

PROJECT EXAMPLES





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Based in Stafford AirCRAFT Air Handling are a long-established specialist UK based manufacturer of air handling units (AHUs).

AirCRAFT Air Handling have manufactured and supplied AHUs for installation at properties managed by some of the UK's best-known brands.

We are very proud of the relationships we have and the AHU's we have delivered some of which are detailed in this project's brochure.

SOME OF OUR CLIENTS:





PROJECT CASE STUDY

MEDICAL CLEAN ROOM - VERTICAL AHU

The majority of air handling units (AHUs) are manufactured and supplied in a horizontal framework and case, there are however some environments where this is not possible, and one option is to install a vertical AHU. This was exactly the case for a western-based medical technology company planning on upgrading their cleanroom ventilation system.

The initial request to AirCRAFT Air Handling was made by a specialist cleanroom solution contractor and required our design team to assist with the bespoke specifications required to for the environment where the new AHU was to be installed.

One of the principal requirements of this AHU was that it had to function within an unclassified cleanroom that needed dust and other external pollutants to be filtered from the supply air whilst controlling the humidity and temperature of the output air.

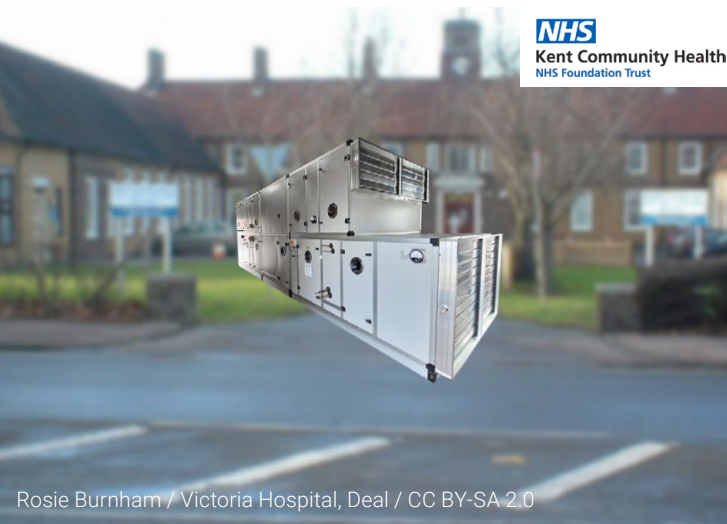
With the installation footprint sizes confirmed along with the dimensions of the supply and output air ducting, our design team worked closely with the cleanroom contractor to finalise the specifications for an up-flow air AHU.



Considerations also had to be made to ensure the clean room's air pressure was constantly maintained at the desired level for optimum performance.

The new AHU was configured with a direct drive centrifugal EC plug fan, a reverse cycle DX heating/cooling coil, high-efficiency particulate air (HEPA) and ultra-low penetration air (ULPA) filters. A packaged control system was manufactured and fitted, which provided easy onsite configuration.

As with all AHUs that AirCRAFT Air Handling design and manufacture, we fully test, and quality check the equipment prior to delivery. In this instance the AHU was not broken down for flat-pack delivery to site and the specialist cleanroom contractor undertook the full installation and commissioning of the equipment.



PROJECT CASE STUDY

VICTORIA HOSPITAL, DEAL

An HTM-03.01 2021 AHU for Deal & Walmer Victoria Memorial Hospital

Opened to the public in 1924, Victoria Hospital in Deal, Kent was originally built as a memorial hospital to recognise the loss of life during the First World War. The 22-bed inpatient unit provides a rehabilitation and intermediate care hospital for the local community.

AirCraft Air Handling were approached by Kent Community Health NHS Trust to undertake a survey and produce a condition report, relating to Victoria Hospital's AHU which serves the general areas of the Hospital. Unfortunately and as expected, the 30+-year-old AHU was found to be in poor condition and did not comply with the current HTM-03.01 standards. Due to the AHU's age and configuration, it could not be upgraded to meet the current efficiencies required by the NHS. As a result, we recommended that the failing AHU should be replaced with a fully compliant HTM-03.01 2021 unit.

Due to limited access, size of the Hospital's internal plant room and connectivity to the existing ducting and pipework, we worked closely with the Trust's M&E contractor to ensure the project went smoothly. This required the Trust's mechanical consulting engineer to draw up the technical specification for the unit, prior to its manufacture.

To assist with this, one of the AirCRAFT Air Handling team had detailed on-site discussions with the M&E contractor to ensure ease of duct reconnections and pipework positions. An additional problem that needed careful planning was access to the internal plant room. This was via a door opening that was 2.5mtrs high and only 750mm wide. As a result, the entire AHU was designed to be easily disassembled into component form which, in turn, could be delivered on pallets.

The AHU was manufactured, disassembled and delivered to the site to be reassembled. After carefully carrying the components up to the plant room, assembly was completed in just 2 days. The fully assembled unit is 7.2mtrs long x 2.0mtrs wide x 2.5mtrs high, delivering 2.5m³/s supply and extract. In conjunction with heating coils and plate heat exchanger, high-efficiency EC plug fans and reverse cycle heat pumps complemented the energy savings, helping to make this new AHU fully compliant with HTM-03.01 2021.

The above is a typical project undertaken by AirCRAFT Air Handling which specialises in site build of compliant HTM-03.01 2021 AHUs. The current delivery period from order and completion of on-site assembly of this type of AHU is approximately 8-10 weeks.



PROJECT CASE STUDY

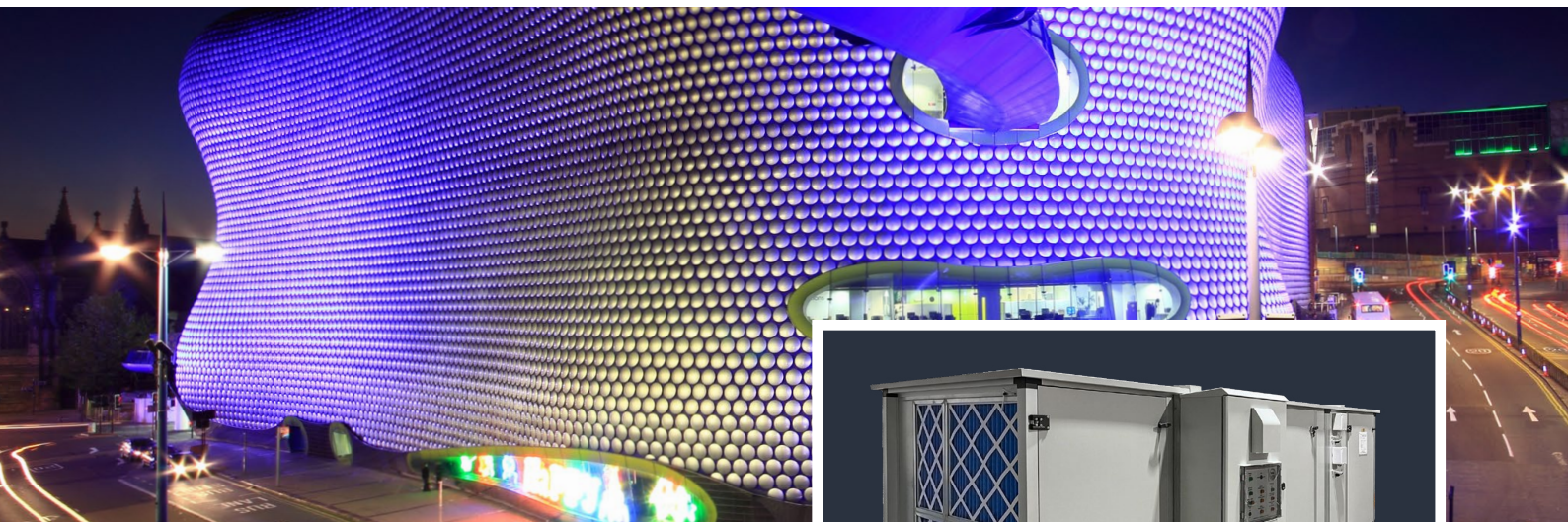
W1 FLAT PACK DELIVERY

In Central London or any congested city centre with limited access, lifting equipment onto a rooftop can present issues, some costly due to crane hire or logistically due to access for a mobile crane and, in some cases, obtaining a crane oversail licence. For one of our customers, a southern-based M&E specialist, arranging a mobile crane to lift a bespoke external AHU for installation on a rooftop had become a problem. In this instance, the issue was obtaining a crane oversail licence which was presenting the difficulties.

As a result, when discussing the problem with our customer, we both agreed the best solution to avoid extending the delivery programme was to break down the AHU that we had manufactured into manageable flat-pack pieces, before shipping them to the site. The parts were broken down sufficiently so that they would fit within the on-site goods lift to enable transportation to the roof for subsequent reassembly.

The problem was solved, the AHU was assembled on-site and tested prior to handing it over to our customer for connection to the building's duct ventilation system. All completed within the programme and to the agreed budget.





PROJECT CASE STUDY

TOCA BIRMINGHAM KITCHEN AIR EXTRACTION

Over the past few years there has been a growing interest in venues that provide interactive sports activities for those who enjoy the excitement of competitive sports in a social environment. One of the sectors innovators is TOCA Social, the world's first combined interactive football and dining experience venue operator. TOCA Social has venues in the UK and America and in the summer of 2024 will be opening their latest UK venue in Birmingham's Bullring & Grand Central shopping centre.

As part of the venue's fit out and kitchen installation, AirCraft Air Handling worked with TOCA Social's consultants and contractors to design and manufacture a high performance external weatherproof kitchen air extraction unit.

The new extraction unit is additional to the building's existing air management and ventilation systems and was required to address the need of removing warm, moist air that contains steam, smoke, VOCs and cooking



odours from kitchen canopies and ducting. Additionally, the extraction unit was manufactured to comply with the HSE's requirements for kitchen air extraction.

The external kitchen extraction unit has been supplied with high performance G4, F9 bag, H11 Hepa and activated carbon filters that will collectively remove the irritants found in the air of an active kitchen environment and dispense the unwanted air in a safe and environmentally friendly way.



PROJECT CASE STUDY

QUEEN ELIZABETH HOSPITAL, WOOLWICH

AirCraft Air Handling HTM-03.01 AHU for Queen Elizabeth Hospital in Woolwich

In line with the latest NHS standards of compliance for Hospital AHUs (HTM-03.01) and specifically their unique requirement for external weatherproof units, AirCRAFT Air Handling have recently delivered a packaged AHU with an integral service corridor to Queen Elizabeth Hospital in Woolwich, London. HTM-03.01 not only relates to the AHU's construction but also its performance relating to air quality and energy efficiency.

Queen Elizabeth Hospital was opened in 2001. It has 521 beds, an A&E department and multiple specialist departments including major trauma and intensive care. The hospital has been undergoing an 80-week programme of infrastructure works including the replacement of its air handling units that serve the operating theatres, pathology, delivery suite, special care baby unit and ward areas.

For Queen Elizabeth Hospital, AirCRAFT Air Handling manufactured and delivered a fully compliant HTM-03.01 rooftop AHU with an integral service corridor to ensure that when engineers are maintaining the AHU, both them and the equipment are protected from adverse weather conditions.



Our team worked closely with Lewisham and Greenwich NHS Trust's M&E Services Contractor to design and supply this bespoke supply & extract heat recovery AHU c/w reverse cycle direct expansion (DX) coil, and energy-efficient EC plug fans.

We completed the AHU build in August 2022 and after final quality testing at our premises in Stafford, we broke the unit down for transporting and shipped the AHU in a modular form directly to the site for reassembly and installation. AirCRAFT Air Handling's Team were on-site for the reassembly and testing, prior to handing it over to our client for final installation.



PROJECT CASE STUDY

ALDERLEY PARK, CHESHIRE

Originally owned by ICI Pharmaceuticals and now under the ownership of Manchester Science Parks, Alderley Park is the UK's largest single-site life sciences campus with world-class laboratories, providing unique facilities for drug discovery including anti-cancer treatments and development.

The park and campus host many of the world's top scientific research organisations including Sygnature Discovery. Sygnature Discovery is a drug discovery company with expertise across a range of therapeutic and biological target classes, creating a second Integrated Drug Discovery Site at Alderley Park.

As a direct result of our previous work in manufacturing high-quality laboratory heat recovery AHUs, AirCRAFT Air Handling were approached by Sygnature Discovery's M&E contractor to help with the design and manufacture of 2 substantial heat recovery AHUs. The new AHUs were required to manage the air recovering the residual heat in the extracted air, to assist in warming the intake of fresh air into the ventilation system. The equipment was also required to filter in the inbound air and chill,



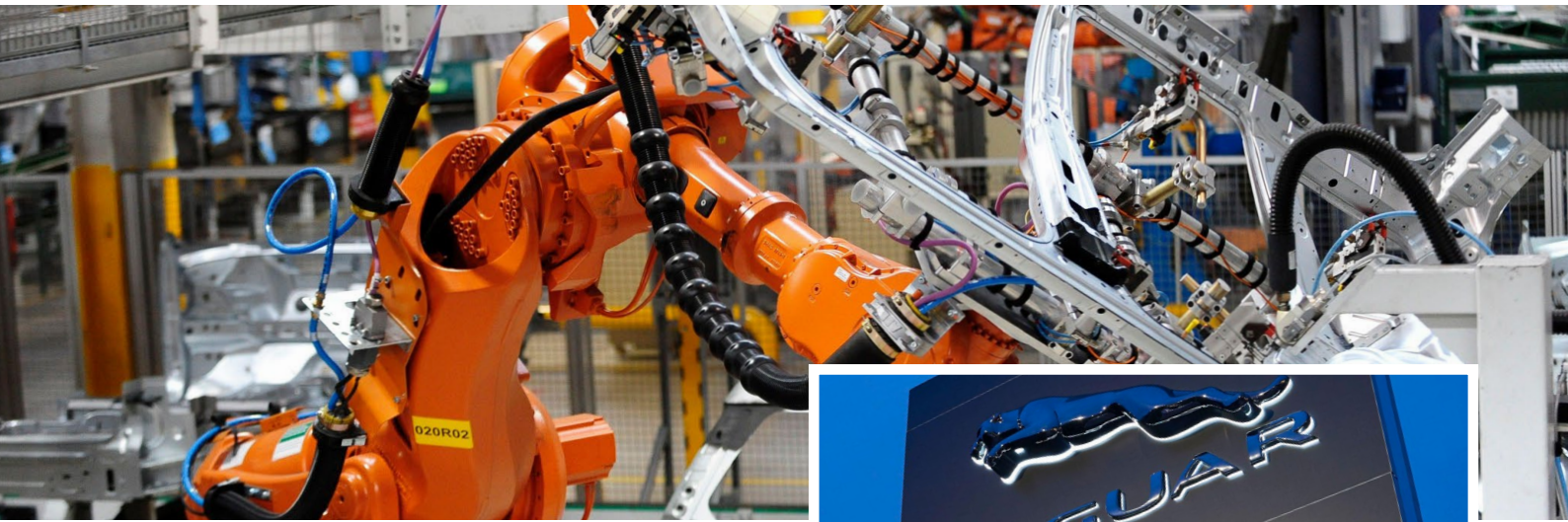
when needed, to ensure consistent air temperature in Sygnature Discovery's laboratories.

The design and build specification:

- Manufacture 2 bespoke AHUs with high efficiency rotary thermal wheels
- Fresh Air Filtration
- Low Pressure Hot Water (LPHW) frost protection and reheat coils
- Chilled water air cooling coil
- Fitted with a system control panel

The systems were also manufactured to provide dual-duty points; a day 1 scenario and a day 2 scenario, where Sygnature Discovery's ventilation requirements could be modified.

As with many of the large and supersize AHUs that AirCRAFT Air Handling design and manufacture, we fully assemble, test, dismantle, flat-pack and ship to the site, for our experienced engineers to assemble and test with the on-site services and ventilation equipment in place, prior to hand over.



PROJECT CASE STUDY

JAGUAR LAND ROVER SOLIHULL

Two of the UK's most iconic automotive names are Jaguar and Land Rover today these brands fall under one multinational automobile manufacturer Jaguar Land Rover Automotive PLC. The company operate manufacturing plants both in the UK and internationally.

The Solihull plant, which sits on a 300-acre site, operates production lines for three Land Rover models and the four-wheel drive Jaguar F-Pace.

AirCraft Air Handling was approached by the contractor who had been awarded the contract by Jaguar Land Rover for the full installation of a new AHU heating system for their latest production line. As with other bespoke systems, our design team collaborated with the contractor to ensure the specification and subsequent build achieved the results Jaguar Land Rover required. This required AirCraft Air Handling to build and supply four, identical 525kW Indirect Gas Fired systems along with extraction units that would filter and heat the



air. We also provided a control solution for each unit that has full BMS connectivity.

To ensure build quality, we fully tested each of the fully assembled AHUs at our premises and subsequently prepared them for site delivery. AirCraft Air Handling engineers undertook on-site testing and commissioning.



PROJECT CASE STUDY

CÔTE COMMERCIAL KITCHEN

Since the pandemic, in almost every enclosed commercial and public environment air quality has become a significant issue for organisations to address. Commercial kitchens are no exception and have their own unique requirements. Not only do they have to remove the steam and cooking odours from the kitchen, they also need fresh, temperature regulated make-up air in quite large volumes to ensure the kitchen operates at maximum efficiency.

Air quality is a contributor to achieving the standards required as laid out by Food Standards Agency (FSA) that all kitchens should be SALSA & HACCP accredited and to gain these accreditations commercial kitchens must have an inbuilt ventilation system.

Today, many restaurant chains and restaurant groups have a development and central production kitchen, Côte, the well-loved French Bistro chain is no exception, and recently opened a central kitchen in West London.

AirCraft Air Handling were recently approached by the contractor of the new Côte to help with the design and

manufacture of an AHU system that would be capable of supplying upwards of 20 kitchen stations with fresh filtered air.

Working with our client, we designed a bespoke AHU system that incorporated five large internally located AHUs with controllers, four of which were indirect gas fired units serving fresh filtered air to the kitchen stations with a delivery rate of approximately 60 cubic meters per second when running at maximum speed. All of the five units' temperature controlled warm air indirect gas fired AHUs were fitted with control systems that were BMS compatible with BACnet and Modbus data communications protocols that allows for detailed monitoring of the equipment.

All five units were fully assembled prior to site delivery and subsequently AirCraft Air Handling engineers undertook on-site testing and commissioning of the controls.



PROJECT CASE STUDY

THOMAS ALLEYNE'S HIGH SCHOOL

Thomas Alleyne's High School is a coeducational upper school and sixth form located in Uttoxeter, Staffordshire. The founder Clergyman, Thomas Alleyne, who passed away in 1558, left provisions in his will to establish three schools including Thomas Alleyne's High School. All three are still in existence and remaining as educational facilities for over 460 years. Although the school has grown over the decades and now has over 27 building, the original listed school building still exists.

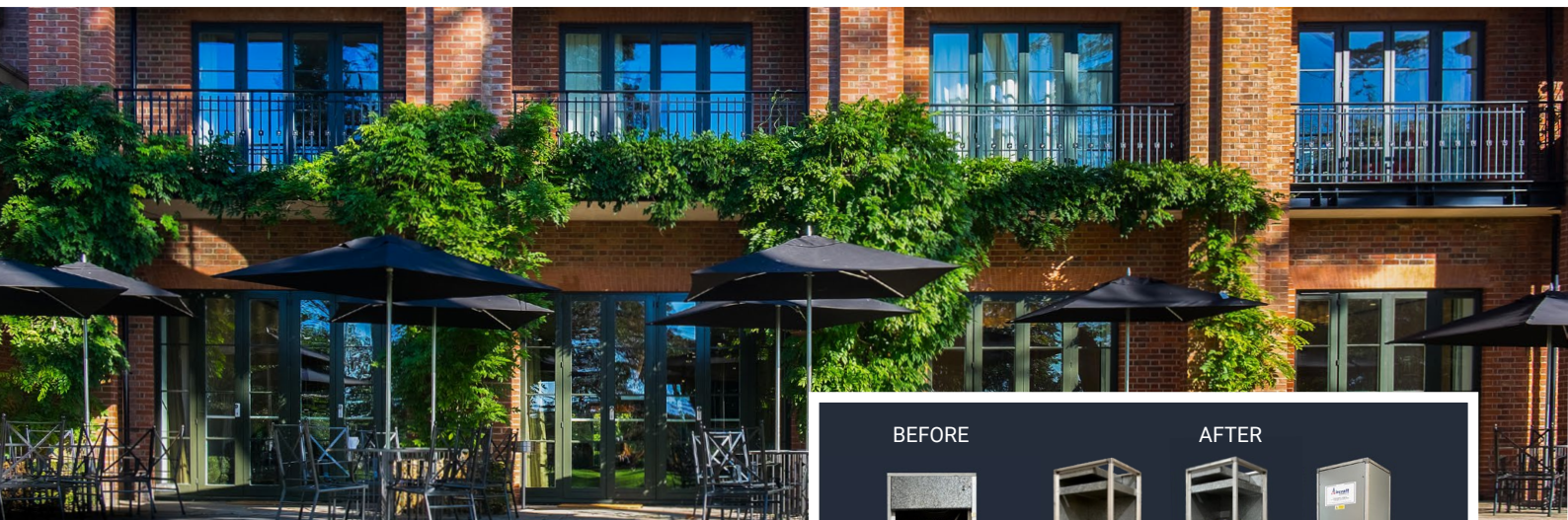
Most recently, the school has undergone a major refurbishment of the swimming pool along with the construction of a gym, changing rooms and 3 classrooms.

AirCraft Air Handling worked with the school's nominated contractor, with regards to the specification of a replacement fresh air displacement AHU. The new AHU was required to provide tempered fresh air into the Pool area and drive the humid/stale air out to atmosphere via roof mounted extract louvers, using the most energy-efficient manner.



To assist in reducing running costs, AirCraft Air Handling manufactured an efficiency heat recovery AHU incorporating a plate recuperator that offers c.75% reduction in heating costs vs the original AHU, along with high-efficiency EC fans that save on electrical running costs and lowering maintenance costs by omitting the traditional belt driven fans of the old unit.

All of AirCraft Air Handlings' pool compliant AHU's are built with a high level of anti-corrosion to ensure longevity on capital investment.



PROJECT CASE STUDY

THE GROVE

End-of-life refurbishment for 20-year-old AirCraft Air Handling AHUs

Because of the range of environments where AirCraft Air Handling AHUs are installed, we can never forecast the exact life expectancy of the equipment we manufacture. However, over time, we frequently refurbish AHUs that AirCraft Air Handling have manufactured over the past years.

This was exactly the case at The Grove Hotel in Chandler's Cross, Hertfordshire – a Luxury Hotel, Spa Retreat & Golf Club where AirCraft Air Handling delivered six mini vertical AHUs 20 years ago. These AHUs were specified to serve the Hotel's bedroom suites and their task had not changed over the years. However, each of the six 20-year-old AHUs had begun to approach the end of their usable life and now required refurbishment.

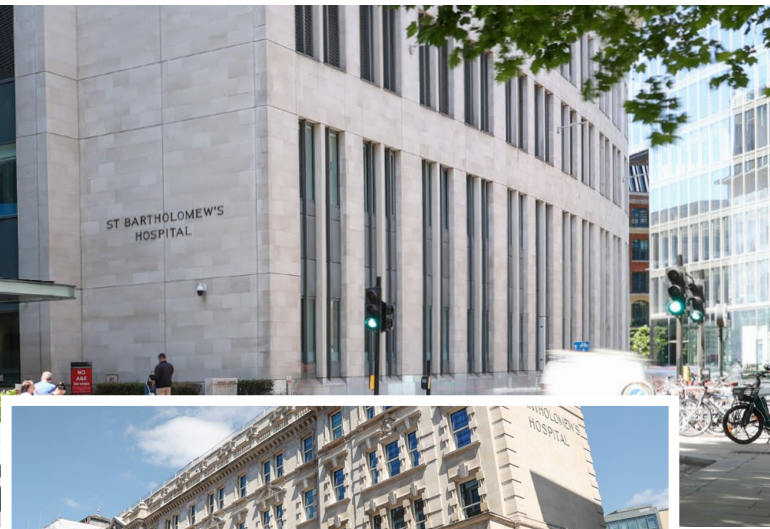
We were initially approached by the Building Service Consultants, Anderson Green, who validated the existing design and confirmed what was required to bring the AHUs up-to-date and more energy-efficient.



All six mini vertical AHUs were returned to us for refurbishment and upgrading which included a full strip down and installation of a new combined heating and cooling coil, high-efficiency direct drive EC plug fans and filters, along with a general tidy up and new replacement casework.

With the work completed, we returned all six AHUs to The Grove Hotel for Herventa Building Services Engineering to install and put into service.

We were all delighted that The Grove Hotel had experienced long-term reliability from our AHUs and pleased that the Hotel can once again benefit from having AirCraft Air Handling's AHUs and the energy efficiencies of upgraded equipment.



PROJECT CASE STUDY

ST BARTHOLOMEW'S HOSPITAL - PATHOLOGY LAB

Even before the pandemic, maintaining air quality in a hospital was essential for the wellbeing of its patients, visitors, and staff. Even more essential than that of the general hospital, are the departments like pathology, theatres, virology, and rare diseases, that all have the potential of distributing airborne viruses. To address the NHS's concerns relating to air quality, all new installations have to meet or exceed the NHS standard HTM-03.01 for Compliant Hospital Air Handling Units (AHUs) with regards to performance and construction.

During the early part of 2022, AirCraft Air Handling was approached by M&E Services Contractor to design and supply a bespoke heat recovery reverse cycle direct expansion (DX) AHU for St Bartholomew's Hospital's Pathology Lab. St Bartholomew's is Britain's oldest hospital, best known simply as Barts, it is one of five large hospitals run by Barts Health NHS Trust.

The very large, bespoke AHU was designed and manufactured to stand the rigors of an external roof

top (four-story high) environment. The specification included a Trend Control Systems smart controller to allow for connectivity to the Hospitals' Building Management System (BMS).

After final quality testing at our premises in Stafford, we shipped the AHU directly to site for installation by our client. Once installed. The delivery follows on from a previous HTM-03.01 for Compliant Hospital Air Handling Unit supplied to St Thomas' Hospital in London SE1, to provide filtered and conditioned air for the hospital's Rare Diseases Centre.



PROJECT CASE STUDY

BRITISH AIRWAYS ENGINEERING, HEATHROW TECHNICAL BLOCK A

Pre-pandemic, Heathrow was the sixth busiest international airport, with annual passengers numbers peaking in 2019 at 80,884. Like many infrastructure hubs, Heathrow has undergone multiple expansion and developments to retain its position as the UK's largest international airport.

Although Heathrow is principally known for passenger transit, it also provides maintenance facilities for a wide range of commercial passenger aircraft, one of the largest being the Airbus A380. This supersize aircraft, along with others, are being maintained in Heathrow's Grade 2 listed Technical Block A (TBA), operated by British Airways Engineering, in a hangar originally designed for smaller aircraft.

Along with other developments at Heathrow, ARUP, a multinational professional services firm, were

given the task of re-designing the hangar, which included the installation of new recirculation AHUs to filter the air and maintain the temperature within Technical Block A.

AirCraft Air Handling worked closely with the installation contractor on the specification, design and subsequent manufacture of eight identical 600kW indirect gas fired recirculation AHUs, that included extraction units which would filter and heat the air.

As with all of the units we manufacture, we comprehensively test the fully assembled AHUs at our premises and subsequently prepare them for site delivery. AirCRAFT Air Handling engineers also undertook on-site testing and commissioning.



PROJECT CASE STUDY

LUXURY BOUTIQUE HOTEL IN LONDON'S FAMOUS BOW STREET

The new NoMad London, a luxury boutique hotel once the home of the Bow Street Runners, London's first professional police force and subsequently Bow Street Magistrates Court, is located in Bow Street WC2 and opened to the public in May 2021.

The 90,000 sq ft Victorian Grade II listed building has been developed into a luxury boutique hotel with 91 rooms, a three-storey atrium restaurant and a ballroom with events space.

Working with NoMad's contractor, AirCRAFT Air Handling were asked to design and manufacture the all-important AHUs needed to ensure well-regulated, clean fresh air is circulated throughout the property.

Our initial task was to design and specify the equipment needed for the manufacture of 8 bespoke individual AHUs. These bespoke AHUs were designed to provide low energy heat recovery and fresh air make up that delivers filtered, temperature conditioned air into the building, whilst extracting stale air from the



interior. The 8 AHUs with varying capacities were required for the hotel's bedrooms, front of house, atrium restaurant and kitchens.

AirCRAFT Air Handling worked with Sarum Electronics to produce 8 bespoke AHU controllers that would provide full BMS interoperability.

We subsequently manufactured the 8 bespoke AHUs and undertook full pre-delivery testing prior to delivery to site, for installation by the client's contractor. Final commissioning and testing was undertaken by AirCRAFT Air Handling technicians prior to the units being placed into service.



PROJECT CASE STUDY

BATTERSEA POWER STATION

The Grade II listed Battersea Power Station is one of London's most iconic buildings and has been undergoing major alterations, transforming it into a visitor destination that includes a new shopping centre, restaurants and cultural spaces. As part of the transformation, a new multi-floor shopping centre, found in the power stations' original turbine halls, forms part of Battersea Power Station's Circus West Village.

In any enclosed environment that hosts the public, air quality has become a significant issue. Apart from the obvious needs of air filtering prior to its distribution, maintaining a constant and comfortable temperature irrespective of season is essential for retail environments.

Working with building services and environmental engineering consultancy ChapmanBDSP, AirCraft Handling were asked to design and manufacture an



Typical bespoke vertical AHU

AHU system capable of filtering, recirculating, cooling and heating the air within the new main shopping mall area. Due to the size of the shopping mall, AirCraft Handling manufactured twelve vertical AHU units.

The AHUs were transported to site and installed by the client's contractor. Commissioning and testing was undertaken by AirCraft Air Handling technicians, prior to the units being placed into service.



PROJECT CASE STUDY

PUTTSHACK, WHITE CITY

Good air quality in restaurants, particularly when a kitchen is close, is essential to ensure customers have a great eating experience, one not tainted by cooking smells or uncomfortable temperatures. Today and more importantly, well-regulated fresh air has become essential to ventilate indoor areas that do not have doors or windows that open onto the outside.

To address the need for well-controlled fresh air is that of Puttshack White City, an indoor social venue located in the Westfield Centre, London W12 that required 4 fresh air AHUs, all to be suspended from the ceiling.

Working directly with Puttshack's contractor, AirCraft Air Handling designed and manufactured the four units capable of; filtering, heating & cooling the incoming air. Puttshack White City was London's first high-tech indoor mini-golf centre and social venue, highly stylised with a modern semi-industrial appearance. As a result, the fully exposed suspended AHUs had a semi-matte black and aluminium finish to blend in with the industrial look.



As with most contracts of this kind, we manufactured the AHUs at our premises in Stafford and delivered them to site for Puttshack's contractor to install. We also attended the site for commissioning and testing, prior to the AHUs being placed into service.



Services

Bespoke Design
Site Surveys
AHU Manufacturing
Flat-Packed AHU
On-site Assembly
Refurbishment & Upgrade
Controls Commissioning

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