

Frit Placement, Filling and Weighing



- 1 Assemble at a rate of 35 parts per minute**
- 2 Accurately weighing and dispensing to +/-20mg**
- 3 Faults will be tracked by the control system and display on the HMI the reasons why the assemblies have been rejected**
- 4 Full traceability of each device**

Frit Placement, Filling & Weighing

SP Automation & Robotics worked with a leading developer of test solutions to design and build a machine that could automatically laser mark columns, assemble a frit (filter), weigh each device, dispense a liquid and weigh again before loading the completed devices. Standard filling systems did not offer the flexibility of being able to handle, assemble and test a variety of parts to their required specification. The weighing also required to be carried out using non-standard techniques (normally parts “slid” over weigh scales) as this would potentially damage the device.

The Challenge

The challenge was to provide a system to remove the need for low speed manual processes to assemble at a rate of 35parts/min, along with fully checking all parts/assemblies for dispensed liquid weight and part presence and position of frits.

- Automatically assembling, marking, filling, weighing, and off-loading of devices
- Required to handle two sizes of device/assemblies
- No shedding of material (frits are a fibrous)
- Full checking and inspection of parts
- Accurately weighing/dispensing to +/-20mg
- Fitting within tight constraints of a cleanroom environment

The Solution

Designed around a six-station indexer, the first station fed columns from a vibratory bowl, where they were picked and placed into a tooled nest on the machine dial plate. At station two, the columns were laser marked with a configurable code before entering station three where the frits were fed from a vibratory bowl, along a vibratory track then picked and placed into the columns.

Station four lowered the devices onto a weigh cell to take a net weight of the column and frit assembly. Station five dispensed an accurate dose of slurry before the final station lowered the devices onto a second weigh cell, and the weight obtained from station 3 was deducted to give a dispensed weight of the slurry.

If the part is verified as having only one frit placed and the slurry dose is correct, it is picked and placed from the dial plate into an unload area. Once the tray was completed the operator removed the full tray and replaced with another empty tray without having to stop the machine.

Features & Benefits

- Assemble at a rate of 35parts/min. Faulty assemblies are automatically rejected
- Faults will be tracked by the machine control system and display on the HMI the reasons why the assemblies have been rejected
- Accurately weighing/dispensing to +/-20mg
- Full traceability of each device. Inline marking of devices
- Fitting within tight constraints of a cleanroom environment
- Fitting within tight constraints of a cleanroom environment



For more information or to discuss your bespoke solution get in touch.

☎ 01382 880088

✉ sales@sp-automation.co.uk

sp-automation.co.uk