

Fleming Park Leisure Centre

CCS Spotlight on Air Pollution



Interserve were employed by Eastleigh Borough Council to build a new 25 million pound leisure centre over a period of 18 months. The new leisure centre would provide the following sports facilities; a 25m 8-lane swimming pool with viewing gallery, a 20m x 10m learner pool with movable floor, 15 court sports hall with retractable spectator seating for 500 people, four squash courts with movable walls, a fitness suite with spin studio, three multipurpose studios, four new tennis courts (replacing 8 existing tennis courts), a café, soft play and space for three concessions.

During this project a number of measures were implemented to not only control air pollution at site level, but to reduce our impact as a group.

Within this case study are examples of measures we utilised on site to control and minimise air pollution whilst bringing the project to a successful conclusion.

Key Project Information

- Client:
Eastleigh Borough Council
- Value:
£25m
- Duration:
April 2016 - November 2017
- Contract Type:
JCT Design & Build 2011
- Architect:
AHR
- M&E Services:
Arup
- Structural Engineer:
Arup



Site Planning

- Solid steel hoarding to site boundary, of 2.4m high. Stockpiles to be no more than 1m high
- No bonfires or burning of waste materials on site at any time
- Site layout - machinery and dust causing activities to be located away from residential areas, site cabins and car parking areas
- All site personnel to be fully trained and briefed on dust mitigation measures
- Trained and responsible manager on site during working hours to maintain Dust Logbook and carry out site inspections
- Hard surface site haul routes
- Use nearby rail for transportation to/from site if available
- Undertake regular dust monitoring
- Diesel generators will not be used on site
- Site water supply for the duration of the works will be from existing mains supply

Construction Traffic

- All vehicles to switch off engines, no idling vehicles
- Effective vehicle cleaning and specific fixed wheel washing on leaving site and damping down of haul routes
- Haul routes to be cleaned with road sweeper as required to prevent transfer of site mud/dust onto the public highway
- Avoid dry sweeping of large areas
- Ensure runoff is managed effectively in accordance with the CEMP
- All non-road mobile machinery to use ultra-low sulphur tax-exempt diesel where available
- Minimise movement of construction traffic around site and ensure compliance with speed limit
- Hard surfacing and effective cleaning of haul routes and appropriate speed limit around site

Site Activities

- Minimise dust generating activities for all site activities
- Use water as dust suppressant where required
- Seed and water earth stockpiles to prevent wind whipping
- Re-vegetate earthworks and exposed areas
- Ensure that all operations that involve a dust generation potential are subject to Method Statement to minimise the effect and includes spill containment and clean up measures
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery
- Keep site hoardings clean using wet methods
- Manage the storage and handling of material that has potential to produce dust in a way that minimises the effect
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction
- Ensure concrete crusher has permit to operate and mobile plant licence (demolition phase only)

Heavy duty exhaust filter kit

The HT220T Heavy Duty Diesel Exhaust Fume Filter Kit is extremely effective on large plant with its 450mm diameter fan, being particularly suitable for generators, diggers, handlers, piling rigs, excavators, etc. The HT220T is suitable for an engine rating of up to 150kW.

The filters are constructed to trap fine particles when first fitted. As the filter becomes 'conditioned' these particle sizes reduce, so that with time, you'll notice soot and carbon particles also being trapped. Once the outside of the filter becomes visibly black, this indicates that the filter media is full and needs replacing. The media is non-corrosive, non-combustible, non-alkaline and chemically stable. It possesses excellent heat resistance, flexibility and low thermal conductivity.



Magnetic diesel exhaust filter kit

The HT340M Magnetic Diesel Exhaust Filter Kit is designed to filter the hazardous particulate fumes from diesel plant and has all the same benefits as the Mini Magnetic Diesel Exhaust Filter Kit, but with the advantage of being slightly larger which means it can be connected to diesel plant up to 60Kw in size. Another unit that's quick and easy to install, has a long-lasting high efficiency filter element, and complies with COSHH regulations



Key product features

- Adaptable to most mobile and static diesel plant and machinery
- Suitable for generators, diggers, handlers, piling rigs, excavators etc.
- Robust and reliable with heat shield
- Removes 95% of particulate from diesel engines
- Complies with COSHH regulations
- Long lasting, high efficiency filter element
- Proven performance

Key applications

- Basement excavations
- Warehouse construction
- Internal piling
- Generators & compressors

Key product features

- Adaptable to most mobile and static diesel plant and machinery
- Fast installation time
- Universal exhaust fitting
- Quick release filter housing
- No straps required
- Compact and lightweight
- Removes 95% of particulate from diesel engine exhausts
- Long-lasting high efficiency filter element
- Complies with COSHH regulations
- Proven performance

Key applications

- Basement excavations
- Warehouse construction
- Access plant

Dust Extraction Unit DC2900C

The DC 2900 is our most popular dust extractor, suitable for vacuum cleaning and source extraction from handheld power tools (with up to 5" suction casings) and small table saws. The DC 2900 has a sturdy steel chassis with big wheels, but is still lightweight and portable. The DC 2900 can be ordered with a bio-degradable bag - code DC 2900c.

Specification	
Weight	19kg
Model	DC2900C 110v
Capacity	29ltr
Height	1.07m
Width	420mm
Decibel Reading dB[A]	68
Power	Power Consumption- 1285W
Power Input	1200-1400w
Voltage	110v
Hose Length	5m
Filter	HEPA H13
Motor	Single Phase
Length	510mm
Airflow	190m ³ /hr
Maximum power	Max Vacuum 24kPa
GO Waste Reduction and End of Life Benefits	Yes
GO Nuisance Avoidance	Yes
Application Class	Class H



Aircube 2000

The Aircube 2000 is a robust air cleaner with an ECO-fan and a capacity of 1800m³/h, equipped with variable speed transmission to save energy, e.g. at night. The Aircube 2000 can be positioned horizontally flat on the floor, with the exhaust then pointing to the side. With its ergonomic design it is easy to carry and transport.

Specification	
Weight	30kg
Model	DC AIRCUBE 2000
Decibel Reading dB[A]	60-68
Filter	HEPA H13
Airflow	1800m ³ /8
Weight Dry	30kg
Negative Pressure	400pa
Pre Filter Area	7.5ft ² /0.7m ²
Degree of Separation	HEPA13



SS3 Cutting Station

The Cutting Station is a unique purpose-built work station for cutting lengths of metal, such a conduit, cable tray and pipe. Integral health and safety features include fire-rated sound deadening foam to reduce noise pollution, and PVC screens to contain and protect from sparks. The chop saw is positioned on a rubber mat to reduce HAV, while the design allows the chop saw to be positioned at a safe working height, minimising risk of accident or injury. The unit can be easily used with a dust extraction, or an air filtration system to further enhance the health and safety features to protect the operative of the chop saw, as well as those working in the surroundings.

Specification	
Height	31.82m
Width	1.36m
Diameter	0.8m
Weight Dry	150.5kg
GO Waste Reduction and End of Life Benefits	Yes
GO Pollution Prevention and Control	Yes



Dust Removal System

Complete system for drilling, chiselling and coring - 99% dust free. The Dust Removal Systems (DRS) help customers to keep dust to a minimum using suction to remove dust at source, in virtually every conceivable job on the construction site such as grinding, chasing, cutting, breaking etc. The new DRS-Y is a new complete dust removal system for all Y-Combi's TE-50 -TE80 covering all relevant applications.

Specification	
Dimensions	235x96x290mm
Drilling Inhalable Dust without DRS	44.8mg/3m3
Drilling Inhalable Dust with DRS	0.5mg/3m3
Chiselling Inhalable Dust without DRS	70.8mg/3m3
Chiselling Inhalable Dust with DRS	1.5mg/3m3
Coring Inhalable Dust without DRS	113mg/3m3
Coring Inhalable Dust with DRS	1.1mg/3m3



Dust Extraction Unit - DC1800

The DC 1800 is suitable for general cleaning and source extraction from handheld power tools (with up to 5" suction casings) and small table saws. The DC 1800 is small, lightweight and ideal for those that need a highly portable machine that is powerful enough for source extraction. With its low weight, it is easy to carry onto the job site and can be easily stored or rolled under a workbench. The sturdy construction is perfect for the demands of the construction and machine rental industry, but also for anyone that needs a light yet powerful dust extractor. The DC 1800 is equipped with steel container and a plastic bag inside.

Specification	
Weight	14kg
Model	DC1800ECO
Decibel Reading dB[A]	66
Voltage	115V
Hose Length	5m
Filter	HEPA H13
Airflow	190m/hr
Application Class	Class H



Dust Buster

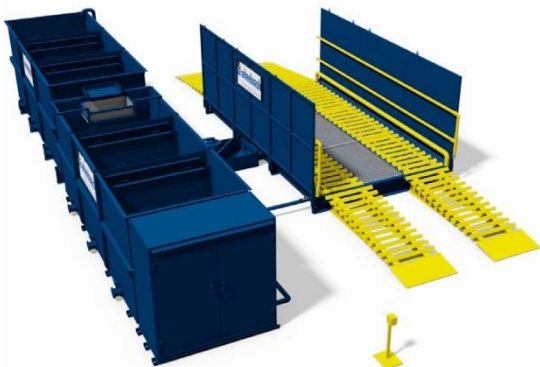
The Dustbuster is a self-sufficient package used to suppress dust at source. Including a long running pump, large water tank and 35m hose, the Dustbuster ensures the user is safely protected for the entirety of their shift. The unit also includes a lockable storage cabinet for saws.



Wheel Wash

On the exit of the site we placed a large automated wheel wash which was highly effective in keeping the mud within the construction zone. This in turn reduced the amount of dust arising from the dried mud and prevented issues both on site and beyond our site hoarding.

- Wash Platform - 6000mm x 3500mm x 380mm - 3224 Kg - 3975 Litres capacity
- Side Screens 6 / 2000mm x 2000mm x 43mm - 110 Kg (each)
- Ramps 3000mm x 1100mm x 380mm - 450kg (each)
- Mobile Road - 4000mm x 1100mm x 380mm - 657kg (each)



Ready mix Silo

We had 3 silos on this project which serviced the large masonry package. The benefits of the dry silo mortar system over other methods of providing mortar to site are numerous and represent the opportunity to enhance business opportunities through potential cost saving benefits:

- The silos produce mortar which contains a guaranteed cement content, controlled air and workability aid contents, contained within guaranteed mix proportions, which provide the customer with a durable mortar less susceptible to frost attack and exhibiting superior resistance to rain penetration.
- Accurate and controlled pigment addition results in superior colour consistency for coloured mortar applications.
- The system allows as much or as little to be produced from the silo as required, from a bucketful to a tubful, meaning wastage is kept to a minimum.
- Workability of the mortar can be adjusted to meet any on site masonry application, resulting in increased productivity.
- Dry material for mixing is always available from the silo whenever required - eliminating downtime and increasing productivity.
- Silos take up a relatively small area on site meaning space is effectively utilised.
- Mortar can be produced at the press of a button, meaning labour intensity and health and safety concerns are reduced, compared to traditional site mixing.
- Material stored in the silo is not exposed to the elements so therefore retains its integrity, reducing wastage and also removing the chance of opportunist theft.
- Large quantities of mortar are delivered via bulk powder tanker, which reduces on site traffic movements significantly.
- Site presentation is considerably improved.
- Noise produced by the silo mixer unit is minimal, particularly advantageous where sites are located close to schools, hospitals, existing residential areas etc.



Tarmac haul road

A decision was made very early on before arriving on site to allow for a fully tarmacked haul road to site, complete with turning circle and layby. This meant that deliveries could be brought to and from site with the knowledge that goods could be loaded and unloaded efficiently whilst minimising the amount of mud being tracked from the construction zone onto any roads. By having a highly effective logistics plan, productivity was increased by the availability of materials, less return trips and of course minimised the amount of manoeuvring for vehicles, reducing risk of collisions.

Road sweeper

A regular visit from our local road sweeper supplier helped to suppress any mud that did get onto our haul road and was swept away to ensure that it did not reach any public areas hence removing it before it dried out to cause an issue with dust.



Offsite manufacture and cutting

Planning ahead to ensure maximum efficiency in terms of transport, cost and materials, offsite manufacture and cutting significantly reduces the risk of exposure of dust and reduces overall pollution. It also enables the most efficient use of materials that are being used in a controlled environment which results in less wastage.

At Fleming Park we utilised these options for almost all brick cuts, concrete block slips and joinery items. Below are details on our own joinery factory based in Christchurch.

Interserve Specialist Joinery's 40,000 sq ft workshop in Christchurch Dorset encompasses all the precautions you would expect to comply with health and safety legislation to protect our workforce from the effects of dust and fumes.

Our Machine shop is equipped with the latest technologies to remove woodworking dust via an extraction system which is coupled with a waste to energy plant. Dust is extracted from each machine and stored in a silo and drawn off and incinerated at high temperature levels to produce heat. This is recycled to heat the workshop space.

Within the bench joinery area each hand held power tool is equipped to be connected to a Class M portable extractor, complying with mandatory legislation. These portable units can be used on a variety of power tools that create dust and will provide protection to operatives even when manufacturing solid surface components.

The finishing area also adopts a proactive approach to eliminate harmful fumes being ingested. The spray booths have a full 'dry backed' extraction and filtration system that extracts the over-spray and fumes and filters them. Additionally the polishers are issued with air fed masks to eliminate harmful toxins and fumes.

Even our site installers are trained in the use of dust elimination, resisting any sweeping of dust and using Class M Vacuum cleaners to remove particles. These machines can also be attached to power tools such as jigsaws, chop- saws, skill saws and planers, in the same way as the workshop.

