



## Laser-Engraving and Assembly System

### Challenge

A medical device manufacturer needed an automated system to laser-engrave and assemble titanium vial and cap components at a rate of 7.5 seconds per assembly.

### Solution

Bulk parts enter the system through operator-loaded vibratory bowls, before vibratory tracks output the parts to nests where a machine vision system confirms part orientation. Properly oriented vials and caps are singulated into nests for pick-and-place assembly operations, while non-conforming parts are placed in reject bins.

A robot with a custom end effector transfers a single cap from the dead nest to the assembly post on the load cell, and then picks a vial from the dead nest at the vial output track. The robot moves the vial to the laser station, where a client-generated label and barcode is laser-engraved onto the vial's surface. The robot then positions the processed vial over the cap on the post at the load cell, and applies a calibrated force to assemble the cap to a per-recipe height on the vial. Finally, the robot moves the completed assembly to the next available pocket in one of the two output trays.



The automated, recipe-driven process allows for user input and real-time process monitoring, though operator attention is required only to maintain bulk part supplies and remove completed trays.

### Result

In full automation mode, the laser-engraving and assembly system automatically orients, marks, and assembles components per a client-selected recipe at **rate of 6.5 seconds per assembly**.

### About DWFRITZ Automation

Established in 1973, DWFRITZ Automation provides world-class build-to-print manufacturing capabilities to clients, in addition to designing, building, and supporting engineered-to-order automation systems and high-speed, non-contact metrology products.

