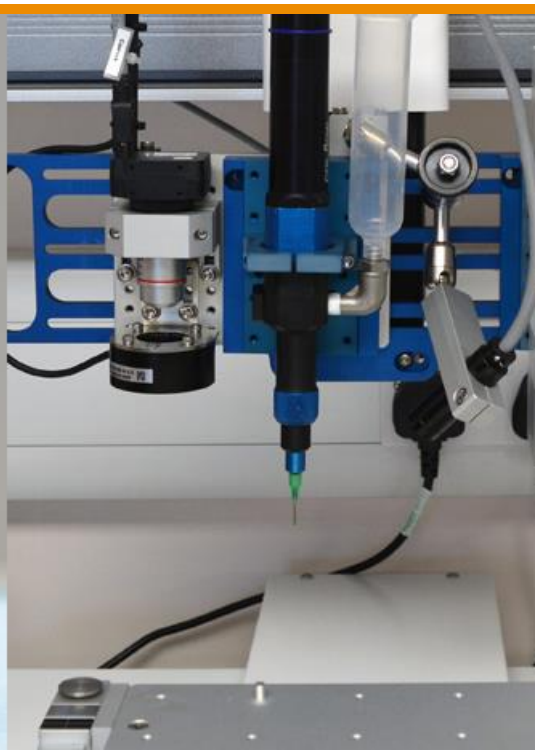
CASE STUDY

intertronics
adhesives, coatings, sealants & equipment
for your manufacturing and technology applications

Preeflow eco-PEN300
Precision Volumetric Disposing Pump

Fisnar F4303N
Benchtop Fluid Dispensing Robot



Our customer

Apacor

Customer benefits

- Highly accurate and repeatable process
- Increased throughput and scalable production
- Reduced scrappage of imperfect parts

Dispensing for particle sampling

Wokingham-based **Apacor Ltd** develops and markets practical, cost-effective solutions in the field of in vitro medical diagnostics, including world-leading innovation in parasitology and pre-analytical diagnostics. As it looked to scale up its production ahead of a new product introduction, Apacor asked Intertronics to help during its manufacturing development phase.

Challenge
Apacor was launching a new air sampling product, designed to capture the full range of airborne particulates including mould, pollen, dander, construction dust, combustion particles corrosion and more. It is used for commercial, residential and clean room monitoring and is designed for the rapid collection and analysis of a range of airborne particulates.

For this project, the company needed to accurately apply a liquid onto a glass substrate, dispensing droplets in the microlitre range in an array. Both the amount of liquid and the positioning of the droplets needed to be within some fine tolerances. In the initial product development phase, Apacor was dispensing the liquid from hand-held laboratory pipettes, but they knew that this would not be adequate when scaled for full production.

Apacor investigated options across three different possible vendors, including Intertronics. A simple time/pressure dispensing machine, applying the liquid direct from a syringe, proved not to be accurate enough. With another vendor, Apacor evaluated a pneumatic jetting valve. Though there were some positive initial results, it didn't end up giving the kind of repeatability required. Pneumatic jetting lends itself to dispensing at nanolitre range, so was over specified for the application.

(continued on next page)

In this case, viscosity variations in the dispensed liquid caused changes in the amount jetted, requiring frequent dispensing parameter adjustments, and so not conducive to consistent production. And the jetting valve was very noisy.

Repeatability
Apacor wanted something that gave it more control over the process; equipment that could provide a tighter tolerance compared to simple time/pressure dispensing or the jetting they tested, and one that could be calibrated for certification purposes.

This led to a trial of the **preeflow eco-Pen 300**, which can dispense at as little as 1 µl and can be used for highly repeatable and consistent dispensing. It is used in multiple industries including laboratory work and biological chemistry, as it can dose and dispense a wide range of material viscosities and can be readily integrated into production processes.

preeflow technology is well proven. The eco-PEN is a precision volumetric, positive displacement dispensing system that gives accuracy and repeatability by a progressive cavity pump principle. By means of turning a specially designed rotor inside a stator, precise volumetric amounts of material are pumped out. Control is by means of specifying the number and speed of rotation. It is completely viscosity independent, and is highly repeatable, with an accuracy of ±1%, >99% of the time.

With the amount of liquid dispensed under control and within tolerance, the positioning of the droplets was the next thing to be considered. Intertronics integrated the preeflow eco-Pen 300 to a **Fisnar F4303N ADVANCE benchtop robot**, something which they had done many times before. With a resolution of 0.001mm per axis, it was able to place the droplets in the required array accurately each time. Programming the robot is carried out by a teach pendant using industry leading dispensing software that walks the user through step-by-step instructions, and the dispensing operation was created in minutes.
Every part that leaves Apacor must pass stringent quality control checks and failure to dispense at the rate and accuracy required would have resulted in failures.

Matthew Basely, Technical Sales Executive at Intertronics:

> *"It was a case of finding the right fit. With a highly repeatable and accurate dispensing valve in the ecoPEN300, along with the positional accuracy of the F4303N, it is the optimal system in terms of accuracy."*

Integration
Intertronics provided a system that is easy-to-use, simple and reliable. The robot and dispenser integration was incorporated into Apacor's workflow. Intertronics provided initial training and support with process development as the unit was brought into production.

The relationship means Apacor has purchased another ecoPEN product.

(continued on next page)

Dr Jonathan Earl, Head of Research & Development at Apacor, said:

> *"The set-up we've got is just right. I see no reason why all our dispensing equipment needs wouldn't be sourced through Intertronics, as we've been happy with everything so far.*
>
> *"Working with Intertronics has been a great experience. Everyone has been professional, friendly and helpful. When we're discussing the expansion of our product range, Intertronics will be part of that conversation."*

Preeflow eco-PEN300 volumetric dosing pump

- Precise, process-stable dispensing as small as 0.001ml (1µl)
- Highly repeatable and consistent dispensing, with an accuracy of ±1%, >99% of the time
- Gentle product dosing process using positive displacement
- Linearly proportional control characteristics
- Wide control and application range
- Controlled reverse flow and clean product break
- Easy system integration, including as part of the archytas series of robot integrations

Applications include: Electronics packaging, SMD/SMT, semiconductor, LCD/LED, medical device assembly, biological chemistry, laboratory, photovoltaic, optics and photonics.

Fisnar F4303N benchtop fluid dispensing robot

- Fast, accurate and reliable 24/7
- Productivity and quality benefits over manual processes
- Dispenses dots, lines, arcs and circles
- Range of plug and play accessories including Tip Alignment Kit, Height Sensor and CCD Vision Kit
- Workspace area up to 600mm x 500mm
- Suitable for adhesives, coatings, gaskets, potting, filling and shielding applications
- Resolution 0.001mm/axis
- No computer skills required
- 100 programs memory, 50,000 points per program
- Software tip alignment routine for quick program offsets when changing dispensing tips

Applications include: Adhesives, form-in-place (FIP) gaskets, potting, coating and filling.

Contact us for more information on our dispensing and robotic products
t 01865 842842
e info@intertronics.co.uk
www.intertronics.co.uk

intertronics
Station Field Industrial Estate
Banbury Road, Kidlington
Oxfordshire, England OX5 1JD