Air purifying in the environmental research centre - Genano® SUERC case story

Organisations involved

SUERC (Scottish Universities Environmental Research Centre) provides the Universities of the Scottish consortium with collaborative access to expensive equipment and specialist expertise. The main areas of strength are in geochemistry, radiochemistry and isotope bio geosciences and the Centre houses perhaps the most comprehensive suite of dating techniques available in the UK. Research and development is a very significant part and the occupational safety is considered an important part of the everyday work in this laboratory. The company continuously controls the working environment and searches for improvements. The persons involved are Professor Rob Ellam, Director of SUERC, and Professor Anne Kelly, Research Laboratory Manager

Genano Ltd is a Finnish manufacturer of air purification units. Genano's mission is to create clean air solutions for commercial and industrial applications by using its patented Genano technology®. Its air purification systems can be used in many applications e.g. cleanrooms, isolation wards and critical areas (hospitals, dental, laboratories etc.). The core of this air purification technology is the ability to clear indoor air of particulate matter of any size, starting with nanosized particles.

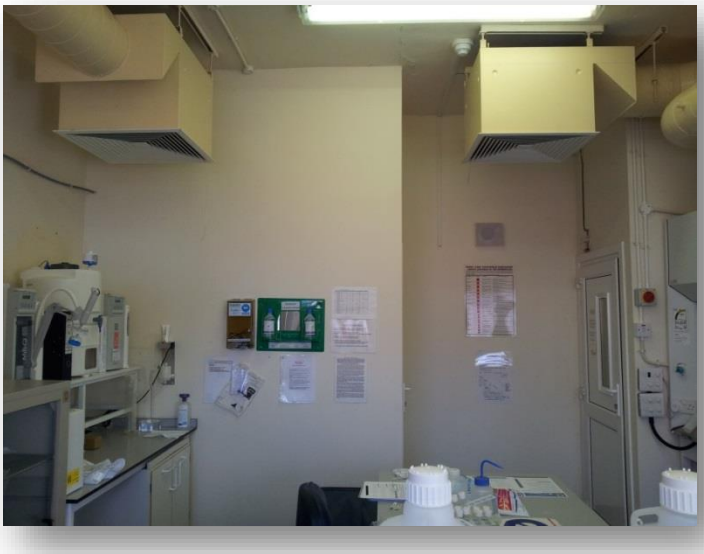
Description of the case

Genano technology®, which cleans all the airborne particles, also nanosized particles and molecules, is used to purify the indoor air in the laboratory of SUERC.

Because of the non-compromised air quality required in their Clean Rooms, they are built as positive pressure rooms, with 2 + 2 HEPA filters / room purifying the air.
Due to the internally raised concerns, in 2012, about the air quality within one area of SUERC premises and possible health risks to the people working there, that area was closed and a thorough survey on the air was carried out. Although some air quality issues were recorded in the survey, the target area was cleared to meet the regulatory requirements for health & safety at the work place. However, the health & safety doubts raised in general and the identified air quality issues, combined with the external sources of possible air pollution in the SUERC location, Scottish Enterprise Technology Park, SUERC agreed with Genano UK Ltd to investigate how clean their most critical Clean Rooms really are.

Additional reason was also the less convenient work in regularly changing the HEPA filters and the cost of the filters.

The agreed project covered air quality analysis in the HEPA filter purified rooms before Genano, bringing G310 units in and then carrying out air quality analysis after Genano.



Picture. The agreed project covered air quality analysis in the HEPA filter purified rooms before Genano, bringing Genano 310 units in and then carrying out air quality analysis after Genano.

With Genano technology®, it is possible to remove all types and sizes of particles. With this technology it does not matter whether the particles are living organisms (microbes) or inert e.g. metal dust. It is able to collect very small particles even nanoparticles, which is normally not possible with fibre filters. Larger particles e.g. mildew (blight) and dust particles do not clog the purification unit, as can happen in filter-based technology. The removal of airborne particles operates at 100% efficiency from the air into the collection surfaces and then readily washed into the collection container.

In the Genano technology®, particles are collected into washable collection surfaces while in the filter technology, particles are collected onto the filter which must be changed regularly. Genano technology®, can be described as a state of the art electrical filter, where the air flows freely between the collection surfaces or in a collection tube. The airborne particles, also nanosize particles, are subjected to a powerful ionic spray, which confers on them a negative charge and pushes them forward. The particulate matter settles onto a collection surface from where it is flushed into a separate vessel or sewage system with a mixture of water and detergent. The particles are collected into a vessel, providing tangible proof of the efficiency of this technology.

Aims

- Purifying the air of the laboratories.
- Protecting products from contamination.
- Protecting the laboratory personnel from nanosize and molecular size particles.
- Keeping the HEPA filters clean
- Saving money with less HEPA filter change

Solution

In order to achieve the targets above, which could be considered as risks, air purifiers made with Genano technology® are placed in the working rooms that have the greatest influence on the purity of the products or have an influence on cross contamination between laboratory rooms by airborne particles.

Pictures. Genano 310 units are running in three clean rooms in SUERC laboratories, Scotland, UK.

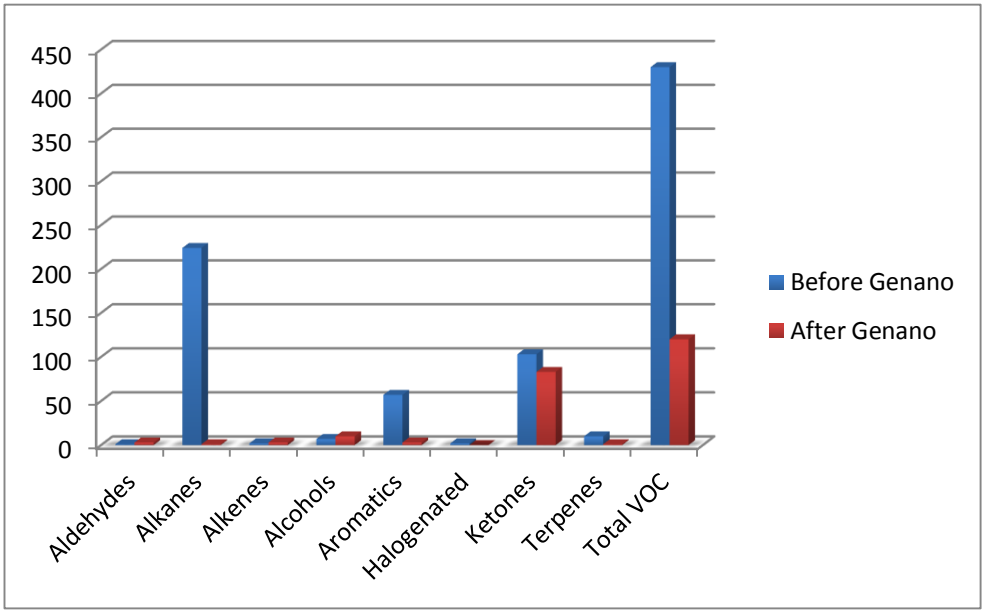
What was achieved?

The HEPA filter purification operation was left working normally in each room so G310 results are after HEPA / before G310 and then after HEPA / after G310 results.

The air samples after HEPA / before Genano, analysed by Ositum Ltd laboratories, showed clearly that HEPA filters were not doing their job properly – the Clean Rooms were very clean compared to normal office premises, but not as clean as they should have been as Clean Rooms.

After about 3 weeks from turning G310 units on, the air samples were taken for after HEPA / after Genano analysis. The laboratory results were interesting to wait for but, as the pictures above show, G310 basins already verified the efficiency of Genano technology®.

The results from Ositum Ltd analysis gave the scientific verification for Genano's unique purification efficiency, as shown below. Ketones were dropped from 103 to 83 - Acetone is used for equipment disinfection = always in the air.



Success factors

Good laboratory practises (educated employees and hygienic working methods) together with Genano technology® assure good work practices in the laboratory.

Further information

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Transferability

Genano technology® is efficient, environmentally friendly and an easy to use air purification and decontamination method. It makes no difference to this technology whether the particles are living organisms (microbes) or inert particles e.g. metal dust. It is able to collect very small particles even nanoparticles, which is normally not possible with fibre filters. Devices can be used in a wide variety of establishments e.g. in offices, bureaus, schools, nurseries, hospitals, healthcare centres, dental laboratories and clinics and in various manufacturing industries etc.

FINNISH SOCIETY OF INDOOR AIR QUALITY AND CLIMATE

Member of CLEANTECH FINLAND

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