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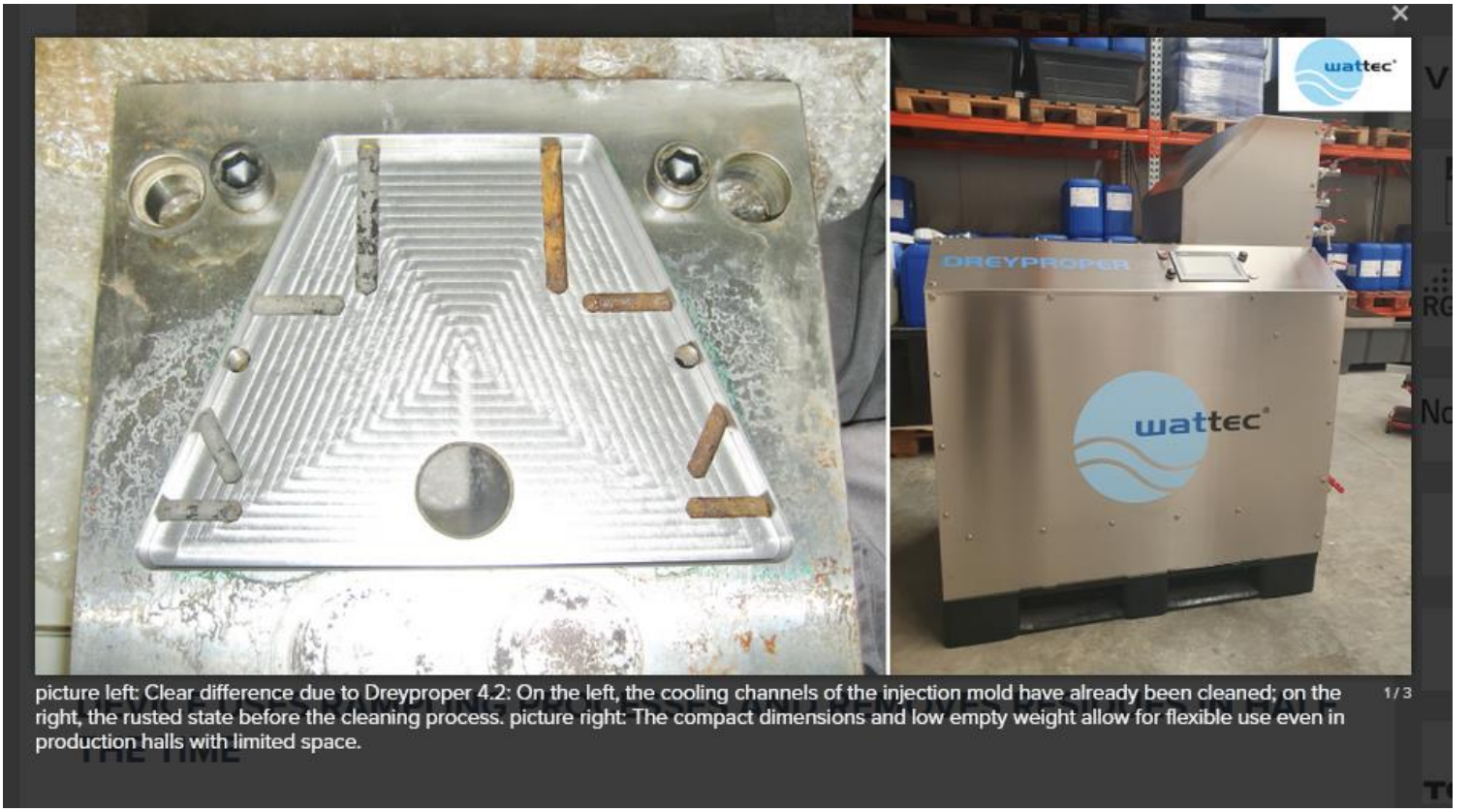

picture left: Clear difference due to Dreyproper 4.2: On the left, the cooling channels of the injection mold have already been cleaned; on the right, the rusted state before the cleaning process. picture right: The compact dimensions and low empty weight allow for flexible use even in production halls with limited space.

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picture left: Operating display of the Dreyproper 4.2 for controlling and monitoring the cleaning process in the cooling channels of injection molding tools.

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AIR BUBBLES AGAINST DEPOSITS: FULLY AUTOMATIC CLEANING DEVICE USES RAMPLING PROCESSES AND REMOVES RESIDUES IN HALF THE TIME

Cooling channel cleaning for die casting tools

Reading time: 6 min | Bildquelle: www.wattec.de

Integrated blow-out function saves additional work steps after flushing

Modern die casting tools are highly complex systems with high economic value. Operational interruptions, quality defects in the casting process, and extended cycle times have negative effects and must therefore be avoided. This also applies to the liquid cooling systems integrated into the casting tool. Deposits of limescale, corrosion, and other contaminants in the tool cooling channels can lead to cross-sectional constrictions. This reduces cooling efficiency, and energy and operating costs increase; bacterial slime can also form. A further consequence: the quality of the die-cast part decreases, resulting in higher scrap rates and damage to the tool molds. The 4.2 generation of the Dreyproper, a further development from wattec GmbH, already proven successful in plastic injection molding, provides an effective remedy. The mobile cleaning device is already being used successfully at the Swiss company DGS Druckguss Systeme AG to flush the cooling channels and is proving its worth in daily use.

"Our customers place great value on consistently high and consistent casting quality, and we must ensure this quality standard on a long-term basis," says Joachim Rohmann, physicist and Managing Director of wattec GmbH. To meet the demanding customer requirements of the automotive industry, it is essential for the St. Gallen-based company to keep the entire die-casting process stable and under control at all times. This includes regular cleaning of the die-casting tools and their cooling channels. Over time, corrosion and limescale deposits form a layer in the lines, which impairs efficient cooling. The Dreyproper 4.2 operates according to the "rampling method." A pump automatically injects air bubbles of varying sizes and hardness into the cooling channel in alternating cycles. This process supports the inadequate chemical cleaning, which attacks limescale and rust deposits but cannot completely remove them.

Sustainable and efficient cleaning method increases cooling performance in die casting molds

In the past, Druckguss Systeme AG had recurring, major problems with inadequate water quality and a high level of contamination in the cooling and temperature control circuits. This effect was exacerbated when the respective casting mold was used for an extended period in series production or was out of service for a certain period due to an overhaul. The deposits and corrosion led to clogged filters and pumps in the heaters. "The goal was to fundamentally tackle both of these problems. Above all, it was important to us to install a sustainable and efficient solution that would ensure we always have clean, ready-to-use die-casting molds," explains Mr. Mark Lewis, Project Manager, System Planning. To give the company the opportunity to experience the performance of the Dreyproper 4.2 for themselves, wattec GmbH initially provided the cleaning device as part of an extended test phase. This was completed after eight weeks with consistently positive results. This also demonstrated the advantage that, in this customer-specific case, up to twelve cooling channels can be connected simultaneously. The overall cleaning process was accelerated by up to 50 %, representing significant added value for the company. After just the first run, it was clearly evident that the Dreyproper 4.2 had removed almost all deposits and contaminants. Furthermore, the fluid flow rate was significantly increased, resulting in improved cooling performance in the die-casting molds.

The use of the new cleaning system enables a cost-optimized and stable casting process

A fundamental advantage of the cleaning device is that the various rinsing processes are fully automated, requiring only minimal manual intervention. This minimizes the time-consuming pre- and post-processing workload. The Dreyproper 4.2 also features an integrated blow-out function. The cooling channels can be blown out with compressed air directly after the cleaning cycle is complete. This eliminates a separate step previously required after disconnecting the cleaning device, further simplifying the cleaning process and saving time. At the Swiss company DGS Druckguss Systeme AG, a cleaning cycle is now performed after each casting batch.

Dipl. Phys. Joachim Rohmann is Managing Director of wattec GmbH, based in Langenau. The company specializes in cooling and drinking water treatment.

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"Flushing with our cleaning device guarantees a constant fluid flow and optimal cooling and heat dissipation within the mold," explains Joachim Rohmann, Dipl.-Phys., Managing Director of wattec GmbH."

This ensures a consistent heat balance within the mold, which contributes to stabilizing the entire die-casting process. Filter cleaning cycles have also been drastically reduced. Previously, filter replacement was necessary every shift in three-shift operation. Now, changes only occur weekly or less frequently, resulting in a noticeable reduction in operating costs. As a result, downtimes have been reduced, interruptions during shifts for the machine operator have been reduced, and productivity has thus increased. Another advantage that should not be underestimated is the compact dimensions of approximately 1200 x 810 x 1025 mm (L x W x H) and the comparatively low empty weight of 150 kg of the Dreyproper 4.2. These features enable flexible use even in production halls with limited space. In summary, the use of the Dreyproper 4.2 from wattec GmbH offers numerous advantages: noticeably improved cooling performance of die-casting tools thanks to efficient cleaning, significantly reduced filter change intervals, and increased productivity. The integrated blow-out function eliminates additional work steps – a sustainable solution that is both technically and economically convincing and has already proven itself in everyday cleaning applications.

Today's **DGS Druckguss Systeme AG** originated in 1950 as Bühler AG in St. Gallen-Winkeln. In 1999, it was acquired by Von Roll. In 2003, this company became DGS Druckguss Systeme AG, headquartered in St. Gallen-Winkeln, Switzerland. The company specializes in the production of high-quality die-cast components made of aluminum and magnesium, primarily for the automotive industry. With a total of five production sites in three countries – Switzerland, the Czech Republic, and China – the company has a global focus and is always close to its customers.

wattec GmbH specializes in the treatment and purification of cooling, boiler, humidifier, and drinking water. At its site in Langenau, Swabia, the company, with its five employees, develops chemicals, programs, and systems for filtration, water softening, and reverse osmosis that serve to conserve water and energy, as well as protect the environment. The products are used in almost all areas of industry and commerce and contribute to the sustainable optimization of operational processes, increased profitability, and enhanced productivity.

Source: www.abopr.de

https://www.foundry-planet.com/d/air-bubbles-against-deposits-fully-automatic-cleaning-device-uses-rampling-processes-and-removes-residues-in-half-the-time/