



SECTOR: Metal Industry

CLIENT: HT Laser Oy

LOCATION: Finland

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CLEAN INDOOR AIR IS A SAFETY ISSUE IN THE METAL INDUSTRY

AN OBLIGATION AND SAFETY FACTOR THAT INCREASES THE ATTRACTION AND DEVELOPMENT OF THE INDUSTRY

Clean indoor air is more than an obligation for the total supplier to the metal industry, HT Laser. It is a safety factor that increases the attraction and development of the industry.

THE SITUATION

Work in the metal industry is perceived as physically heavy and dirty.

With clean indoor air, we make sure that dangerous small particles are not circulating to breathing air and that our employees stay healthy,

says Anna Fellman, Lappeenranta's Site Manager.

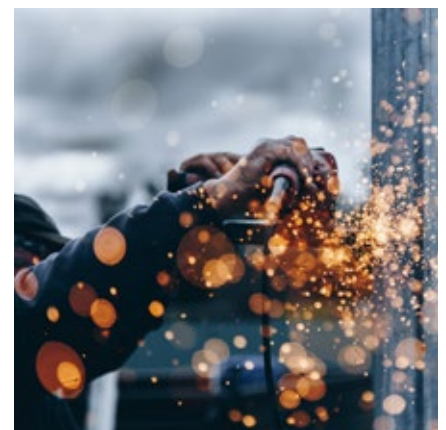
We have known for a long time that HEPA filtration is the only adequate way to protect employees, Fellman continues.

Founded in 1989 in Keuruu, Finland, HT Laser Oy is a system supplier to the metal industry. It is a flexible family business with special expertise in assemblies, component manufacturing, and customized and processed clips.

HT Laser offers cutting, edging, welding (laser and laser hybrid welding, MIG / MAG and TIG welding), machining, 3D metal printing, surface treatment, assembly and product development services. The company operates in eight locations in Finland and in Poznan, Poland, employing approximately 400 people. In 2020, the company's turnover was EUR 61 million.

EFFECTIVE AIR CLEANING IS PART OF OCCUPATIONAL SAFETY

Welding generates dangerous small particles that must be filtered from the indoor air. Exposure to substances generated during welding can even cause cancer if it enters the bloodstream. When welding steel, it can be exposed to chromium, nickel and manganese. There is a risk of exposure, especially when welding stain-



less steel. They are monitored through occupational health.

HT Laser monitors exposures to chromium, nickel and manganese fine particles annually or every two years. For new employees, baseline levels are measured. Monitoring of levels is continued annually. In the metal sector, there are no coherent limit values for controlling air purification. Every employer in the industry works differently.

– Exposure and air purification are treated differently in the industry, and actions depends on the company and its approach to occupational safety, says Anna Fellman, Site Manager.

HT Laser also reports employees to the ASA Registry in Finland, which is a register of those exposed to substances and methods that pose a risk of cancer in their profession. The register maintained by the Finnish Institute of Occupational Health since 1979 is based on the law (452/2020).

It is up to each employer to decide how the air purification is organized, but of course the employee has their own responsibility.

We require the use of fresh air masks when welding or grinding. In addition, we emphasize hygiene factors, such as hand hygiene, in preventing exposure. It is our duty as an employer to make sure that employees get home healthy every day,

says Anna Fellman



THE SOLUTION

Changes were observed in the annual exposure monitoring of HT Laser's Lappeenranta site. At that time, the mapping of air purification solutions was launched. In addition to general ventilation, a workable solution was wanted. Camfil's dust extraction systems were chosen as the solution. The Keuruu site has used Camfil's solutions equipped with HEPA filtration for a long time, so the choice was easy for Lappeenranta as well.

First, a suction duct system was installed in the light-tight laser welding booth producing a high dust load, through which the dusty air is led to the Camfil APC filter unit. It purifies the air in two stages, the latter being HEPA H13 filtration. The air free of small particles can then be returned to the large hall and not removed, saving energy costs. APC units have automatic filter cleaning, so they can withstand even heavy dust loads.

Second, Camfil delivered six CamCleaner 6000 air purifiers to the welding plant, which circulate the hall air, filtering it to HEPA level. In addition, Air Image Sensor systems were introduced for air quality monitoring and automatic speed control of air purifiers. The application remotely monitors the indoor particle level, temperature and humidity, among other things. This gives a real-time view of indoor air quality. The application controls both daily occupational safety and long-term quality development. At sites in the metal industry, it is very important to map and measure the dust load on the site to know if air purifiers can be used or whether APC equipment with an automatic filter cleaning system is required.

All PM1 particles can enter the bloodstream. Not only the welders are in danger, but the entire staff, says HT Laser's



real estate manager Aleksi Graf. From Keuruu, he monitors the indoor air of the Lappeenranta production from Camfil's Air Image Sensor application.

THE RESULT

Camfil's dust management systems are an excellent solution for industrial environments. Equipment that uses certified HEPA filters remove even the smallest dust particles.

Molecular filtration can be added, if necessary. Dust and combustion particles belong to the PM1 particles, in which case they are less than one micrometer (μm) in size. When inhaled, they reach deep into the lungs. From there, a significant portion can pass through the respiratory membrane into the bloodstream, where they damage blood vessels, travel to tissues of the cardiovascular system, and possibly spread to other organs as well.

The particle size class PM1 is the most problematic, although PM2.5, for example, is also irritating. The more particles there are, the greater the risk that they will enter the body. That's why we chose Camfil hardware. They have HEPA filtration according to EN 1822: 2019 standard, says Anna Fellman.

Camfil's solutions are designed to complement the ventilation system to protect workers, products and processes. At the same time, they also reduce energy consumption.

- In fact, all possible factors from the individual to the environment have been taken into account in this solution. In addition, the devices are on wheels, so they can be moved to wherever the dust load is ever high, Fellman says.