Case Study

AHU Refurbishment

Laboratory & Clean Room Manufacturing Facility.

Warrior Close, Chandlers Ford.



The challenge...

"We need to improve the reliability of our clean room environments, its critical to ensure our laboratories and manufacturing processes perform 24 hours a day"

"It is essential we have absolute control of our zones; air flows, IAQ and thermal loads. Our products, during manufacturing require specific air quality conditions.

"Unconditionally, the dependable solution, must reduce our carbon emissions in line with our global Net Zero targets"

"We only have a 5-day window, over Christmas, during our shutdown period to carry out any improvements."

The HALO HVAC solution

Fan upgrade & AHU remodelling

Higher efficiencies therefore significant energy & CO2e savings, with additional reliability through multiple fan installation. Easy to maintain with no maintainable components such as belts and pulleys.

New high-efficiency particulate absorbing filtration system - improved IAQ

We know IAQ. Learn how we remove at least 99,995% of dust, pollen, mould, bacteria, and any airborne particles with a size of 0.3 microns (μ m) or larger.

Upgrade of the BMS, the AHU comms, wiring, and panel modifications

Our innovative solution helps maintain, control, and monitor the performance of the air handling systems – 24/7/365.

An outstanding project delivery ****

A total of 13 Air Handling Units serving a critical manufacturing process and science laboratories all requiring modifications or refurbishments, maintenance access modifications, new filtration systems, fan upgrades, air flow and BMS modifications, delivered in just 5 days.

Enabling Net Zero

Reduced CO2e, reduced energy bills whilst improving the effectiveness and reliability of the existing air handling units. See our energy saving report for this delivered project on page 8.





Fan Upgrade & AHU Remodelling

Prior to installation Halo HVAC validated all technical aspects of the system, designed structural modifications of the AHU, pre-wired all fans, along with Internal-rotor motor PM/EC technology that boasts an efficiency of IE6, exceeding motor energy efficiency classes set by both the International Electrotechnical Commission and European Efficiency.

The new maintenance-free fans were installed into each Air Handling Unit, for both supply and extract air streams. Along with predesigned and manufactured reinforced bulk heads, pre-welded bolts, and fan openings for a seamless installation.

This combines three solutions in a way that previously seemed almost impossible: Reliability with designed redundancy, outstanding system efficiency with high-power density for environmental control and 15-20-year extended life cycle for each AHU. www.halohvac.co.uk/case-studies for more before and after photos.



Energy Saving



Life cycle improved



Reliability





Highest-Efficiency Particulate Absorbing Filtration System

Despite available technologies such as UVGI, and ionisation treatment, which use negative ions and ozone gas respectively to improve indoor air quality (IAQ). The likelihood of potential sideeffects and down time is much lower with a suitably designed High Efficiency Particulate Absorbing filtration system.

HALO HVAC designed and installed 54 new HEPA filtration systems in accordance with EN1822:2019 and ISO 29463. The filtration system has an in built anti-microbial coating to kill off the live bacteria and viruses trapped by the filter media. This filtration system offers an efficiency rating of 99.995%, which assures a very high level of protection against airborne transmission, and ultimately, offers optimum indoor air quality (IAQ) for our clients laboratories and clean rooms.

With Halo HVAC IOT it is possible to continuously remote monitor IAQ and accurately adjust based on live data to guarantee a consistent maintenance schedule.





Improved IAQ

Remote Monitoring for PPM



Efficacy





Upgrade of the BMS, the AHU comms, wiring, and panel modifications

The existing legacy controller information, AHU panel and SET files were uploaded with a backup taken, fully checked over for any errors prior to any modifications. Then the software was updated and modified with new security features and speed control operation for the new high efficiency EC fan arrangement and associated sensors.

Enabling the future; HALO also disconnected the existing cabling and removed legacy inverters. We then conducted the Installation of all new wiring for each fan output with new bespoke AHU breaker box, terminations, and isolators. The new BMS system was then fully validated and commissioned to enable the new fans to perform as per the air flow validations carried out by Halo HVAC using our own BSI and UKAS accredited BSRIA calibrated equipment.









Decrease in Costs

Increased Productivity





An Outstanding Project Delivery

With a total of 13 Air Handling Units serving a critical manufacturing process and science laboratories, all requiring modifications and refurbishments, including new HEPA filtration systems, fan upgrades, damper and coil remediation, new antileakage seals and BMS modifications delivered in a specific time frame, it takes real experience and meticulous planning.

When our client said, "*we only have a 5-day window, over Christmas, during our shutdown period to carry out any improvements*". We knew we had to be comprehensive, engage with our supply chain, and Halo teams collectively to guarantee our client was back up and running at 100% production capacity with absolutely no delays or problems.

Many components were pre-designed and fabricated off site. Ensuring safety, compliance, and risk mitigation to support an impeccable project delivery. We preinstalled plantroom equipment protection prior to the shutdown and completed works that did not disrupt the ventilation systems at the earliest stages. This process enabled us to maximise on site time and guarantee the health and safety of everyone throughout the entirety of this project.



100% Health & Safety





Energy Saving Report



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Equivalent CO₂e reduction to taking over **fifteen** diesel cars off the road, that each travel over 7600 miles a year

26 tonnes

The total amount of CO2e reduced by implementing the Halo HVAC solution is twenty six tonnes!

HALO HVAC

1257 trees The equivalent to 1257 fully grown trees absorbing their average of 21Kg of CO2 a year.

2.4 years

By implementing the HALO HVAC solution, the estimated return on investment for the end client is 2.4 years.

Figures based data published by GOV.UK: Greenhouse Gas Reporting Conversion Factors 2022

HALO HVAC

With our range of wireless sensors and secure internet gateways, we enable you to intelligently monitor and control the performance of Air Handling Units.



Our wireless sensors and secure internet gateways notify you about abnormal HVAC events, energy use and temperatures, system degradation, humidity, air pollutants, air pressure, water, vibration, velocity, motion, security & much more. We tell you the exact energy consumption in kWh of each individual component of your HVAC system, in real time or over a period, remotely.

To learn more visit www.halohvac.co.uk



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