Robotics Technician Occupational Profile

A robotics technician is responsible for the installation, maintenance, repair, and replacement of robotic systems and sub systems. The technician ensures the safe operation of robotic equipment such as automated storage and retrieval systems, automated picking systems and similar robotic systems. A robotic technician should have both soft and technical skills. The overall main skills are: critical thinking, basic computer and programming, problem solving (six sigma) as well technical skills dealing with designing, developing and manufacturing robotics, and the maintenance of robots. Three levels of knowledge follow:

Primary level of knowledge:

- Blue print reading

- Electrical ladder logic

- Electrical/hydraulic/pneumatic circuit understanding

- Basic computer and programming skills

- Safety standards to avoid accidents, human factors, and safety sensors.

- Disassemble and reassemble robots or peripheral equipment to make repairs such as replacement of defective circuit boards, sensors, controllers, encoders, and servomotors.

- Sensor (contact and non-contact) types (micro switches, solid-state switches, proximity, photoelectric, rotary position switches (encoders, synchros, resolvers, potentiometers)).

- Motion control using ladder logic and microprocessors

Secondary level of knowledge:

- Designing, developing and manufacturing robotics

- Programming of robots, programming languages (there are 15 common languages)

- Maintenance and preventive maintenance

- Machine-visual sensing (optical methods to provide image acquisition, image digitization, image processing, image analysis, and image interpretation), scanning laser systems, and cameras.

- Problem solving skills (six sigma)

- Troubleshooting robotic systems

- Develop robotic path motions to maximize efficiency, safety, and quality.

- Maintain service records of robotic equipment or automated production systems.

- Install, program, or repair programmable logic controllers, robot controllers, end-of-arm (EOA-grippers, special tools, etc.) tools, or conveyors.

Tertiary level of knowledge:

- Align, fit, or assemble component parts using hand tools, power tools, fixtures, templates, or microscopes.
- Test performance of robotic assemblies, using instruments such as oscilloscopes, electronic voltmeters, or bridges.
- Develop robotic path motions to maximize efficiency, safety, and quality.
- Designs for Flexible Automation/Manufacturing, Computer Aided Design (CAD), and Computer-Integrated Manufacturing (CIM) systems

- Artificial intelligence systems (machine learning, expert systems (intelligent computer programs that solve complex problems))

- Signal processing analysis (using controller, sensors, and decision making software)

Future applications

- More technological breakthroughs will take place in the future. New possibilities exist in the fields of medical, underwater, surveillance, guard duty, and home applications.