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## Aluminum die casting: Energy-efficient extraction for clean air

**Haas Metallguss, a company with a long tradition in Baden-Württemberg, is not only economically successful, but is also setting a positive example by reducing energy and resource consumption in production. The new eLine electrical separator from Keller Lufttechnik helps Jürgen and Dr. Michael Haas to achieve their goal.**

"Continuous improvement is necessary in order to survive in the markets. This also applies to the ecological footprint of our products," says Dr. Michael Haas, Managing Director of Haas Metallguss GmbH in Mühlhausen im Täle, a community of 1,000 residents in the Swabian Alb. Their company, in its second generation, is managed in partnership with his brother Jürgen. It produces aluminum and zinc components such as compressed air, motor and ventilation housings. Their main customers are the automotive industry, mechanical engineering and equipment construction as well as engineering controls. Components are manufactured by Haas in series of 2,000

to 600,000 units. In addition, customers rely on the competence of the Haas brothers and their team for creating prototypes. "The fast and reliable production of sample aluminum or zinc components, whereby only between 50 and 200 pieces are required, is our unique selling point," says Dr. Michael Haas. "Our clients benefit from our experience in this particular segment of the industry. We produce approximately 150 prototypes per year. Components are delivered to the customer within six to eight weeks. This process is unique and requires high flexibility."

**Environmental protection: "I want to be able to look my children in the eye."**

Both Haas brothers, as well as their customers, for whom the company supplies the necessary components, are constantly looking for potential improvements in their companies. They place a special focus on energy savings and resource efficiency. Some years ago, Haas Metallguss GmbH had both its energy management (ISO 50001) and its environmental management (ISO 14001) formally certified. The two managing directors made this goal a top priority and assumed the roles of energy and environmental representative themselves. "Even as a comparatively small company, we should make every attempt to

protect the environment," emphasizes Dr. Michael Haas. "Ultimately, I want to be able to look my children in the eye."

### Electrostatic separator replaces wet scrubber

In order to save resources, the brothers optimized and automated the work processes. Today, 27 robots are already in operation at Haas Metallguss. As a result, rejects were significantly reduced and productivity increased. To reduce energy consumption, the company invested in triple-glazed windows and LED lighting. New compressors with central controls also helped to reduce energy consumption. In early 2019, Haas management decided to make a further investment by replacing the old wet scrubbers, which extracted and separated the separating agent fumes escaping at six of the eight die-casting machines, with the latest eLine electrostatic separator from Keller Lufttechnik.

### Significant energy savings

Haas has experienced triple energy savings. Because of its lower filter resistance, the eLine requires significantly less power than its predecessor. It is also equipped with a frequency inverter that adapts the performance of the extraction system to the number of machines in operation. These two factors alone have already resulted in a savings of 150,000 to 170,000 kilowatt hours annually. The third advantage: The eLine cleans the air so thoroughly that it can be recirculated into the plant once it has passed through the separator. "This will have a noticeable effect on heating costs next winter," says Dr. Michael Haas. "Due to fluctuating clean air values, operators were previously allowed to operate a wet scrubber by only using exhaust air. As a result, we experienced a total air exchange inside the plant twice an hour. Although the die casting machines and the melting furnaces generated more heat to supplement normal heating, it was never comfortably warm in the production area during winter. That's about to change."



The four eLine modules clean the air so well that it can be recirculated into the plant. "This will have a noticeably positive effect on heating costs next winter," says Dr. Michael Haas.

### Compact and quiet

Employees immediately noticed additional advantages of the new extraction system. The four new eLine modules, with a total air flow of 25,800 cubic metres per hour, occupy considerably less space in the machinery bay than their predecessors. They also run more quietly. Instead of emitting 80 decibels (as loud as a truck), they now reach only 45 decibels (equivalent to normal sounds inside an apartment).

### eLine uses principle of electrostatics

Thomas Peine from Keller Lufttechnik, who supports Haas and advises them on air pollution control matters, explains how an electrostatic separator works. "The eLine makes use of the principle of electrostatics. A charger ionizes the unwanted foreign particles in the air flow. The positively charged particles then flow through narrowly spaced plates that are alternately positively charged and grounded. The effect: The particles are repelled by the charged plates and adhere to the grounded plates. Clean air exits the plant." >

**Automatic cleaning for continuously optimal extraction performance**

Regular cleaning of the collector and charging stages is important, because only a clean extraction system provides the required high separation efficiency for clean air recirculation. In the past, many systems reached their limits. "Keller Lufttechnik, however, developed a reliable flushing unit that thoroughly cleans the panels during a manufacturing break and thereby ensures constantly high extraction performance levels," explains Thomas Peine. "At Haas Metallguss, automatic cleaning is always done on Saturdays when the die casting machines are shut down. An environmentally friendly circulation system with appropriate water treatment feeds the rinsing device.

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**In the plans: Replace the second wet scrubber as well**

The Haas brothers are very satisfied with their new eLine: "It has proven itself to be extraordinary. Eventually we will probably replace our second wet scrubber, which is used on two other die casting machines in an adjacent room, with an eLine as well. <

The die casting machines of HAAS Metallguss GmbH generate adhesive separating agent fumes. Back in 2019, the Haas management decided to install a new extraction system: The modern eLine electrostatic separator from Keller Lufttechnik replaced an old wet scrubber.

