

Robots Address Medical Device and Pharmaceutical Packaging Trends

By ESS Technologies, Inc. Blacksburg, VA

Robots now moving from end-of-line operations into primary packaging.

It starts with seniors and ends with robots.

According to a recent report in the February 2006 issue of *Healthcare Packaging*, with seniors living longer, the demand for procedures like prosthetic hip replacements and interocular lens implants have skyrocketed.

Medical device manufacturers, stuck in the “all by human hand” mode, cannot afford to continue hiring unskilled workers and train each one to operate in a validation environment.

With severe price competition and growing demand, coupled with rising labor and training costs, automating any part of the device production process — from manufacturing through product handling, assembly, and packaging—looks like an idea worth exploring.

Robots hold the key to automating device packaging, and not just for end-of line applications. At a PMMI Tech Talks workshop held in Florida in 2006, participants were introduced to the new breed of machines taking over primary and secondary packaging applications.

These machines more closely resemble clusters of robot arms and servo collating belts rather than traditional cartoners and case packers. The following quote is from a *Packaging World* report of the meeting:

“Perhaps the ultimate in modular design, the robotic machines recently hitting the market make changeovers as simple as swapping out end effectors, selecting a recipe that automatically changes lug spacing, and refilling the magazines. This scenario blurs the distinction between routine changeovers and total machine reconfiguration – redefining the meaning of flexibility”

Potential explored in thermoforming

Statistics show that more than 80% of the medical device applications using thermoforming equipment are currently being manually fed by one or more plant personnel. This current method of machine loading and unloading can increase labor costs and affect production



FANUC LR Mate 200iC Collating Blister Packs at a Cartoner Infeed

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FANUC M-430iA Robot Loading Product Into Blisters at the Infeed of a Thermoform Blister Packing Machine

efficiency.

Many pharmaceutical and medical device producers are looking to robotic pick and place systems to address the increasing labor, insurance, and productivity costs associated with the manual, and often repetitive, process.

Dr. Ken Ryan, director of manufacturing automation research and education at the Center for Automation and Motion Control, Alexandria Technical College, in Alexandria, MN, is convinced automation will continue to be the answer, especially for medical device manufacturers. And not only for thermoforming, but throughout the plant.

Dr. Ryan, who trains technicians to help automate packaging applications, says “I’ve got medical device manufacturers telling me they will take all the technicians I can train.”

Ryan and Alexandria Technical College responded to the growing need by introducing a course that includes the basics of chemistry, biology, medical terminology, and other disciplines. Technicians are learning automation, but with an eye for Food and Drug Administration regulations, documentation, risk assessment, underscoring a holistic approach needed in today’s environment.

Ryan says growth can be expected for machine manufacturers—those making robots in particular—as well as suppliers of vision systems.

Ryan is convinced the complex validation issue alone would have eventually justified packaging automation even without all the other drivers. “You must train the human each and every time,” says Ryan. “You design the machine and it remembers forever.”

At the recent Medical Device and Manufacturing (MD&M) trade fair and conference in New York City, ESS Technologies exhibited its newest robotic system, the TaskMate. The system, comprised of a stainless-steel platform, interlocked guarding and a model M-6iB FANUC robot is designed to load one or multiple items into the product cavity. This may include blisters, vials, syringes, instrument kits or other medical devices.

TaskMate is available in several environmental

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Robotic Accumulation of Diagnostic Test Kit

configurations, including wash down, clean room and basic industrial. A complete system as described can be designed, programmed and integrated with a return on investment between six to twelve months.

For most applications, a smaller “mini” robot, the LR Mate, is the standard platform for the TaskMate. Motion control, high speed and robotic dexterity make the TaskMate ideal for product orientation, collation, and other repetitive tasks.

Capable of speeds above 40 picks per minute, the TaskMate can count, stack, load, or unload medical devices, pouches, and other related items. All FANUC systems utilizing the new R-J3iC controller come vision-ready to facilitate the precise picking and placement of multiple items. In addition, vision can be used as an inspection system.

ESS Technologies is an authorized FANUC integrator and a strategic partner for pharmaceutical and cosmetics secondary packaging. Products and services include line design and systems integration, robotic case and tray packing, robotic palletizing, liquid and powder filling, device assembly, cartooning, and over-wrapping.

For information on automation and robots in medical device packaging, contact ESS Technologies at 540-961-5716 or visit our web site at www.esstechnologies.com.

