Air purifying in the molecular diagnostics company - Genano® Mobidiag case story

Organisations involved

Mobidiag Inc. is a company manufacturing and developing molecular diagnostics products to detect human pathogens. The products are based on PCR technology, where the target DNA segments are amplified. Due of the huge amplification power of the technology, the laboratory environment purity is extremely important.

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 and different gases.

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 Mobidiag Inc. The laboratory facilities locate at the Life Science Center, Espoo, Finland.

CEO Tuomas Tenkanen Mobidiag Inc:

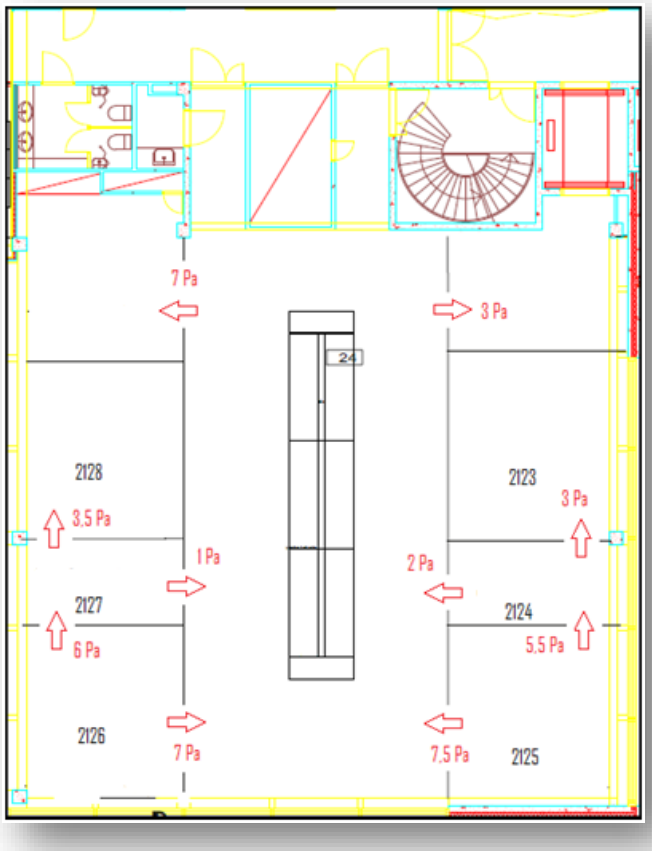
”The challenge in the air purification is not only the traditional particle purification, but for us the most critical part is the purification of the amplification product that we are making ourselves in the laboratory. A contamination of our samples or products with amplification products could cause wrong positive results in our diagnostics tests. The PCR amplification products (amplicons) are very difficult targets for air purification, since their size is small. The size of these amplicons is from 100 bp (base pairs) to 500 bp which equals to 30 nm (nanometers) - 200 nm. Traditional HEPA filters are not capable to filter those amplicons or the capability is limited. Genano system is a perfect solution for our needs. The system is not only capable to purify the amplicons, but also destroy them”.

Aims

The aim is to have the air purified both R&D and production laboratories, where the assay contamination is minimized. The most important target for purification are PCR amplicons, bacteria and viruses.

Solution

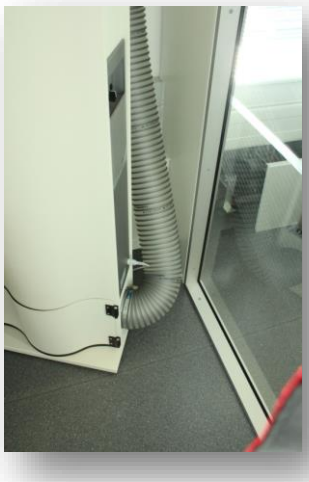
In order to achieve the targets described above, which could be considered as risks, air purifiers made with Genano technology® are placed in the working rooms that have the greatest influence on the purity of the products or have an influence on cross contamination between laboratory rooms by airborne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



Three different air purification solutions were installed to laboratory premises depending what is the desired cleanliness level. In the picture is the layout of the laboratory. The laboratories equipped with Genano solution are in decreasing cleanliness level 2125, 2126 and 2123.

In two rooms (2125 and 2126) the supply air passed through Genano 4500 air purifier before entering the room as seen in picture.

In room 2125 a stand-alone Genano 4500 was also used to circulate and purify the air. In room 2123 only a stand-alone Genano 4500 was used to purify the air. The ventilation in laboratory was adjusted in order to achieve the desired pressure differentials between different areas. The pressure differentials prevent the airborne particles and contaminants to transfer towards cleaner areas. The measured pressure differentials



are shown in the layout pictures on the left side.

Pictures.The layout of the Mobidiag laboratory
Source: Courtesy of Genano and Finnzymes, Finland.

What was achieved?

The laboratory has now two areas (2125 and 2126) where the particle count is compliant with ISO 6 according to ISO 14464-1 measurements.

Proof: The airborne particle measurements have been conducted in the laboratory, according to ISO 14464-1.

The air in the laboratories 2125 and 2126 is 96 % cleaner compared to the center area.

Proof: The airborne particle measurements have been conducted in the laboratory, according to ISO 14464-1. (Studying 0.3 µm particles with 10 sampling locations. The laboratory was at rest)

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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