services	Installation, commissioning, start-up, training, transport
Welding timers	BOSCH, SERRA, HARMS+WENDE
Welding guns	ABB, ARO, SERRA, NIMAK
Welding table	<ul style="list-style-type: none"> <li>• Turntable 2 positioners 180°</li> <li>• Turntable 4 positioners 180°</li> <li>• Turntable external axis</li> <li>• ABB positioner IRBP 1000R</li> </ul>
Safety	<ul style="list-style-type: none"> <li>• Horizontal light curtains</li> <li>• Roll-down door</li> <li>• Scanner</li> <li>• Mesh, metal sheet, or PVC fences</li> </ul>
Gun service	<ul style="list-style-type: none"> <li>• Tip Dresser ABB, Bäuer, AMDP, etc.</li> <li>• Automatic tip changer</li> <li>• Bull's Eye for automatic TCP definition</li> </ul>
Marker machine	<ul style="list-style-type: none"> <li>• Couth scratch</li> <li>• Couth MicroDot</li> </ul>
Others	<ul style="list-style-type: none"> <li>• Dress packs: Leoni, Becker, etc.</li> <li>• Gun Brackets: top, back, back 30°, multipos</li> <li>• Air conditioning</li> <li>• Water Chiller</li> <li>• Fume hood</li> </ul>

## FlexSpot cells

### Model specifications

#### Standard models of FlexSpot

FlexSpot	Version	Robot	Payload	Max. length of jigs	Max. width of jigs	Station footprint with light curtains	Station footprint with roll-down door
FlexSpot FT-1000 IRB 6700	Single	1	1000 kg	2000 mm	1200 mm	7800×2900<->5750×2600	6500×2900<->5750×2600
FlexSpot FT-1000 IRB 6640	Single	1	1000 kg	2000 mm	1200 mm		

#### Cells based on turning table concept: 2 positioners

FlexSpot	Version	Robot	Payload	Max. length of jigs	Max. width of jigs	Station footprint with light curtains	Station footprint with light curtains
FlexSpot TT-750 IRB 6700	Single, Dual, Triple	1, 2, 3	750 kg	2000 mm	1000 mm	7800×2900<->5750×2600	6500×2900<->5750×2600
FlexSpot TT-750 IRB 6640	Single, Dual, Triple	1, 2, 3	750 kg	2000 mm	1000 mm	7800×2900<->5750×2600	6500×2900<->5750×2600
FlexSpot TT-750 IRB 6620	Single, Dual, Triple	1, 2, 3	750 kg	2000 mm	1000 mm	7800×2900<->5750×2600	6500×2900<->5750×2600
FlexSpot TT-1000 IRB 6700	Single, Dual, Triple	1, 2, 3	1000 kg	2500 mm	1200 mm	7800×2900<->5750×2600	6500×2900<->5750×2600
FlexSpot TT-1000 IRB 6640	Single, Dual, Triple	1, 2, 3	1000 kg	2500 mm	1200 mm	7800×2900<->5750×2600	6500×2900<->5750×2600
FlexSpot TT-1000 IRB 6620	Single, Dual, Triple	1, 2, 3	1000 kg	2500 mm	1200 mm	7800×2900<->5750×2600	6500×2900<->5750×2600

#### Cells based on turning table concept: 4 positioners

FlexSpot	Version	Robot	Payload	Max. length of jigs	Max. width of jigs	Station footprint with light curtains	Station footprint with light curtains
FlexSpot TT-750 IRB 6700	Single, Dual, Triple	1, 2, 3	750 kg	2000 mm	1000 mm	8800×2900<->5750×2600	7500×2900<->5750×2600
FlexSpot TT-750 IRB 6640	Single, Dual, Triple	1, 2, 3	750 kg	2000 mm	1000 mm	8800×2900<->5750×2600	7500×2900<->5750×2600
FlexSpot TT-750 IRB 6620	Single, Dual, Triple	1, 2, 3	750 kg	2000 mm	1000 mm	8800×2900<->5750×2600	7500×2900<->5750×2600
FlexSpot TT-1000 IRB 6700	Single, Dual, Triple	1, 2, 3	1000 kg	2500 mm	1200 mm	8800×2900<->5750×2600	7500×2900<->5750×2600
FlexSpot TT-1000 IRB 6640	Single, Dual, Triple	1, 2, 3	1000 kg	2500 mm	1200 mm	8800×2900<->5750×2600	7500×2900<->5750×2600
FlexSpot TT-1000 IRB 6620	Single, Dual, Triple	1, 2, 3	1000 kg	2500 mm	1200 mm	8800×2900<->5750×2600	7500×2900<->5750×2600

#### Cells based on ABB servo positioner

FlexSpot	Version	Robot	Payload	Max. length of jigs	Max. width of jigs	Station footprint with light curtains	Station footprint with light curtains
FlexSpot 600R IRB 6700	Single, Dual, Triple	1, 2, 3	750 kg	2000 mm	1000 mm	7800×2900<->5750×2600	6500×2900<->5750×2600
FlexSpot 600R IRB 6640	Single, Dual, Triple	1, 2, 3	750 kg	2000 mm	1000 mm	7800×2900<->5750×2600	6500×2900<->5750×2600
FlexSpot 600R IRB 6620	Single, Dual, Triple	1, 2, 3	750 kg	2000 mm	1000 mm	7800×2900<->5750×2600	6500×2900<->5750×2600
FlexSpot 1000R IRB 6700	Single, Dual, Triple	1, 2, 3	1000 kg	2500 mm	1200 mm	7800×2900<->5750×2600	6500×2900<->5750×2600
FlexSpot 1000R IRB 6640	Single, Dual, Triple	1, 2, 3	1000 kg	2500 mm	1200 mm	7800×2900<->5750×2600	6500×2900<->5750×2600
FlexSpot 1000R IRB 6620	Single, Dual, Triple	1, 2, 3	1000 kg	2500 mm	1200 mm	7800×2900<->5750×2600	6500×2900<->5750×2600

#### Transfer module for MH or MH+SW without turntable

FlexSpot	Version	Robot	Payload	Max. length of jigs	Max. width of jigs	Station footprint with light curtains	Station footprint with roll-down door
FlexSpot MHSW IRB 6700	Module MH + SW	1				4850×2100×2600	
FlexSpot MHSW IRB 6640	Module MH + SW	1				4850×2100×2600	
FlexSpot MH IRB 6700	Module MH	1				4850×2100×2600	
FlexSpot MH IRB 6640	Module MH	1				4850×2100×2600	





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