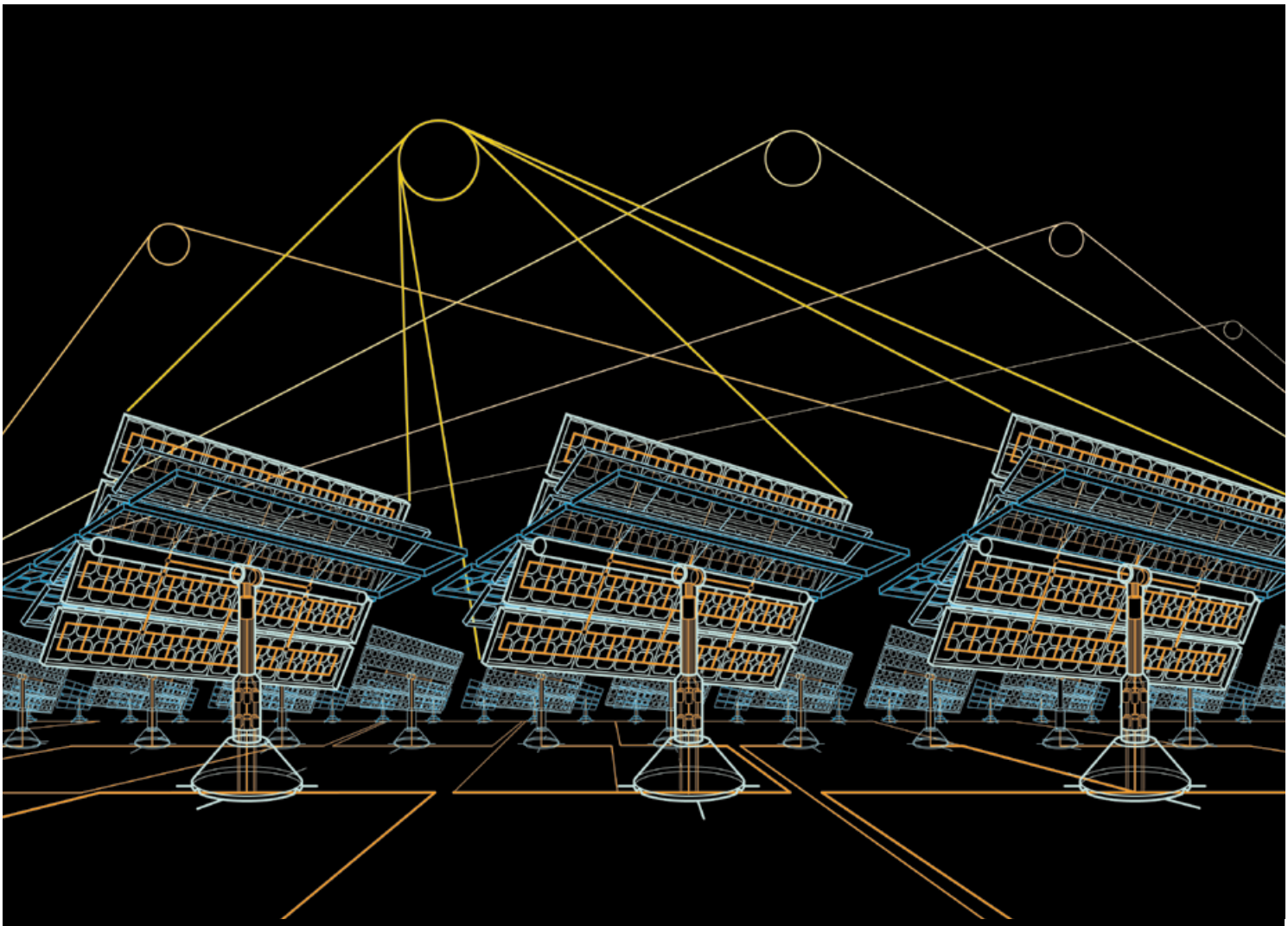


Robotics

Efficient robot-based automation for solar cell and module production

Power and productivity
for a better world™

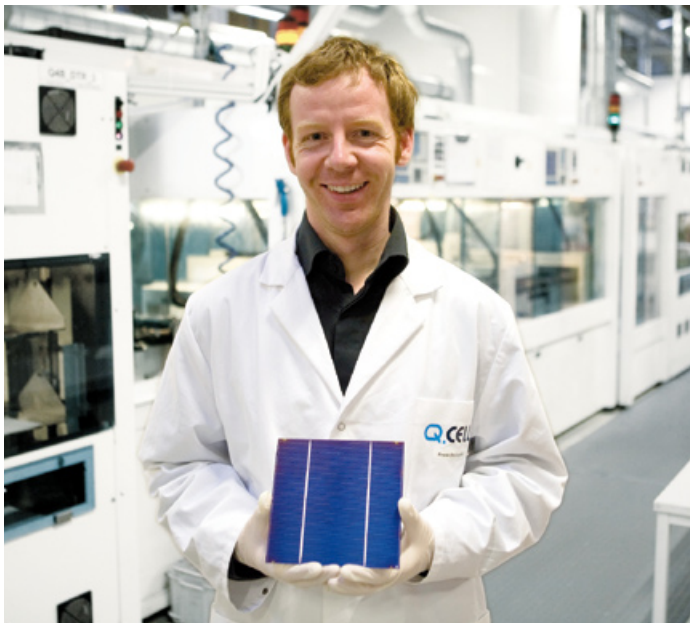


ABB is a leading global power and automation technologies group with 112,000 employeesworking in about 100 countries. For more than 30 years we have maintained our position as the leading robot manufacturer by keeping pace with the latest market demands and developments. Our company thrives on the innovation created by our extensive development programs and research centers.

Robot-based automation

Our automation solutions for the photovoltaics industry contribute significantly to sustainable energy generation. Renewable energies, such as solar energy, are becoming increasingly important for the future of us all. Achieving the full potential of renewables demands a considerable building up of production capacities and quality which must be accompanied by a reduction in production costs.

Photovoltaics technology is particularly benefiting from the use of robots which bring unmatched precision and the highest production efficiency. Working with our strategic partners, we are meeting the challenge with a broad range of products created specifically to support the solar industry's different manufacturing processes.

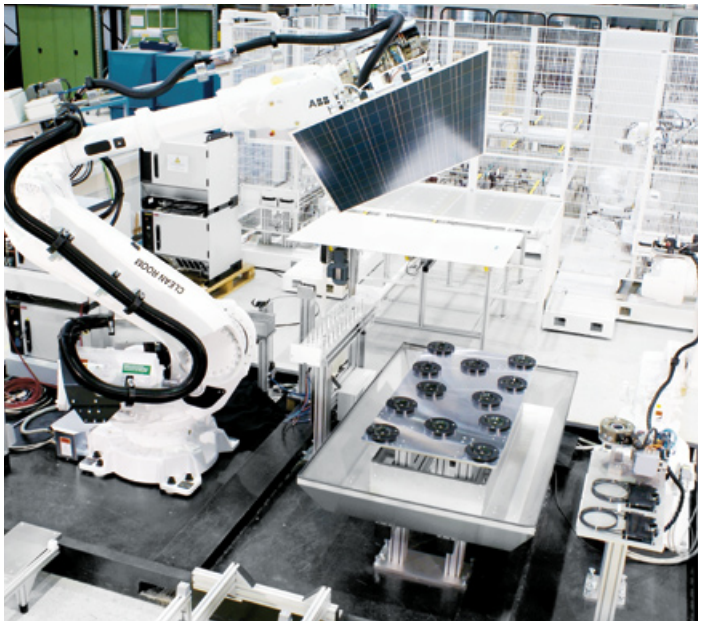
Our know-how, our innovative approach and our total capability bring the high level of quality that you expect from ABB and which you can always trust. We go far beyond simply offering the right robot for each of your requirements. We provide coordinated intelligent software, tailored training and exceptional field service – all around the globe.

Reliable robots with high availability

Our robots can meet any demand. From high-speed compact robots for the handling of wafers and solar cells, to our large robot family that can reach more than three meters to handle major components such as solar modules, we cover nearly every imaginable request. Our robots are even available with clean room specifications for thin-film production.

Requiring minimum maintenance, our robots achieve maximum availability. No matter what the task, our robots fit your needs precisely and efficiently. These are working machines you can rely on in every production process. We build our robots with supreme quality, providing a strong foundation for excellent working relationships with you, our customer.

General robots	IRB 360	IRB 140	IRB 1600	IRB 2400	IRB 4600	IRB 6640	IRB 7600
Lifting capacity (kg)	1 – 3	6	6/8,5	5 – 20	20 – 60	130 – 235	150 – 500
Reach (m)	∅ 1,130	0,81	1,2/1,45	1,5 – 1,8	2,05 – 2,55	2,55 – 3,2	2,55 – 3,5



Pre-proven solutions designed to meet solar industry needs

Flexible wafer and solar cell handling

The sorting and loading of wafers and solar cells depends on rapid and sure handling of components to help achieve an efficient and productive manufacturing process. With acceleration up to 15g and a pick and place performance of up to 200 cycles/min the IRB 360 is the world's fastest robot.

Flexible at any demand

Our robots can be customized easily and without extensive development work to meet the needs of a wide range of wafer and solar cell handling tasks. Even subsequent changes typically only involve re-programming. The optional integration of image processing systems provides efficient identification of objects and their position (e.g. ABB Software PickMaster). Furthermore, the compact IRB 360 requires minimal working space for smooth and efficient loading/unloading and handling processes.

Easy integration

The robot's space-saving ceiling mounting system enables it to be integrated very easily into all existing production processes. This helps achieve all-round access to process equipment without difficulty. The robot fits your manufacturing line for a powerful and efficient production unit.

Robot application

- loading and unloading of several production systems for solar cells
- sorting of wafers and cells in different quality categories
- Handling of wafers and cells in test systems

Robot type

- IRB 360 FlexPicker with IRC5 control

Glass and module handling

With our wide range of products we can provide a robot to handle every size and every weight of component. Different handling tasks are always achieved flexibly, efficiently and cost-effectively.

Our QuickMove motion control function guarantees the shortest cycle times and the highest productivity. The flexibility of our robots means you get the most efficient performance at all times, wherever you deploy them.

A completely safe manufacturing sequence

When handling delicate products, such as glass-covered or laminated modules, our robots' exceptional positioning accuracy (0,05 – 0,08 mm) assures maximum safety.

And with the MultiMove function, several robots can be operated safely and efficiently in one workroom. The use of up to four robots with just one control module brings significant space saving and allows a clear, easily managed work space.

Robot application

- handling
- loading and unloading (e.g. glass washing machines)
- palletizing / depalletizing

Robot type

- IRB 4600/ 6640 with IRC5 control

Edge trimming

The precise cutting of laminated solar modules is an essential element of automated module production. Exact path planning ensures the robot is controlled accurately to achieve edge trimming of laminates with the highest precision in the shortest cycle time. Our well designed gripper enables a single robot to perform accurately the complete handling and cutting process.

Matching production needs without limits

Our robots can be tailored to different module dimensions without the need for complex construction or development work. In fact, additional changes can be done simply through programming. And with a broad reach of up to 3,2 meters, a single robot can trim horizontally all around even large solar modules.

Robot application

- laminate handling
- position checking
- trimming

Robot type

- IRB 6640 series with IRC5 control

Automatic interconnection unit

Several robots are typically used in a soldering process, each performing a specific task, such as positioning the soldering ribbons, or carrying out the actual soldering. Using our MultiMove system enables up to four robots to be controlled simultaneously.

An exceptional 0,05 mm positioning accuracy ensures the highest quality production for perfect results every time.

Increased production efficiency

Our compact and powerful six-axis robot, the IRB 1600, combines high acceleration with a large work area, enabling even the most arduous production routines to be achieved with the highest quality and the shortest cycle time.

A reliable partner

The IRB 1600, along with the rest of the ABB robot family, is created as a standard product to offer exceptional availability with minimal maintenance.

Robot application

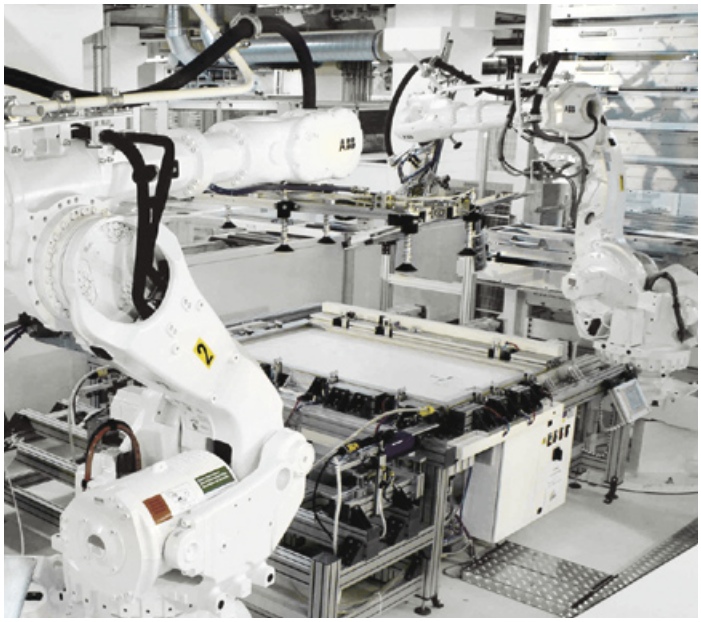
- flexible preparation of ribbons
- fully automated soldering (cell matrix)

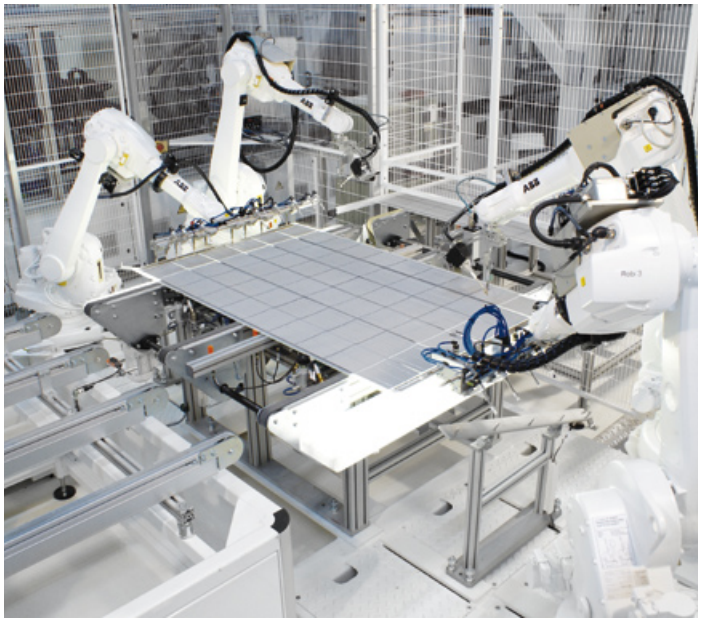
Robot type

- IRB 1600 with IRC5 control

RobotStudio for simulation and programming

With RobotStudio you can create and simulate cells on your PC, as well as program the software to shorten installation and changeover times. In short, you can test the entire production process at your PC before starting live.





IRC5 – The robot controller with multi robot capability

Our IRC5 robot control sets new global standards with modular control, ergonomic programming and the FlexPendant teach pendant unit (TPU), as well as the MultiMove function which can control up to four robots.

Our unique motion control optimizes robot efficiency through precision movement, high speed, short cycle time, easy programmability and synchronization with external tools. Our software with the QuickMove function for short cycle times and the TrueMove function for highest path accuracy, achieve optimum work flow. The new “Panel Mounted Controller” is an exceptionally space-saving version of IRC5 which, due to its compact dimensions, can be integrated with even small production lines.

Controller	Single cabinet controller	Dual cabinet controller	Panel Mounted Controller	FlexPendant
Size H x W x D (mm)	970 x 725 x 710	1370 x 725 x 710	899 x 498 x 299	7,5 Zoll Screen/1,3 kg
Protection	IP54	IP54	IP20	IP54

Contact us

ROB_0040EN_C April 2009

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