

CASESTUDY

BEDFORDSHIRE POLICE
HQ LECTURE THEATRE



A complete ventilation refurbishment to achieve a demand solution, ensuring comfort whilst training



Better air for the built environment

WORKING WITH P CHESTER & SONS LTD TO CARRY OUT A COMPLETE VENTILATION REFURBISHMENT

VES were tasked by P Chester & Sons Ltd, based in Bedford, to carry out a complete ventilation refurbishment, in a limited space, on a tight budget. The project was the lecture theatre at Bedfordshire Police HQ in Kempston.

CHALLENGE

The location of the units was quite restricting in the small space. Present was an old supply AHU with cooling and heating, running on a belt drive fan with no speed control. The extract from the lecture theatre was an old “long cased” axial fan with no form of control. Speed could only be adjusted by altering the pressure drop in the system, or belt and pulley change on the supply unit.

There were also problems with the old chiller, so cooling was an issue, and the chiller also ran some old chilled water cassettes in the area which were under performing.

The space being ventilated had its challenges. Whilst being a large lecture theatre area, it accommodates varying numbers of occupants throughout the day, from 3 to 4 people to upwards of 100. The space has to be conditioned for when people arrive, but also needs to react to the changing demands over the period.



The old extract fan



Part of the old supply unit

The client wanted to replace the old ventilation scheme with a modern heat recovery system, and replace the chilled water cassettes with DX units. They also wanted to retain most of the existing ductwork. Any replacement equipment also had to be accommodated into the existing ground floor plantroom.

There was an initial design drawn up by a consultant that went to tender, but the scheme came in as very expensive, so was put under review.

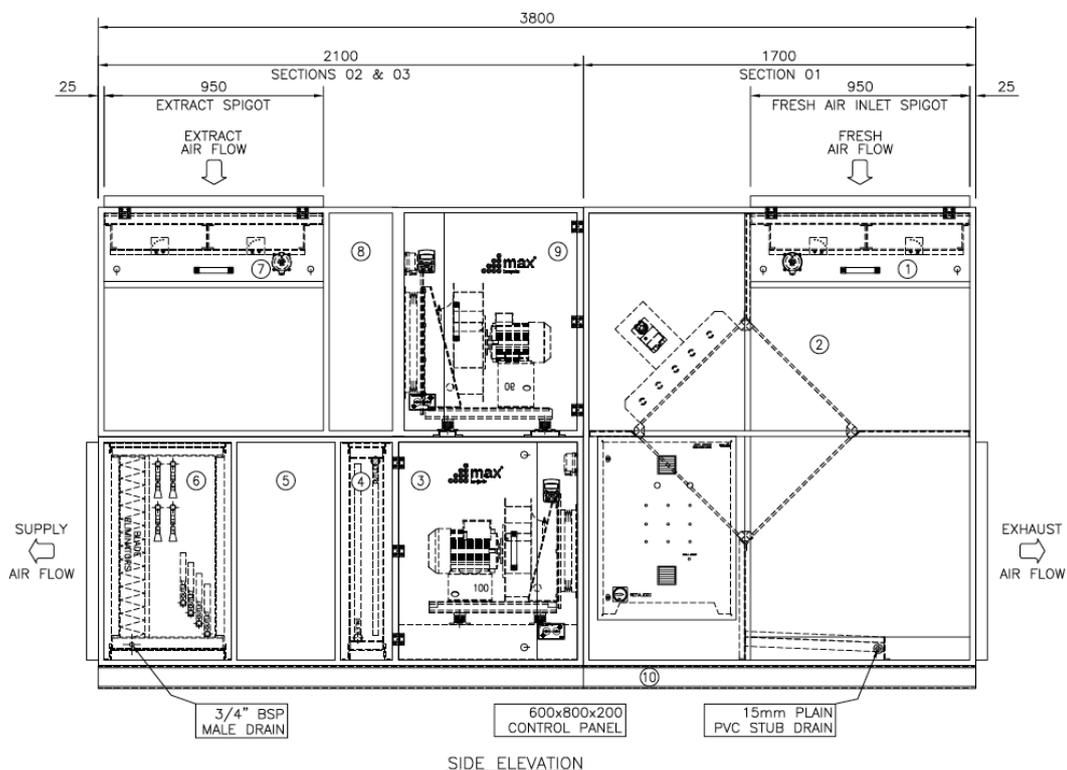
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VES worked closely with P Chester's engineers and were able to look at a specially configured "stacked" heat recovery unit from their MAX bespoke range.

SOLUTION

By having supply and exhaust at opposite ends, but bringing the return air and fresh air on to the top of the unit we could access the existing duct connections easier, and remove some of the ducting which spread around the plantroom. The unit could also fit tightly in against the back wall of the plantroom, creating more space. The unit also incorporated a four circuit DX heat pump coil, which was matched to 4 x 15 kW high efficiency inverter driven condensing units, supplied by P Chester's. This enabled VES to offer up to 60 kW of heating and cooling, so all the heating and cooling for the area could now be managed from the AHU, with no need for additional equipment in the space.

VES were able to produce the unit in sections small enough to get into the building and position in the plantroom, and then build the unit back to full size inside. There was a stand-alone control panel on the AHU, which could interface with the condensing units. P Chester's also replaced the old diffusers with new higher specification diffusers to give improved air distribution to the theatre with air throws able to reach the key areas.



Unit specifications

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RESULT

- ▶ Improved utilisation of existing ductwork entry and exit points
- ▶ Saving on ductwork and space
- ▶ Incorporates high efficiency fans and heat recovery module
- ▶ Allows all the required heating and cooling via the ventilation system – Removed the need for an additional fan coil system in the space
- ▶ Improved acoustics for the area
- ▶ Energy saving through efficient “stand alone” control system with temperature and CO₂ control
- ▶ Interfaced with high efficiency inverter controlled external condensing units for further energy saving
- ▶ Improved demand control
- ▶ Better filtration
- ▶ Saving on routine maintenance – time and cost



The result

“The feedback from staff and people using the lecture theatre is positive. We appreciate the unequalled support from VES, given during the whole project from survey, design, conception, installation, commissioning and demonstration. We look forward to the next projects and have no reservations in employing the services and deploying the equipment VES specify and manufacture.”

- Spencer Chester, MD
P. Chester & Son (Bedford) Ltd

