



CASE STUDY

WELDING FUME EXTRACTION IN WORKSHOPS 25 METRES HIGH



THE CHALLENGE

Breman Machinery has three workshops that are 25 metres high, and welding work takes place in two of these shops. There is also another building with a 15-metre ceiling height where welding is also performed. Due to the varying size of the workpieces and the large distance between welds, source extraction was out of the question in this situation. There was already a welding fume extraction system in the first building, but it was not up to the task. Due to the large quantity of welding wire that was used, the filters lasted no more than two weeks. In the second building, welding is performed both by hand and by a welding robot. The robot is used for welding large workpieces, which involves large amounts of welding wire. Logically, this results in more welding fumes. Combined with the manual welding at varying locations throughout the building, this produces lots of fine particulate matter that results in a cloud of welding fumes. A solution was sought that would be suitable for both manual welding and robot welding. In the third building, like the first, the work involves large workpieces and the welding is generally done by hand. The welding fumes rise to between 4 and 6 metres due to the heat, and it is here that the cloud of welding fumes forms. This cloud becomes thicker throughout the day. Then, when the temperature drops, the cloud sinks to the floor again.

Breman Machinery in Genemuiden (The Netherlands) has been in the metalworking business for nearly 150 years. Harm Breman placed the cornerstone for the company when he opened a blacksmith in 1864. Today Breman Machinery has unique equipment at their disposal and a growing customer base. The company is now being run by the fifth generation of the Breman family, Breman Machinery is still known for their technical creativity, flexibility and entrepreneurial spirit. With its location on open water, the Breman Machinery facility has a direct connection with international ports, including those of Rotterdam and Amsterdam.



Push-Pull systeem, MDB-filterunit met 12 filterpatronen.



MDB-filterunit with 12 filtercartridges.

TESTIMONIAL

“The old extraction system was unable to handle the large volume of welding fumes. We had problems with the filters every other week. The engineered solution from Plymovent has changed all that. All the hassle is a thing of the past!”

» With the engineered solution from Plymovent all the hassle is a thing of the past. «

QUOTE by Ruben Blokzijl, Safety Officer

THE SOLUTION

Because the welding fume extraction in building 1 was inadequate, Breman Machinery began looking for a new system that could handle the volume of welding fumes produced. After examining a number of similar systems available in the market, they chose a solution from Plymovent.

A Push-Pull system, specially designed for them, ultimately provided the desired solution. The system is connected to an SCS filter unit. The decision was taken to use 4 parallel systems in building 1, which comes to a total of 8 SCS filter units. In building 2 a U-shaped Push-Pull system was installed around the welding robot. This extracts and filters the welding fumes in the zone immediately surrounding the robot. Because manual welding is also performed at various, ever-changing locations in building 2, a Diluter system was chosen. The Diluter system is a self-contained, 100%-recirculation system that reduces the background concentration of welding fumes in a workshop and keeps it manageable. The Diluter system is the ideal solution for situations where source extraction is not possible. Plymovent has fitted 3 of the total of 5 Diluter systems with a steel plateau that makes it easy to relocate the installations. After the positive experience with the Push-Pull system in buildings 1 and 2, a similar system was also chosen for building 3. The system is connected to an MDB filter unit with 12 filter cartridges. Of these, 4 are set up in this building.



U-Push-Pull system, placed around the welding robot.

MAIN BENEFITS

- The U-Push-Pull system is placed around the welding robot for optimum extraction.
- The SCS and MDB filter systems are usually installed on the floor. To save floor space in the buildings, however, the installations were also partially installed on platforms.
- The Diluters make it simple for welders to move from place to place throughout the day.
- The filter systems provide a healthy working environment, as well as cost savings due to the recirculation of warm air.

SYSTEM FACTS

Type of installation

Zone ventilation systems

- 6 parallel Push-Pull systems
- 1 U-Push-Pull system
- 5 Diluter-systems

Products

- 4 x MDB-12
- 5 x EDS Diluter
- 9 x SCS filter
- 11 x roof-top air handling unit DVS

Year of installation

- 2009 till 2014



Diluter-system

NL-30

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