# NGNY Devices SL

## Automated Tube Handling System
## Ensures Accurate Analysis of Human Fluids

When clinical lab scientists research and analyze human fluids to develop new drugs, find cures, prescribe treatment or solve crimes, they require samples not compromised by contamination, infection or misidentification.

To prevent this from occurring during the sample preparation phase, NGNY Devices SL of Barcelona, Spain, developed their STDK500 Automatic Sorter Decapper system. It automates the pre- and post-process of handling,



*Galil's motion technology maneuvers the robotic arms of NGNY's automated sorter and decapper of clinical lab vials containing human fluids for analysis.*

to the input robot and axes 5–8 assigned to the output robot. Directly attached to the controller are two Galil AMP-20440 4-axis 200 W servo drive boards which minimize space, cost and wiring. Each robot moves independently on its own Cartesian axis X-Y-Z and T, with rotation of the tube gripper on the Z-axis. Galil's DMC-2143 4-axis controller with a single AMP-20440 board maneuvers the decapping module.

Joan Viladomat, design engineer at NGNY Devices SL, said "This has been our first design using Galil controllers, and we found that they have an easy and intuitive programming method, which makes them very suitable for our applications."

Viladomat explained, "The host PC is programmed in C#, and we used Galil's .NET API command software to communicate with the controllers over Ethernet. We have the application programs burned in the controller's non-volatile memory, and the host PC executes them depending on the state. We also use many variables that are read from the PC and others that are written by the PC, such as XYZ positions."

sorting and decapping the vials or tubes of samples, which are organized in trays used with the analysis equipment. No human hands are needed during this step.

The STDK500 consists of a robotic arm for inputting the tubes and another for outputting them, plus a conveyor and decapping module. The input robot picks up the tube from the tray, reads the barcoded label on the tube to retrieve information using the Laboratory Information System (LIS), and then places the tube onto the conveyor.

The LIS also identifies the specimen and confirms the specific tests to be performed, and relays that information to the STDK500 which determines if the tube needs to be decapped so that the sample can be accessed for analysis. If required, the tube is decapped upon arrival at the Decapping Module. After that, the tube is gently gripped by the output robot which places it in a pre-determined spot in a specific tray that is forwarded for analysis.

A Galil DMC-2183 8-axis motion controller handles the precise motion of the robots, with axes 1–4 assigned

The STDK500 features a user-friendly, GUI touch screen, real time updates of tube status, and the ability to handle tube diameters of 10–17mm wide and heights of 70–110mm at 500 tubes per hour. It accommodates standard and custom input/output trays, and automatically classifies tray type via bar code recognition.

The Galil controller also allows the STDK500 to accept more modules. "For example, in the future, it will be very easy to add a recapping module that will be controlled by another Galil Ethernet controller," Viladomat said. "In addition, they have an excellent quality to price ratio. I'm sure we will keep Galil controllers in our future projects!" ◼

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