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Impulse flushing process for pipes

Cleaning and saving water

Consumers - both private and industrial - expect water in wall-free quality and in sufficient quantity. Clean pipes are a prerequisite for this. Cleaning to maintain the pipes is therefore of particular importance.

The dry summer of 2022 has shown just how valuable a resource water is. The pulse flushing process of the Hammann helps time and again to ensure that drinking water is available in perfect condition and in sufficient quantities. In this way, security of supply can be maintained even in critical times. For more than 25 years, Hammann has not only been cleaning pipes for drinking water, but recently also more and more industrial plants for various water-based products. In addition to pipes, these systems also include equipment such as pumps and heat exchangers. In addition to intensive cleaning, the argument in favor of Complex technology is increasingly the lower water requirement compared to water flushing. Low water consumption also means less waste water for treatment or disposal. Particularly in the case of critical industrial wastewater with expensive treatment processes, lower rinsing water volumes are required enormous energy savings.

In industrial plants, product changes require careful cleaning not only of the pipes, but also of the associated equipment. This is possible with Complex technology because it works independently of the geometry. The highly accelerated air and water blocks are also effective in areas that are inaccessible to other methods. For frequent cleaning measures, stationary process-

integrated Complex units. These devices prompted the supplier to found the subsidiary Hammann Engineering GmbH. Its task is to plan and build these devices according to requirements and finally to integrate them into the user's existing operation. The associated software modules are developed by the partner company Sycotech. The following examples show some of the applications of Complex system technology that have been implemented to date.

Filling station for biocidal products

BASF's agricultural products plant in Ludwigshafen fills various crop protection products in complex systems. When changing products, there are high demands on the cleanliness of the product lines. Cleaning measures must prevent microbial infestation of the pipelines and, above all, reliably avoid cross-contamination by product residues. The previously used water rinsing required large quantities of demineralized water and produced a correspondingly large amount of waste water. The newly introduced Complex cleaning system brought considerable advantages over the very labor- and cost-intensive measures. This was mainly due to the cost savings resulting from reduced waste water volumes and downtimes. Another advantage is drying with compressed air pulses after cleaning. The Complex technology paid for itself after just a few months.

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Production of water-based emulsion paints Until recently, preservatives and biocides ensured sufficient shelf life and safe storage of water-based emulsion paints. The limit values for biocides in force since May 2020 restrict their use as preservatives. Preservative-free products place enormous demands not only on the quality of the raw materials, but also on the cleanliness of the production facilities and operational hygiene during production. Complex technology can make an important contribution to this. Mobile Complex units are ideal for regularly recurring cleaning tasks, regardless of location, across several buildings and plants. For frequent batches or product changes on the same system, static cleaning systems that are automated and process-integrated are suitable.

Production of detergents and care products

An international manufacturer of water-based detergents and care products is faced with the task of optimizing maintenance as a result of rising energy prices and increasing water shortages. Up to now, rinsing with hot water was sometimes used when changing products. Internal company tests ensured the necessary cleanliness. Tests in Hammann's technical center showed that Complex technology offers enormous savings potential of over 90 % in terms of water consumption and waste water consumption.

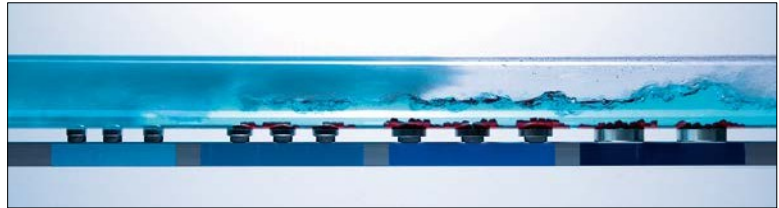
treatment is possible. At the same time, it was possible to dispense with hot water in many cases and use cold water, which resulted in further significant energy savings. Complex cleaning also made it possible to clean branched pipelines and dead spaces, which was not possible with the technology used until then. Complex cleaning at various locations confirmed the savings potential and improved maintenance. It is a forward-looking component of the company's sustainable strategy.

How Complex cleaning works

The Complex process works through the targeted use of compressed air pulses and water. The cleaning process saves time compared to the usual washing



View of the plant section for emulsion paints before and after cleaning.



The process is based on blocks of air and water pressed through the pipeline in powder form.

Hammann

Pictures:

flushing saves around 90 % water and more. This is a significant contribution to conserving water resources, especially in the dry season. In contrast to pigging technology, not only pipes but also non-piggable equipment, i.e. entire

Keeping systems clean. The process-integrated Com-
plex technology enables automated routine cleaning.

The process generates rinse water with highly enriched product concentrations, especially at the beginning of the measure. It was therefore an obvious idea not to dispose of this rinse water, but to reuse the products it contains. The technology has its origins in the hygienically demanding application area of drinking water supply. Recently, however, the technology, which has been optimized for pharmaceutical operations, has proven its worth. This makes the process ideal for recovering valuable materials from rinsing water and using them in new product batches. This would enable further benefits in terms of water saving.

**Decision -
maker facts**

- *Water-saving solutions for pipe cleaning are particularly worthwhile when there are high hygiene requirements in order to reduce drinking water consumption.*
- *Experience with the pulse flushing process presented here shows that energy and water consumption are significantly reduced.*