Pannkoke
Flachglastechnik GmbH

New Operating Conditions for Glazing

Have you had to glaze a glass pane with a dimension of 3.4m x 1.8m and a dead weight of 285kg? Sure, no problem...if a roof of ca. 1.0m weren't in the way!

The company Normbau Weity GmbH & Co. KG of Ortenberg-Lißberg was faced with exactly that problem during the reconstruction of an office building in Frankfurt Rödelheim: Around 90 insulating glass panes were scheduled to be replaced by smaller window elements in the five-floor office building.

The preset sun protection and its anchoring profile and railing almost made exchanging the insulating glass panes impossible. The available opening was not much larger than the insulating glass pane instelf.

The vacuum lifting device "Balance" by Pannkoke Flachglastechnik GmbH in Lübeck was the perfect device for the problem. The overhang was set at 1500mm (to ensure extra space compared to the 1000mm overhand of the building), the maximum deadweight to be transported was set at 500kg. Moreover, the device had a non-fixed counterweight, making it suitable for a construction site! The moving motion was controlled from a battery-operated DC drive. The drive was equipped with a speed control element for fine-controlling the inclination movement. The speed control could also be set from an operation switch.

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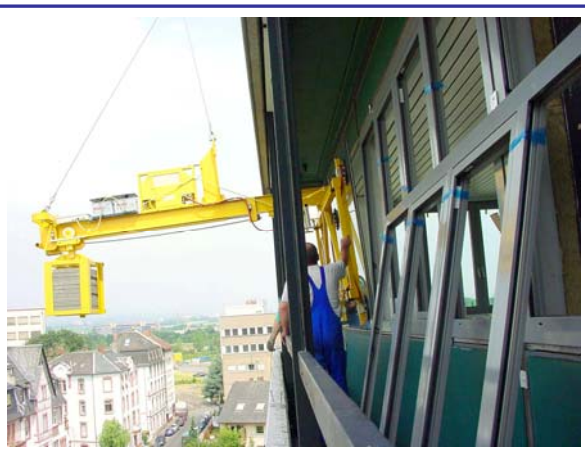

The vacuum generation was done using a separate battery-operated vacuum unit. Pannkoke's concept enabled a quick adjustment to the new operating conditions and a vacuum unit to be used for other cases. The modular structure of the device enabled a quick exchange/replacement of the vacuum unit. Thus, the device could be quickly converted if the construction supervisors demanded a redundant vacuum system.

A redundant vacuum system (2-circuit system) increases the device safety in case one vacuum circuit becomes untight. In which case, the other vacuum circuit could handle the normal load, since safety norm EN 13155 for construction sites requires each vacuum cirucit to be able to handle the normal load with a safety factor of 2. Each vacuum circuit is equipped with a separate control vacuum meter and a separate vacuum monitor. If the vacuum of a vacuum circuit falls below the standard, the system issues an optic and accoustic warning to warn the operators of the situation. Besides plane elements, an additional component enables curved curtain walling elements to be transported using the vacuum lifting device Balance.
About the device.

The project at the Frankfurt construction site was accomplished in the following manner: The suction frame was placed vertically on the glazed insulating glass pane, the counterweight was then moved on the suction frame until it was hanging vertically. Once the suction had attached to the insulating glass plate, the holding rail was removed. The counterweight was then moved backward, which tilted the top of the insulating glass plane out of the frame. Thus, removing the insulating glass pane was almost child's play. Transporting the pane to the container below was the easiest part of the job once it had been manoevred past the sun protection.

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The process was made much easier my the facts that the inclination agle was set at a micro-level and the counterweight of "Balance" was non-fixed; this also minized the safety risk. The company was able to quickly complete the glazing and Weitz appreciated the assignment, that they can implement the next time they receive a similar order.

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