

Custom-engineered. Production of large fibreglass parts requires individual ventilation of the work stations. With two corresponding systems, a flexible and inexpensive solution has been found.

Mobile Workplace Protection for Production of Fibreglass Parts

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The benefits of fibreglass construction are being used to produce ever-larger parts, such as those in a new production facility for sports boats in Rostock. The facility encompasses several bays with a length of up to 60 m and a height of 18 m in which boat hulls up to 50 m in length are manufactured. The shapes and sizes change with each order. This production facility must be kept of air-borne pollutants in order to protect the health of the employees and not disrupt sensitive manufacturing processes.

The hand lay-up technique is used for the most part (Fig. 1). While the resin-impregnated fibreglass mats cure, styrene is released. The styrene must be directed to the air purification system to prevent en-

dangering the health of the employees or the build-up of critical hydrocarbon concentrations that could result in an explosion. To comply with the applicable workplace and emission limits with minimum air exchange, a special exhaust system is employed. Supply and removal of air are guaranteed by two corresponding systems.

For general ventilation of the building, air that has been cooled below room temperature is introduced gently under the ceiling (Fig. 2). This results in a largely laminar flow of air downwards from

above (Fig. 3). Ideally, the air flow entrains the styrene generated by the workpiece and conveys it to the exhaust vents in the floor with minimal turbulence. The air flow was modelled in advance by the Institute for Ventilation and Air Conditioning (Institut für Luft- und Kältetechnik), Dresden/Germany, in order to obtain information about optimum flow conditions on the basis of as many boundary conditions as possible.

Ventilation System Moves with the Work Platform

Moreover, air is supplied to and removed from each work station individually in order to provide the employees with the maximum amount of fresh air and remove pollutants at the source. The actual challenge for this project is presented by the ongoing relocation of work stations, since enclosed booths cannot be employed. Instead, the mobile platforms used for production are

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Fig. 1. Cutting of glass mats to size



Fig. 2. Air supply under the ceiling