

Case Study

AHU Refurbishment

Food Manufacturer. Rugby, Warwickshire



The challenge...

Our client is a manufacturer of crackers, wafers, cookies, and biscuits that you'll find in most households across the UK.

Therefore, quality and hygiene levels throughout their facilities are required to be much higher than those you'll find in most general manufacturing factories.

To eliminate the risk of contamination, this food manufacturer required total control of the internal environment, including temperature, humidity, and air quality.

The existing air handling units were coming towards the end of life, and a lack of reliability from the overall HVAC system.

The HALO HVAC solution

1 Fan upgrade & AHU remodelling

Higher efficiencies therefore significant energy & CO₂e savings, with no maintainable components such as belts and pulleys.

2 Heating & Cooling coil upgrade

The coils within the system had suffered with degradation and were towards the end of their life. With limited access space the new efficient coil arrangement was predesigned and built within the AHU.

3 New high-efficiency filtration system - improved IAQ

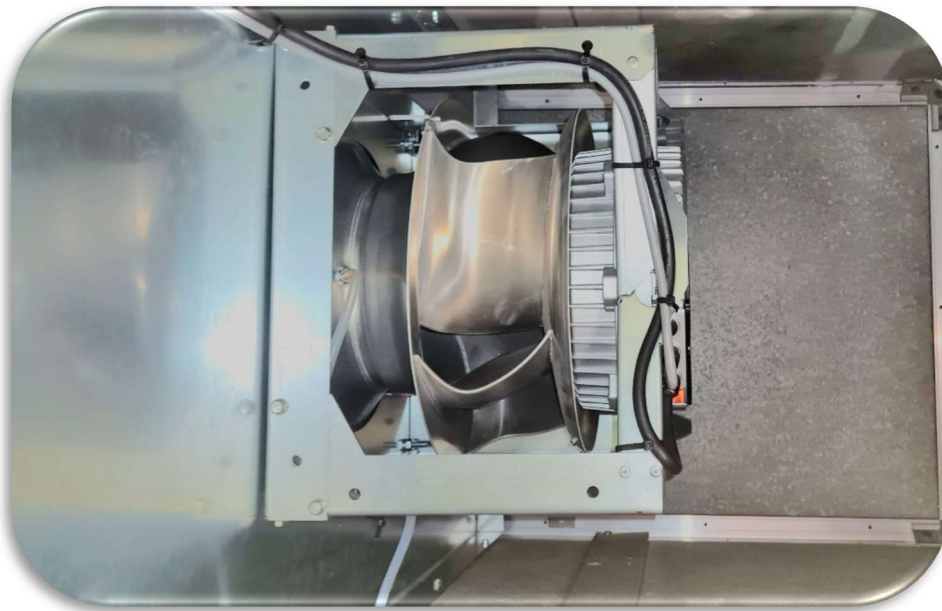
We installed a new high-quality air filtration system designed to effectively capture and remove airborne contaminants. Compliant to ISO 16890-1:2016,

4 AHU (Asset Life Extension)

The air handling unit had suffered with a lack of maintenance and required a full refurbishment, enabling improved maintenance, compliance, efficiency, and value to the asset in its entirety.

5 Project delivery

Food Manufacturing is essential all year round, therefore we had to deliver this project with minimal disruption. We completed all works in 3 days and staged the works to allow for ventilation to continue during working hours.



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 the Air Handling Unit, for both supply and extract air streams. Along with bespoke manufactured reinforced bulk heads and fan openings for a seamless installation.

This combines three solutions in a way that previously seemed almost impossible: Reliability, 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 GoPro footage of this and other fan installations.



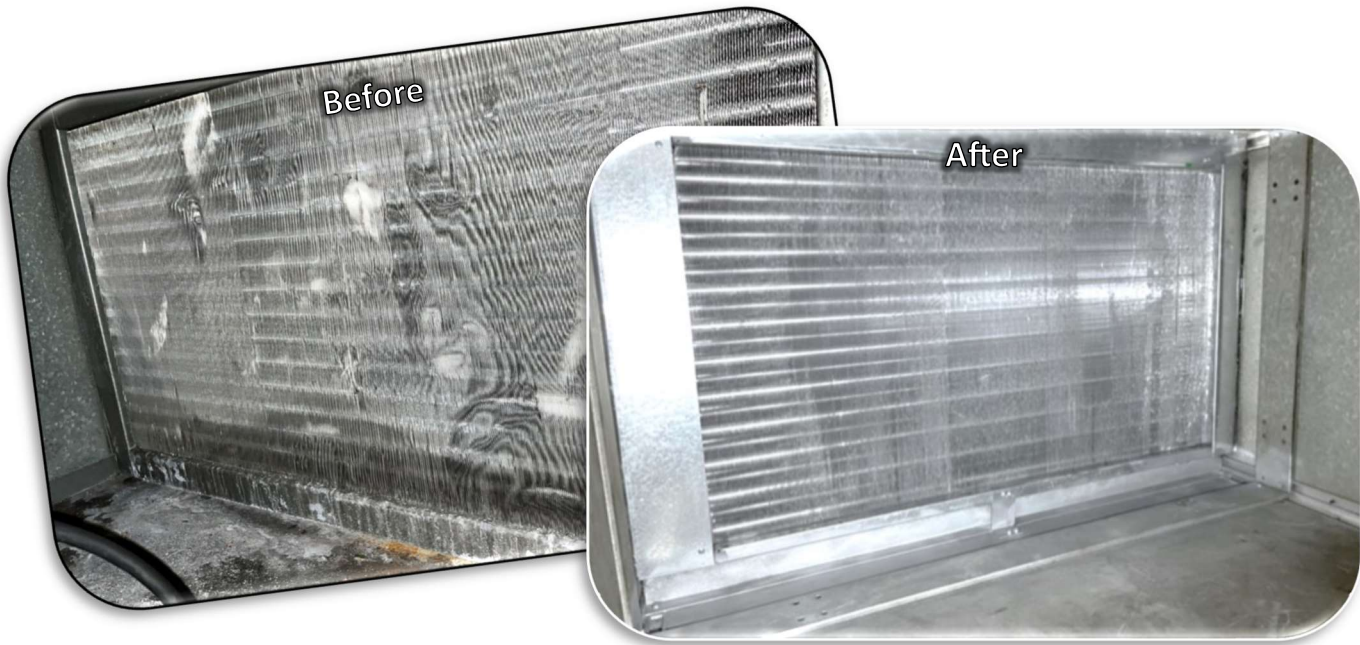
Energy Saving



Life cycle improved



Reliability



Heating & Cooling coil upgrade

Prior to the upgrade, our technical survey engineer identified a coil capacity issue, off coil temperature issues, blockages and a failed condensate drip tray and drain.

We designed a new coil process that involved the calculation of peak heating & cooling loads, specification of system and equipment configuration, calculation of annual performance, whilst taking into perspective noise, humidity and IAQ.

Our engineers supplied and installed replacement coils. To do this, the AHU cover panels were removed, as necessary. Unsecured the existing coils and removed them from the air handling units. The area vacated by the redundant coils was then thoroughly cleaned with anti-microbial cleaner that produces zero VOCs, and rust treatment was applied where applicable.

The new coils were positioned into the air handling units and secured as required. New pipework connections installed. All panels were refitted with new anti-leakage seals, all redundant coil materials were removed from the site in line with ISO14001.



Staff Comfort



Reduced Contamination Risk



Efficiency



New high-efficiency filtration system – Improved IAQ

Although we have been known to utilise IAQ technologies such as UVGI, and ionisation treatment, to improve indoor air quality (IAQ). Considering the nature of this food production facility the likelihood of potential side-effects and down time is much lower with a suitably designed and maintained high-efficiency filtration system. (HEPA)

The system we developed and installed has ease and simplicity of maintenance at the forefront. We installed a new high-quality air filtration system designed to effectively capture and remove airborne contaminants. To ensure the hotels deep commitment to holistic wellness of all staff and guests, the new filtration system is compliant to ISO 16890-1:2016, EN 779:2012, DIN 53438-3 (F1) and OEKO-TEX® 100.

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



Well-being

AHU (asset) life extension

Issues arising from AHUs ageing present key challenges for building services.

Technological advances and ever-changing compliance requirements, means that there are many air handling units operating beyond their originally conceived application. As HVAC equipment ages, increased challenges to maintaining integrity require to be managed – coinciding with potential declining financial value. This may be a result of cumulative degradation over time such as neglect, corrosion, rust, microbial growth, and environmental conditions such as serving a greater occupancy than when the AHU was first designed, and therefore the AHU doesn't achieve the airflow and thermal conditions required. Where like for like replacements is no longer suitable due to either obsolescence or changes in engineering standards Halo HVAC will have a solution.

Over time, this air handling unit suffered with degradation, largely due to a lack of maintenance and required fan, coil and filter remediation, a full service, a deep clean, including VOC free rust treatment, new doors, air leakage seals throughout, and damper repairs to meet compliance.

Additionally, upgrading an AHU prevents unforeseen downtime, improved maintenance, compliance, efficiency, and added value to the asset in its entirety. Halo HVAC conducts asset audits, covering planned preventative maintenance, monitoring, risk management, and financial evaluation including return on investments.



Added Value



Compliance



Enhancing credibility



Project Delivery

Food Manufacturing is essential all year round, therefore we had to deliver this project with minimal disruption. We completed all works in 3 days and staged the works to allow for ventilation to continue during working hours. The system deep clean, new coil installations, pipe work modifications and rust treatments were conducted and commissioned on the first day. The new filtration systems, fan upgrades, damper remediation, new anti-leakage seals and commissioning, and BMS integrations were carried out on the 2nd. With Handover on day 3.

To enable an efficient “hassle-free” project delivery, and apart from the coils that were custom built within the unit, most components were pre-designed and fabricated off site. Ensuring safety, compliance, and risk mitigation to support an impeccable project delivery. 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



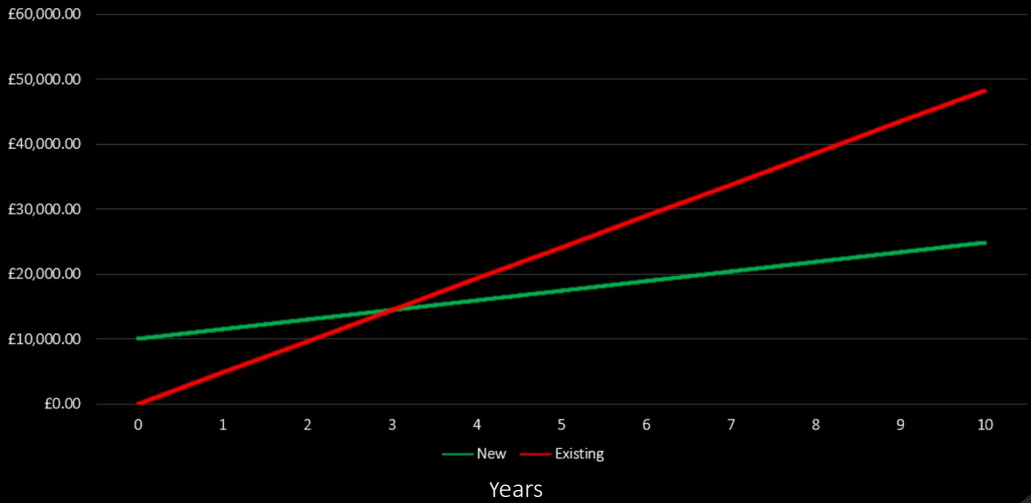
Zero Disruption



Delivered on Time

Energy Saving Report

Running Cost



Equivalent CO₂e reduction to one and half diesel cars off the road, that each travel over 7600 miles a year, every year.

2.5 tonnes

The total amount of CO₂e reduced by implementing the Halo HVAC solution is fourteen and a half tonnes!

110 trees

The equivalent to 110 fully grown trees absorbing their average of 21Kg of CO₂ a year.



2.5 years

By implementing the HALO HVAC solution, the estimated return on investment for the end client is 2.5 years.

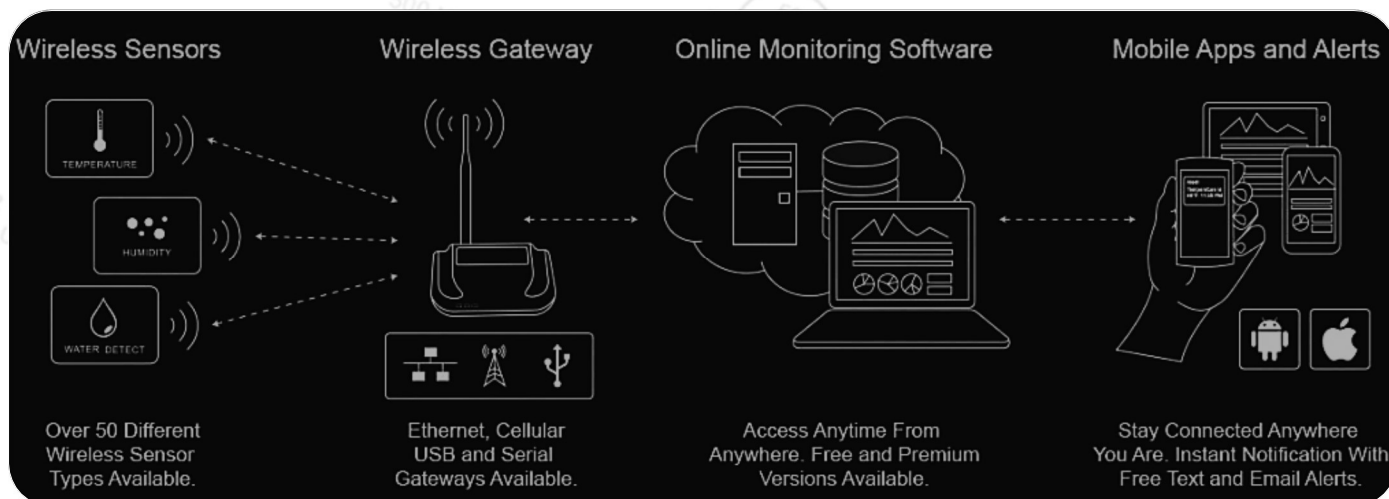




HALO HVAC

WIRELESS IOT SENSORS

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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