

# Innovative Packaging Solutions for Pharmaceuticals, Cosmetics, Medical Devices, and Consumer Goods

Application Brief (AB0382007)

Diagnostic Test Kit Assembly

**Application:** Automated Diagnostic Test Kit Assembly

**Products Used:** MB 40 Monoblock Assembly Machine  
TaskMate Robotic Loader with FANUC LR Mate 200iB Robot

## The Challenge:

A manufacturer of diagnostic test kits needed to automate most of a manual process to assemble diagnostic test kits, inspect the completed kits, and load them into trays. The automated assembly process required a high rate of speed for the assembly of the test kits, as well as automated inspection with automatic reject of incorrect kits and robotic tray loading of completed test kits for further packaging downstream.

## The Solution:

ESS engineers, working with the customer, designed a complete system that assembles the test kit at a speed of up to 40 kits per minute. Pucks are loaded prior to entering the test kit assembly station. After assembly, test kits are inspected via an automated vision system and moved into a TaskMate™ robotic cell where a FANUC LR Mate 200iB robot and ESS-designed end-of-arm tooling de-puck the kits and place them into trays. Empty pucks are recycled back to the front of the assembly process via a conveyor.

## How it Works:

Test tubes containing a reactive material are loaded into pucks before they enter the filling station. The ESS Technologies MB 40 Monoblock Test Kit Assembly Machine places test kit components into a test tube at a rate of 40 test tubes per minute. Caps are fed from a bulk supply bowl feeder/orienter where they are folded into a closed position and inserted into the top of the test tube prior to labeling. A hard automation device lifts completed test kits six (6) at a time and positions them one tube at a time in front of a camera for visual inspection. The inspection program checks the test tubes for the presence of all the test kit components. Incomplete test kits are automatically rejected prior to entering the robotic loading cell.

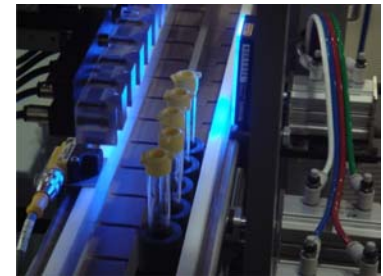
Completed test kits that pass the visual inspection are lifted from the pucks two at a time and inserted into a Styrofoam tray. Full trays exit the robotic cell via a conveyor while an empty tray is put into place. A circular conveyor allows empty pucks to automatically return to the beginning of the process to be loaded with test tubes.

## The Results:

The installed system increased the production rate of the test kit assembly to 40 test kits per minute while allowing the customer to reassign several personnel to other processes.



Components of the Diagnostic Test Kit



Completed Test Kits Enter the Inspection Station



LR Mate 200iB Robot



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