Delta SCARA Robot’s Role in Your Manufacturing Transformation

Before the industrial revolution changed the way we work, most manufacturing was done by a single skilled artisan and a team of assistants. In time, entrepreneurs in rural towns organized several manufacturing households into a single enterprise to manufacture goods for the agricultural industry.

Revolutionary technologies and the dawn of the industrial age laid the foundation for growth in mass production focusing on speed and standardization. Today’s smart manufacturing combines the customization, craftsmanship and closeness to customers of the pre-industrial era with the speed and efficiency of modern manufacturing. Computer and robotic-integrated smart manufacturing has shifted manufacturing from the mechanical to the digital realm.

Technology Brings Unique Challenges

Yet all these advances in technology bring their own unique challenges. Smart production lines need intelligent, agile and flexible workstations to execute faster more precise processes. Meanwhile, manufacturers face increasing demands to improve production efficiency and quality while keeping to tight budgets.

In today’s high-stakes manufacturing industry, robots play a critical role in automation by eliminating labor, increasing productivity and improving the efficiency of the entire production line. And with their high repeatability, excellent precision, linearity and verticality, industrial robots can operate in various applications and industries.

SCARA Robot in the Assembly Process

One manufacturer in the semiconductor industry applied Delta’s Selective Compliance Assembly Robot Arm (SCARA) robot to support their Flexible Printer Circuit (FPC) board shuttle conveyor

production. The robot moves to the standby position before the assembly process begins and when operations begin it targets models and quantities that are in its pre-set software. The robot's software can also calculate the yield of the device based on its condition. This solution can be applied in the assembly process for fast material arranging, with an accuracy up to ±0.1mm.

In the assembly process, finished products from a laminating press deliver to the shuttling workstation by the conveyor for vision positioning. When an FPC board is placed on the conveyor belt, a camera will identify its position and placement and then send real-time data to the robot. After aligning the position compensation, the vision system sends the new coordinates to the robot. The robot follows the conveyor belt, picks the product based on the vision and position data and then places the products into a tray. The robot then goes back to the standby position to pick the next product. All the while, a reloading mechanism replaces full trays with empty ones.

Manufacturing Flexibility

Delta's SCARA is a solution to strengthen your manufacturing flexibility. Along with the 4-axis, SCARA robot, it enables high-repetition positioning accuracy and consistent quality. This robot suits both standalone and workstation applications, enabling flexible modularized production lines with consistent quality.

Manufacturers in the electronics, rubber, plastic and packaging industries can leverage this robot solution for a wide range of applications including insertion, screw locking, precision assembly, dispensing, coating, soldering, load/unload, pick-and-place, stacking, packaging, and inspection.

The solution has PC-software consisting of a secondary development platform for easy and flexible customization. Its general communication interface easily connects with different machine vision systems and modules. Its simple system structure enables easy configuration with Delta's industrial automation products.

Automation for a Changing World

An offline simulation module with real-time information monitoring and analysis helps IT managers pre-evaluate the machine's performance, do vision inspection for product orientation and cost-save in the planning stage to guarantee a reliable outcome. During implementation, the SCARA auto-calibration software combined with vision allows one-click calibration which saves you commissioning time. After deployment, DRAStudio programming supports various applications and creates an offline simulation environment for your robots.

As smart manufacturing becomes the new norm for factories, Delta is ready to help you meet today's market demands and satisfy your customers' needs. Delta continues to drive innovation and efficient robot solutions as part of our commitment to "Automation for a Changing World".

About Delta Electronics (Thailand) Public Company Limited
The company, founded in 1988, is a producer of power and thermal management solutions. Delta also has a regional presence in several product segments including industrial automation, displays, and networking. Its mission statement, "To provide innovative, clean and energy-efficient solutions for a better tomorrow," reflects the company's strong belief in sustainable development especially with issues related to the environment. As an energy-saving solutions provider with core competencies in power electronics and innovative research and development, Delta's business categories include Power Electronics, Automation, and Infrastructure. The company's global presence is supported by its sales offices in key regions around the world; manufacturing facilities in India, Slovakia and Thailand; and several R&D centers located in Thailand, India, Germany and

other countries.

Delta continues to earn numerous recognitions for its achievements in the region and domestically. Some awards won include the prestigious ASEAN Business Award, Stock Exchange of Thailand’s Best Company Performance Award and the coveted Prime Minister’s Best Industry Award.

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