



Error-free and time-saving:
The Eco-Dex machine automatically
deals with patient-specific medication
management.

Automated medication management in hospitals

Individual medication management for hospital patients is time-consuming and error-prone. To better protect patients, France adopted a new regulation in 2010 that obliges hospitals to administer drugs daily, in single doses, and identified with the patients' names. In order to make compliance as efficient and economical as possible, the company Eco-Dex developed a machine with Beckhoff control technology to help manage these requirements.

Eco-Dex was established by Loïc Bessin and Stéphane Ouvrard in response to the new regulation for individual medication management. With their combined expertise from 10 years experience in the design of packaging robots and the production of tools for the pharmaceutical industry, they went about developing an efficient and cost-effective solution that relieves nursing staff from the time-consuming task of medication management while eliminating errors.

Robots deal with individualized drug dosing

The standard model of the Eco-Dex machine consists of two feeding stations, each equipped with a Panel PC and a camera that reads bar codes and Data Matrix codes. The first station with a supply management database handles the drug supply, the second feeds the pill dispensers. "First the product is identified via the bar code on the drug packaging. The packing characteristics are transmitted to the robotic cell, which then executes suitable cuts for opening the



pack,” said Jérôme Cassin, project manager at Eco-Dex. The blister packs are then separated and packed in pouches that are labeled with the name of the drug, the expiration date, the batch number and a Data Matrix code. The second feeding station mimics the work of a pharmaceutical assistant processing prescriptions by distributing the individual drug doses in personally identified dispensers for each patient.

TwinCAT as the integrated control platform

TwinCAT NC PTP automation software from Beckhoff acts as the integrated control platform for PLC and Motion Control. In collaboration with Asprod, a systems integrator, Eco-Dex developed specific application software for controlling and monitoring orders and supplies, the interface with the hospital’s prescription program and preparation of goods receipt lists, etc. All machine processes are coordinated by a built-in CP6202 Panel PC, which controls the whole motion system including nine servomotors from the AM3000 series, AX5000 EtherCAT servo drives, linear motors, six cameras as well as 30 optical and inductive sensors. Eco-Dex uses EtherCAT as the communication system. “A big advantage of EtherCAT is the wide range of fieldbus interfaces, enabling integration of peripherals such as the robotic cell, and also the fact that EtherCAT is so widely used these days. This means we can easily integrate the linear motor from another manufacturer as an EtherCAT slave, for example,” said Jérôme Cassin.

The machine is modular, so that up to three cutting modules and two collection modules can be combined. The modules are standardized and can be customized to the specific requirements of the respective hospital via the software. Functionality can be extended with various software interfaces as required, to integrate pharmacy management, for example.

“Another advantage of the PC-based control platform is the possibility to rectify malfunctions very quickly (the time limit specified by hospitals is six hours) through remote diagnostics and access,” said Stéphane Ouvrard. In addition, new product data such as cutting methods, verification procedures, images, etc. can be provided via remote data transmission whenever new drugs are to be processed or when the packaging of existing drugs has changed.

Further Information:

www.eco-dex.fr

www.asprod.fr

www.beckhoff.fr