

Sustainability that pays off.



Intelligent hall ventilation system reduces energy consumption



The extraction system is installed on the roof of the hall.

The welding fume hall extraction for shuttering and scaffolding specialist PERI was made to measure by ESTA. Sophisticated sensor technology and frequency converter-powered motor control regulate suction power for energy-efficient operation. The high level of filter separation enables air to be returned to the hall – heating cost savings of up to 70% can be achieved with heat exchangers.

The new hall ventilation system had to be legally compliant and energy-efficient for almost two dozen welding workstations at PERI's main plant in Weissenhorn near Ulm. Upon the customer's request, the statutory dust limit of 1.25 mg/m³ had to be improved on significantly; thus the average hall value was fixed at a maximum of 1 mg/m³. The DUSTMAC model of welding fume filter system was installed on the hall roof to save on valuable production space. A widely ramified piping system connects the machine to the extraction points inside the hall. A fine dust sensor in the pipe system continuously measures the air's pollution level. Fully automated

extraction output adjustment based on the amount of welding ongoing in the hall (max. 75,000 m³/h). This is the result of the interaction between sophisticated sensor technology and frequency converter-powered motor controllers – always under the premise of consistently maintaining the defined workplace limit of < 1 mg/m³.

This control technology oriented to production output ensures that the system is operated on an energy-efficient basis. Since local welding fume extraction is not practical due to component geometry, smoke suction is performed based on the layer ventilation principle recommended by the ELIA.

BLUECOMPETENCE

Alliance Member



Displacement diffusers are installed in all welding workstations.

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“Sustainable management is not a slogan in our family business, but a practised philosophy. We unearth energy-saving potential for our customers to reduce operating costs permanently and increase system efficiency.”

Jürgen Gast,
Head of Sales & Marketing

By utilising thermal currents generated during welding, the smoke gases are collected via the pipe system with intake grilles installed on the hall roof. The fine dusts are held back on the filter cartridges of the suction system with a separation level of >99.9%, enabling the air to be returned via displacement diffusers installed on the hall floor.

In line with legal requirements, one third of fresh air must be supplied to the hall during the winter months. A cross-flow heat exchanger transfers most of the temperature from the discharge air to the cooler external air, before being fed to the hall draught-free. The air return and heat exchanger enable a heating cost saving of up to 70% per year. The dust limit is also continuously and reliably undershot for ideal air quality in the work areas.

Facts:

- Heating cost saving of up to 70% using air return in connection with heat exchanger
- Emission guarantee: <1 mg/m³ in the hall (avg. hall value)
- Energy-efficient drive control via fine dust sensor and frequency converter
- Differential pressure-controlled filter cleaning ensures long filter lifetime
- System installation on hall roof saves valuable production space