

Process **Engineering** MANUFACTURING **Control &**

Contactless glass cleaning means increased productivity and improved eco-balance at Saint-Gobain

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After stacking glass panes, a large amount of separating powder often remains on the glass surface. As a result, microplastic particles get into the wash water during the glass washing process. The glass washing machine filters quickly become clogged, which results in time-consuming maintenance work with expensive interruptions to production. Saint-Gobain therefore uses a preliminary contactless glass cleaning system before the glass washing machine phase in the production line for laminated safety glass in Torgau.



Saint-Gobain's multi-shift operation in Torgau produces high-quality flat glass which is used in industries including construction and automotive. The company is known for its innovative and high-quality glass products, including laminated safety glass (LSG). LSG consists of several panes of glass that are joined together by intermediate layers and offers better safety against breakage. There is a wide range of laminated safety glass that is tailored to specific requirements, protecting against burglary, fire and heat or UV rays and thermal energy, for example.

A layer of separating powder is applied to the glass surface at the plant in Torgau before stacking to ensure that the individual flat glass panes can be easily separated during production. Until now, this separating powder residue has had to be removed from the glass washing machine, involving a high water consumption. This resulted in microplastic particles entering the wash water. These separating powder residues also encouraged the growth of microorganisms and quickly clogged the filters. This caused the need for time-consuming maintenance work and expensive interruptions to production when changing the filters. Saint-Gobain in Torgau installed a test Tornado Channel from Wandres in a pre-cleaning stage before the glass washing machine to remove the separating powder from the glass surface. This was aimed to reduce costs and increase productivity.

Sustainable cleaning technology from Wandres

The Tornado Channel uses sophisticated air technology to clean surfaces without making contact with them. The compact cleaning machine can be easily integrated into both new and existing systems. Electrically driven compressed air nozzles inside the channel rotate at high speed. The arms of the Tornado nozzles interlock precisely during the rotation movement so that none of the surface is missed while cleaning. Compressed air is expelled from the Tornado nozzles at several times the speed of sound. Particles and dust are detached from the glass surface, extracted directly and removed from the production environment. The cleaning system delivers impressive results in continuous industrial operation with consistently high performance and comparatively low energy consumption.



Cleaning tests at Saint-Gobain passed with flying colours

During the cleaning tests at Saint-Gobain in Torgau, the Tornado Channel removed more than 95% of the separating powder from the glass surface and showed a reliable cleaning performance over the entire 17-day test period. The consistently strong cleaning results were reflected in the water quality of the downstream glass washing machine. Water conductivity remained stable during the entire test period. There was considerably less strain on the glass washing machine and its water consumption was reduced by 15% during the cleaning test. In addition, the filters clogged less quickly, extending the glass washing machine's maintenance intervals significantly.

The separating powder particles collected in the suction filter during the cleaning tests were analysed in Torgau. After cleaning a 135,000m² glass surface, around 9 kg of separating powder was collected in the extraction unit. The possibility of reusing the collected separating powder is being investigated. Returning the separating powder to the cycle would be in the interests of sustainability, as this would save resources and costs at the same time.

Tornado channel successfully integrated into production line

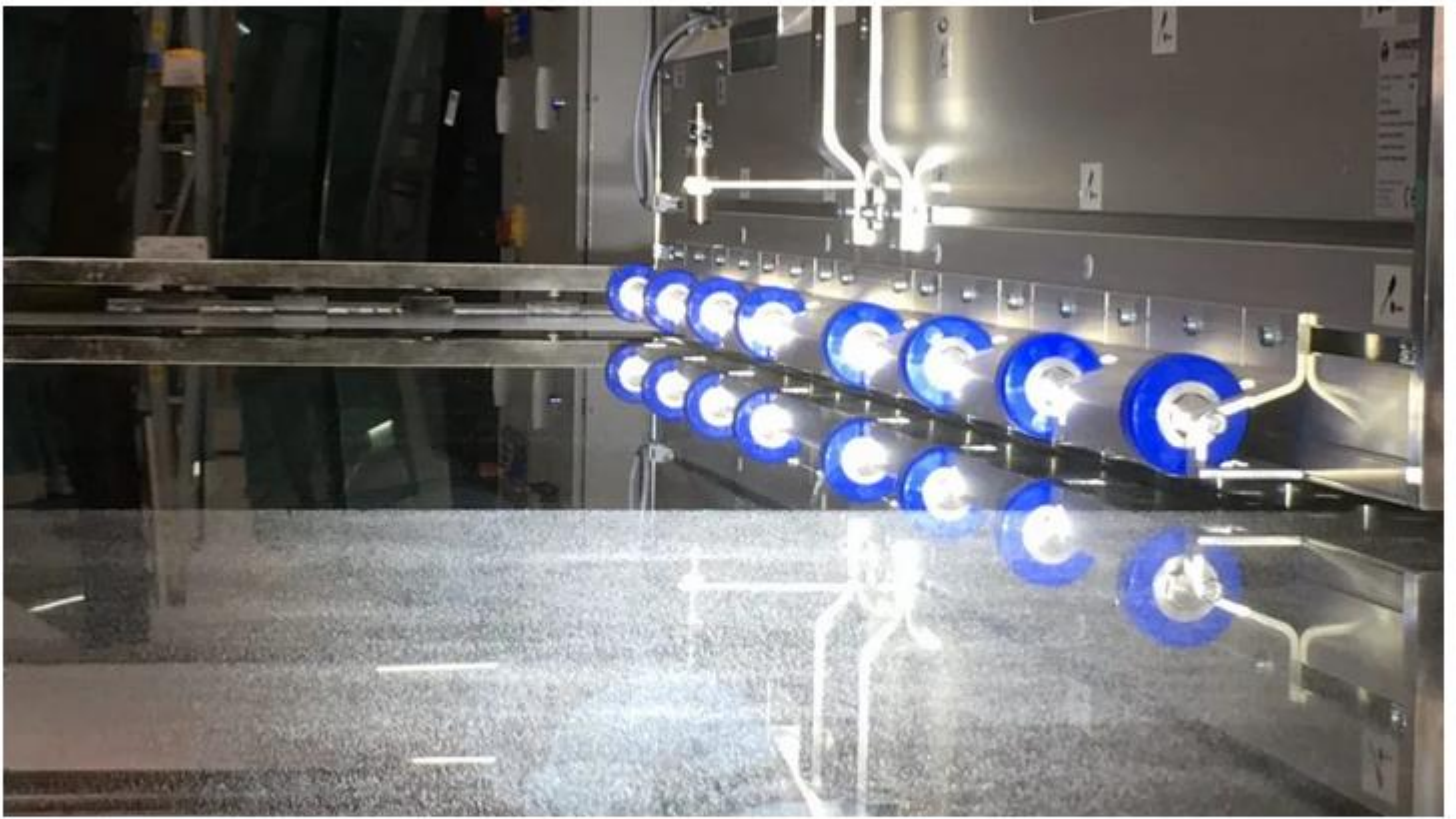
The cleaning tests at Saint-Gobain were a great success. As a result of removing the separating powder particles in the pre-cleaning stage, there were fewer production stoppages and the filter media lasted much longer in the glass washing machine. Consistently high cleaning results were

achieved over the entire test period and the water quality in the glass washing machine was permanently improved. There was also a noticeable increase in the quality of the flat glass panes produced. The Tornado Channel's energy consumption was low during the entire test period. All in all, following the cleaning tests, Saint-Gobain was sufficiently convinced to order a suitable Tornado Channel for the production line.

TMB Torgauer Maschinenbau GmbH was commissioned to install the cleaning machine in the production line. They have many years of experience and special expertise in plant engineering for the photovoltaic and flat glass industry. Since being installed in the production line, the Tornado Channel removes around 1 kg of separating agent per day in a three-shift operation, keeping the glass washing machine significantly "cleaner". The daily water saving comes to around 4,000 litres. Over a whole year, this would be enough to fill over 243 typical 3-metre garden pools each with a 6,000-litre capacity. The new pre-cleaning stage therefore saves a considerable amount of water and the production process has to be interrupted less frequently for maintenance work. Saint-Gobain is so satisfied with the performance of the Tornado Channel and the savings achieved that it has already ordered another one for a further production line.

The LSG Line Manager from Saint-Gobain sums this up: *"I am delighted with the Tornado Channel's cleaning results. It removes nearly all of the separating powder. The investment has already paid for itself in less than a year. It was worth it right from the start, because we had to carry out significantly less maintenance on the glass washing machine."*

Toni Ehrhardt, Senior Manager for Technical Sales in the glass and furniture industry at Wandres, has been in charge of the project at Saint-Gobain from the start and praises the excellent cooperation: *"The test run allowed the customer to see the performance of the Tornado Channel for themselves on site. Its installation in the production line and subsequent continuous operation went smoothly. Increasing productivity while at the same time improving ecological aspects such as conserving resources and avoiding microplastics in the wash water should be an incentive for every glass producer to think about an efficient cleaning system."*



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