CASE STUDY | COMMERCIAL
CATEGORY | OFFICES

Refrigerant removal Bristol Water

'A' team cuts time and costs on refrigerant recovery mission

Even with the best maintenance routines in place, mechanical systems such as air conditioning plant still carry some risk of problems. And when a key component needs attention, the challenge is to restore full operation as quickly and as cost effectively as possible.

Facing this challenge at the headquarters of a utility company, Daikin brought in specialist help to cut the time and cost of refrigerant recovery. Although the incident occurred in Spring, when outdoor conditions were temperate, the aim was to minimise any discomfort for staff in the office.

Bristol Water's three-storey HQ at Bedminster Down has three Daikin VRV IV heat recovery modules outdoors, with total capacity of 40hp. These serve 25 indoor units, including concealed ceiling units (medium static pressure) and under-ceiling cassettes. The system is charged with 45-50kg of R410A.

One of the outdoor units needed work – necessitating recovery of the entire refrigerant charge so that the component could be changed.

"Refrigerant recovery is well within the capability of an appropriately qualified engineer," says Martin Passingham, Daikin DX product manager.

"But the difficulty with a charge of at least this size is that with a normal recovery machine it would take most of a day to complete. In addition, the engineer would need to hire a couple of reclaim refrigerant cylinders at further expense, and the refrigerant would have to be destroyed or reclaimed depending on the capabilities of the cylinder provider."

For the Bristol project, Daikin called in A-Gas, its refrigerant reclaim partner, and international specialists in the supply and lifecycle management of refrigerants and other gases.

Martin Passingham says: "The A-Gas rapid recovery vehicle arrived on site at 08:30 and after accessing the units on the roof, positioning the vehicle and pulling 100 feet of hose up to the roof, its crew removed the Schrader valves and connected the recovery lines.

Year of installation

› 2019

Project requirements

- [ ] Air conditioning
- [ ] Air curtain
- [ ] Air purification
- [ ] Control
- [ ] Heating
- [ ] Hot water
- [ ] Refrigeration
- [ ] Ventilation
- [x] Refrigerant Reclaim

"The lines were connected to the three gauge ports on one of the modules, and refrigerant recovery mode was activated on all three linked modules.

"The crew started their onboard petrol-driven recovery machine at 09:20 and in the next 60 minutes they recovered 38.5kg of R410A.

"At this point, the machine was switched off. The system pressure at that time was zero psi and as the accumulators had iced up because of the evaporation, they were sprayed with hot water and left for 30 minutes for the remaining refrigerant to boil off.

"As the system pressure had now risen, the reclaim machine was run for a further 20 minutes during which another 6.6kg of R410A was recovered and the system pressure then dropped to -10 inch Hg

"The A-Gas rapid recovery crew disconnected their lines, packed up and left the site at 11.40. We were then able to remove the component, fit a new one and recharge the system with fresh gas. By mid-day the system was ready to have the replacement components fitted.

"With the combined benefits of the powerful A-Gas recovery machine and Daikin's ready availability of spare parts across its entire range of systems, disruption of air conditioning in this instance was just two days – at least a day less than it might have been."

Martin Passingham says the time savings were significant.

"Time savings amounted to around one man-day and there was no need to hire cylinders, because A-Gas rapid recovery team brought then as part of the recovery service. A further benefit is that the gas will be reclaimed and returned to the supply chain as equivalent to virgin gas. This also has the benefit of being additional to the F-Gas quota system.

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