THE RIGHT AIRFLOW VOLUME FOR EVERY WELDING SITUATION

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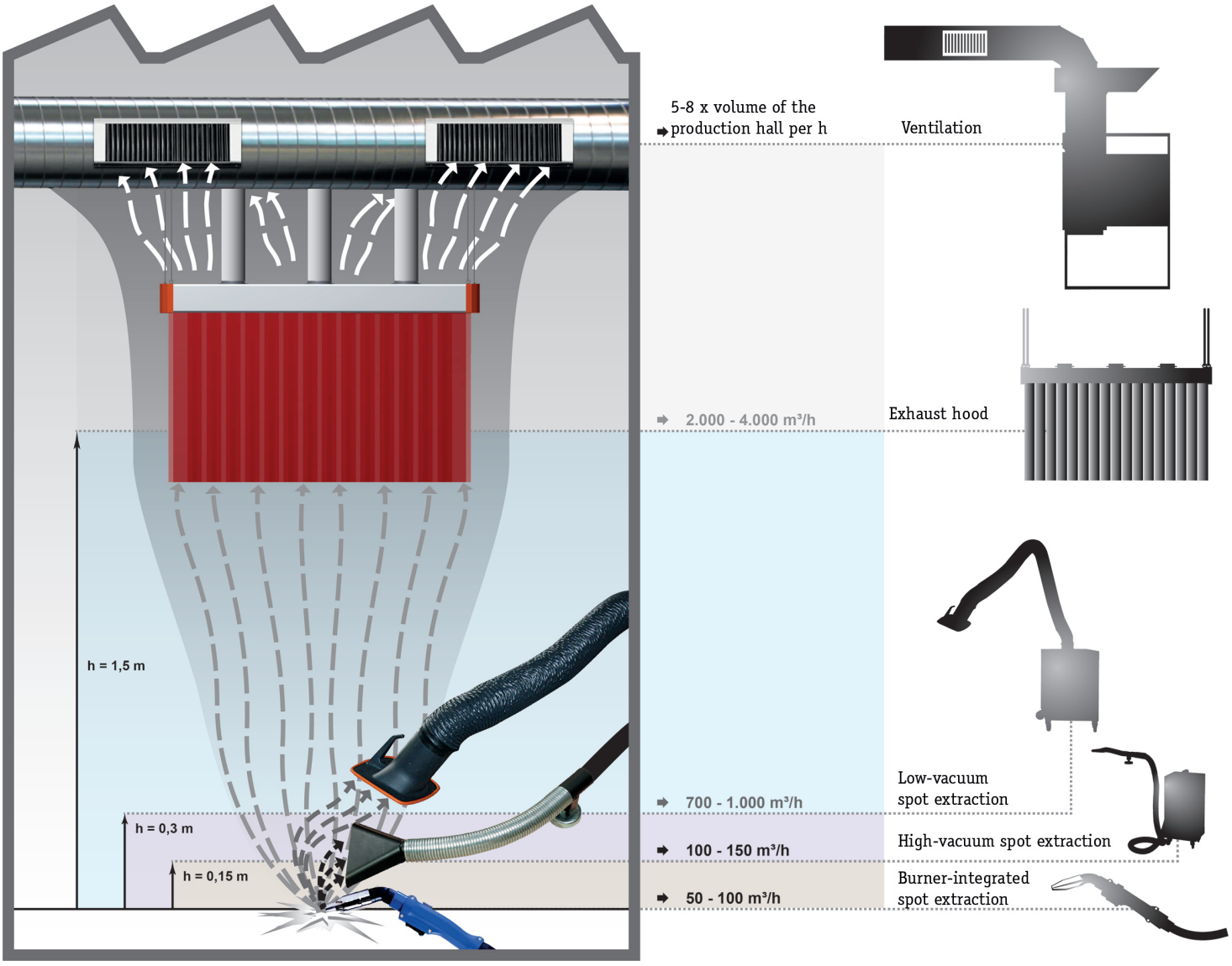

The airflow volume is one of the factors which decides how effective a welding fume extraction system is. Irrespective of whether the system is for spot extraction or hall ventilation: every application has different requirements.

The airflow volume describes the quantity of air flowing through a pipe over a specified time. At a value of 100 m^3/h air, 100 m3 of air flows through a specified cross-section of a pipe per hour. Different airflow volumes are necessary depending on the type of extraction.

Spot extraction

In the case of a high-vacuum spot extraction, hazardous substances can be safely extracted up to a distance of 150 mm using suction nozzles, for example. In this case the suction nozzles are connected to hoses of around 50 mm in diameter. To do this, an airflow volume of between 100 and 150 m^3/h at a relative underpressure of at least 6000 Pa is necessary.

Low-vacuum spot extraction systems have higher airflow volume requirements. In this case, hazardous substance collection takes place using extraction arms of around 150 mm diameter with hoods. Depending on the size and shape of the hoods, airflow volumes of between 700 and 1100 m^3/h at an underpressure of between 800 and 1200 Pa are necessary.

Torch-integrated spot extraction systems extract the welding fumes immediately at their origin. These are mostly directly integrated in or placed on the welding torch. These types require the lowest airflow volumes of all extraction devices due to their immediate nearness to the welding location. However, the underpressure has to be very high (mostly 10,000 Pa or more) due to the low cross-sectional area of the extraction hoses and nozzles.

Hoods

Extraction hoods are mostly used at robot welding locations or other automated welding processes. The welding fumes travel to the extraction hood capture area due to thermal uplift. For this reason the airflow volume has to be designed so that the entire thermal flow is captured. Airflow volumes of between 2000 and 4000 m^3/h are required for this purpose. The underpressure is only a few hundred Pa.

General ventilation system

Hall ventilation systems are often used to support other extraction systems for welding fume capture, or if these systems cannot be used. They often run in circulating operation for reasons of energy efficiency. In such cases, welding fume extraction is less precise. For this reason there is only one basic rule for such systems: the circulating air volume per hour must be a multiple of the hall air volume.