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# FULL AND RAPID AUTOMATION UPGRADE

# Full and rapid automation upgrade with no interruption to service

*Pathology in Practice* speaks with Portsmouth Pathology Service's Nathan Hunt and Beckman Coulter's Tom Coulson about how Beckman smoothed the transition from a mature automation system to a modern Lean automation configuration to eliminate bottlenecks for even workflow.

Ensuring that its customers can achieve, or even surpass, their key performance indicators (KPIs) for results turnaround times is a top priority for Beckman Coulter, regardless of where they are within the cycle of their managed service contract. Portsmouth Pathology Service operates a 24/7 service and has used Beckman automation equipment for over a decade. Therefore, when a full system upgrade to its new-generation Power Express automation was required, Beckman rose to the challenge and implemented with absolutely no interruption to pathology services.

Portsmouth Pathology Service is one of the largest pathology services in the UK, employing more than 350 staff, performing over 10 million individual tests per year in the blood sciences laboratory alone. Operating 24/7 from a purpose-built laboratory complex located on the Queen Alexandra Hospital site, Portsmouth Pathology Service provides a full emergency, routine diagnostic and clinical interpretative service for in-patients and out-patients, as well as for over 90 GP practices. In addition, it provides specialist services on behalf of other NHS and private healthcare organisations.

Given the scale of Portsmouth Pathology Service's operation, it is essential that it meets its KPIs for turnaround times (TATs) consistently.

In order to achieve this, Portsmouth has invested heavily in automation and new technology, ensuring the delivery of a high-quality, cost-effective and responsive pathology service to patients and clinicians alike.

## **Long-standing managed service contract**

As Portsmouth had held a long-standing partnership with Beckman Coulter for nearly 10 years, in early 2015 it became apparent that there was a need to upgrade the laboratory's Power Processor

track system to ensure continued operational efficiency. Beckman, in consultation with Portsmouth Pathology Service, recognised the fact that even though there were just two years left on a renewed managed service contract (MSC), a solution to refresh equipment was necessary to maintain service.

Nathan Hunt explained: "Through the terms of the MSC, although Beckman is obliged to ensure that our service is operational, it does not necessarily have to upgrade us. On completion of the primary seven-year contract with Beckman, as we were extremely happy with the equipment and customer service, we took up the option of a three and a half-year extension. This did, however, mean that by 2015 our equipment was then over nine years old, and, having been very well used over the years, it was beginning to show signs of its age."

Tom Coulson commented: "As we are dedicated to working in partnership with our customers in order to ensure that they



Installation work in progress, with biomedical scientist staff needing to operate analysers manually in the absence of track.

can meet their KPIs, we appreciated that there was a need to replace Portsmouth Pathology Service's equipment. Given the scale of its automated operation, we decided that a full modernisation to our very latest total laboratory automation solution (Power Express) was best to meet their needs."

### Challenges of rapid implementation

Having agreed to modernise Portsmouth's blood sciences laboratory through an automation upgrade, the challenges of achieving this then had to be overcome. This meant Portsmouth and Beckman working extremely closely together. The main challenge was how to manage a full automation installation into an already automated laboratory with no interruption to its KPIs. Table 1 and Figure 1 detail the scale of the installation.

"One of the biggest potential challenges for any laboratory manager, whose entire laboratory's processes and workflow are built around having an automated system, would be to lose this for any length of time," observed Tom Coulson. "Due to the set up in Portsmouth, we had to work out a way of removing the old track and installing the new one into the very same location without interrupting service."

A new and straightforward automation installation generally takes around four weeks, even without the removal of an old track. "In order to minimise disruption to Portsmouth, it was decided that we should halve the standard time and aim for two weeks from start to finish. A challenge that ultimately came down to time management and a very detailed project plan by both parties," added Tom.

Nathan Hunt also recognised the scale of the challenge. "As Portsmouth Pathology Service is housed in a PFI-owned building, we operate under very strict rules on what we can and can't do within this. As all walls, power and drainage had

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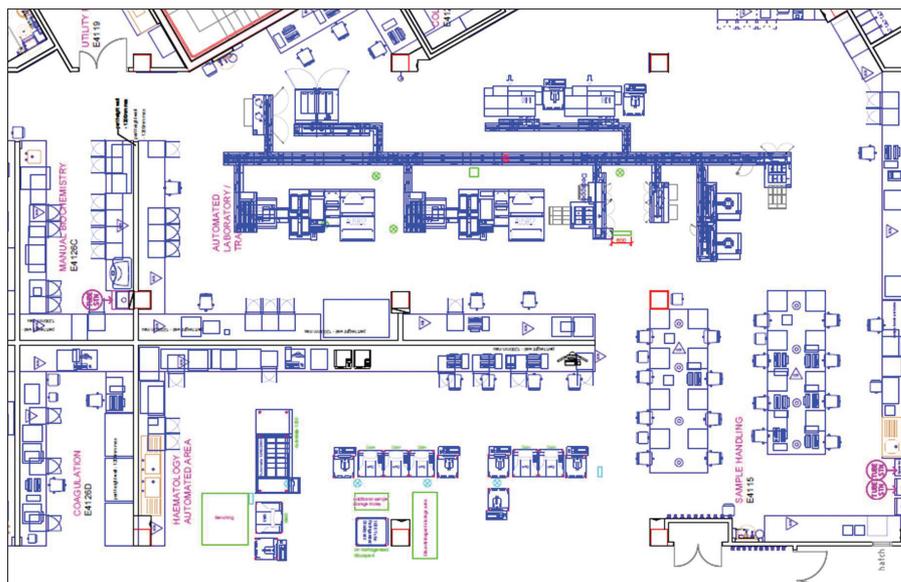


Fig 1. Floor plan of the Portsmouth Pathology Services blood sciences laboratory.

to remain in the same locations, we effectively had to do a straight swap out of the old track with the new Power Express in the same position. Fortunately, Beckman has a lot of engineering and project management expertise and experience of such challenges and was therefore able to fully support us throughout the implementation."

In-depth planning was a critical factor during the entire process. "Beckman had to be extremely flexible and redesign the Power Express around our existing power and drainage. Therefore, all of our instruments were reconfigured to provide the best possible fit within the confines of our fixed laboratory layout," explained Nathan Hunt. "Another consideration was the fact that this all had to be undertaken in consultation and agreement with our PFI provider. They required a detailed

project plan, risk assessment and method sheets, which all had to be approved by them prior to any enabling works taking place or equipment being moved. This involved a vast amount of paper work and liaison, which Beckman fully supported as this was another complication in an already very complicated process. They had the experience to be able to put together an in-depth project plan detailing everything right down to the last plug socket."

### Precision planning and implementation

Having agreed on the detailed plan and timeframe, the next step was to follow this to the letter/hour during the installation. "It was absolutely critical that there was no deviation from the plan. This is because the only way of maintaining a seamless service to our customers was to utilise manpower. Our biomedical scientist staff had to keep instruments fully operational manually without the usual automation delivering samples to these instruments, and also filing away samples post-analysis, all while equipment was being removed from all around them," said Nathan.

To achieve this scale of manual operation at certain preplanned stages within the project, Nathan had to pre-agree all the biomedical scientist overtime required with the trust. "It was essential that we all stuck to the plan because absolutely all of our additional staffing resources were pre-approved

**Table 1. The elements of Beckman Coulter Power Express equipment installed at Portsmouth Pathology Service.**

• Inlet
• Error lane
• 2 x centrifuges
• Decapper
• 2 x AU5812 clinical chemistry analysers (connected)
• 2 x UniCel Dxl 800 immunoassay analysers (connected)
• Recapper
• 5000-tube online refrigerated storage
• 2nd decapper
• Outlet

## LEAN UPGRADE



Two views of the completed Power Express automation installation at the Queen Alexandra Hospital, Portsmouth.

and allocated depending on what was happening and when, as detailed in consultation with Beckman. In doing so, it meant that we never had to scabble around at the last minute trying to find staff to cope when manual processes were necessary in the absence of automation."

Portsmouth observed that a crucial success factor in the incredibly smooth running of the implementation was having a Beckman project manager on site every day. "Having a single point of contact throughout the entire implementation for both hardware and IT was ideal. Stuart McClure was a fantastic project manager for Beckman. He was extremely dedicated, flexible and generous with his time. He was constantly available, meaning that there were always very strong lines of communication," commented Nathan.

The ultimate success factor during the implementation was the fact that Portsmouth was able to maintain its KPIs throughout the process. By 'triaging' workload, the most urgent samples were always prioritised and processed first. "The KPI we use is the turnaround time from receipt in the laboratory to the result being issued, and the most important KPI is a one-hour TAT for samples from the accident and emergency (A&E) department. This one-hour TAT was maintained at all times during the implementation. The next most important KPI is a four-hour TAT for in-patient samples, which again was maintained," highlighted Nathan.

### Benefits of smooth operation

One year on since the completion of the installation in December 2015,

### The main challenge was how to manage a full automation installation into an already automated laboratory with no interruption to its 24/7 service delivery

Portsmouth has found that reliability of the Power Express is excellent, along with its rapid and efficient delivery of consistent results. Even if there is a rare need for a manual intervention, as Nathan observed: "The Power Express has minimal downtime due to its configuration; it operates like a spine with different lanes feeding off it to different instruments and modules, meaning that samples can be routed efficiently around any issues, eliminating any bottlenecks." Although very up to date in its time, Portsmouth's old track had been linear, meaning that one component fed into the next, so any issues would cause bottlenecks until resolved.

Nathan also noted: "In addition to its flexibility, the Power Express also has greater contingency built in as components have inbuilt backups. Also, because it's modular, the new system gives us the option of scalability as our test volumes increase – Beckman has been able to leave space between instruments should we need to add more capacity in the future." The Power Express will enable the laboratory to

respond to growing demand through the ability to add up to 16 instruments, four online refrigerated stockyards and four centrifuges, as required.

### Partnership is key

Both parties observed that a true partnership approach is essential in order to work together effectively, not only in cases such as a rapid installation, but also during routine operation. "Our priority is to support our customers at all times. In the case of Portsmouth Pathology Service, our primary objective was to take the headache of the implementation away from them as much as possible. Working closely with them, we dedicated our resources to the installation and applied our experience to deliver the automation upgrade rapidly and without any impact on their 24/7 service," noted Tom Coulson.

"Over our many years of working together, Beckman has delivered an excellent service and support to us. The fact that it was prepared to implement a full automation upgrade so close to the end of our contract certainly demonstrates the company's commitment to ensuring that we can always provide a good service, meeting all our KPIs. We also feel that we have a true partnership with Beckman, which we particularly noted when working around the clock together to achieve this exceptionally rapid installation," concluded Nathan Hunt.

Nathan Hunt is Blood Sciences Laboratory Manager at Portsmouth Pathology Service; Tom Coulson is Beckman Coulter's Automation & IT Product Manager.