

Press Release



For your business and technology editors:

IRB 6640 clean room robot certified

Complies with most stringent photovoltaic industry specifications

Hanover, April 21st 2008 – Working in close cooperation with strategic partners from photovoltaic industry ABB has upgraded its IRB 6640 robot to create a new “clean room” version. The project was undertaken in response to the strict specifications for thin film production processes used in solar module manufacturing; where cleanliness is a critical factor. Thin film manufacturing consists of applying various semiconductors and electrical interconnecting layers to a glass substrate carrier. Any contamination, even in the micron range, reduces the power rating of the modules. The degree of cleanliness required, plus the diversifying sizes and high weight of the glass substrates, precludes using traditional manual production methods. It is therefore impossible to construct the modules in an economic way without using “clean” robots. Now the new clean room version of the IRB 6640 meets all necessary process and clean room specifications for the industry.

Certification was undertaken by the Fraunhofer Institute for Manufacturing Engineering and Automation IPA in Stuttgart. They rigorously tested the six-axis articulated robot over a period of seven weeks and included evaluation and compilation of all relevant documents. The primary objective was to evaluate the IRB 6640's clean room suitability and surface cleanliness attributes. The first step was to establish the test environment, decontaminate the robot and define the operating parameters. This included the speeds of all robot axes (50 per cent and 100 per cent) and the wrist payload (100 per cent). In addition, possible sources of contaminating particles were isolated. Measurements were subsequently taken for 100 minutes per axis and per speed. These generated 100 test results for the analysis. The evaluation was done in accordance with relevant specifications (VDI, etc.).

The IRB 6640 clean room robot passed all tests and now fully meets the stringent class 5 clean room specifications. With its large working range and high payload it is ideally suited for thin-film manufacturing. It features minimal maintenance and maximum availability, while precisely and cost-effectively adhering to specification requirements. Its unique motion controller optimizes efficiency. Additional features include high speed, short cycle times, easy programming and the ability to synchronize with external devices such as tracks, motors and positioners.

ABB's new IRB 6640 clean room robot will help the thin film photovoltaic sector to improve productivity by lowering manufacturing costs, while at the same time raising production output, achieving consistently high quality and improving workplace health and safety.

Technical details – Clean room robot IRB 6640

ABB clean room robots have three paint layers: a prime coat, a white paint layer and a clear top coat. Screws and inspection panels are covered with plastic prior to painting, which is subsequently removed when the paint dries. Some screws and panels are then protected again using removable covers, which facilitates cleaning. Inspection panels are not painted. Some of the cables are installed in an enclosed cable carrier, which enables them to be properly transported and at the same time



prevents worn areas - even those that are not visible - from being exposed. Any areas that could potentially cause contamination, etc. are sealed at the factory using metal plates. The clean room robots are cleaned before they are shipped to customers and are protected by a double layer of plastic. The first layer is removed just outside the clean room to prevent any contaminants from entering. The second layer of plastic is removed inside the clean room to ensure compliance with strict cleanliness specifications.

Picture:

HM08-05.jpg:

The IRB 6640 in clean room design meets all necessary process and clean room specifications for the industry. Gripper from ABB's development-partner, Schiller Automation GmbH & Co. KG.

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