Starlim: A world leader in efficient injection moulding

"Our goal is to become the most efficient injection moulding company in Austria. If we can achieve this in Austria, we can also do so worldwide."

Thomas Bründl, CEO

The world's largest liquid silicone processing company sees energy efficiency as a competitive advantage

By pairing with Starlim, the traditional toolmaking company Sterner developed into the world's largest processor of liquid silicone. The company now manufactures 5,000 different silicone products at three locations in the Wels region. Most of these products go unnoticed in our daily lives. They are used, for example, as seals in cars, as dampers in kitchen drawers or in the form of keyboard mats. Each year, over 11 billion silicone parts make their way from the headquarters in Marchtrenk to industrial customers in Europe, America and Asia.

Starlim produces single and multi-material parts out of and with silicone in a fully automatic injection moulding process. More than 200 injection moulding, compound and 2K systems are in operation at the Marchtrenk and Weißkirchen locations. The production runs in shifts, 24 hours a day, 365 days a year.

What was achieved?

Projects: step-by-step to higher efficiency

PV systems at 3 sites
- Marchtrenk: 938 kW_p
- Weißkirchen: 245 kW_p
- Lambach: 266 kW_p
- PV electricity generation: around 1.5 million kWh/year

Cooling processes
Freecooling, water cooling
Savings: 150 MWh/year at one plant and similar at a second

Ventilation systems
Heat recovery, new systems with layered ventilation
Savings: 274 MWh/year savings and electricity consumption reduced by $^2/_3$ at one plant. The same applies to a second plant site and partly to the main plant.

Space heating
Use of waste heat in Weißkirchen and Lambach: no additional fossil energy required for heating

Compressed air
Pressure reduction: savings of 40,000 kWh/year

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Energy efficient injection moulding – how to get there

Constantly striving to increase efficiency

The strategy is to constantly increase efficiency in all areas and to further optimise based on the experience gained. This requires advancements in control technology. Since a flaw in controlling can cost a lot of money and energy, Starlim puts great effort into continuous improvement.

Use efficient machines

Starlim works closely with the manufacturer of its injection moulding machines. Together, new technical possibilities were developed to increase the machines' efficiency and convert them to servomotor drives. Servomotors react to changing output requirements and run at optimal speed. In everyday production, this allows 30% electricity savings compared to a standard drive.

Ventilation and cooling: electricity demand divided by three!

New, individually controlled ventilation systems decreased the electricity consumption at one plant from 441 to 167 MWh/year and the related CO_2 emissions by around 60%.

By providing layered ventilation, these systems can circulate reduced air volumes in an energy-efficient manner while ensuring better air quality. The cold water systems at all three sites are networked and the cooling circuits are divided according to temperature levels. This ensures higher efficiency in the generation and distribution of cold. In addition, free-cooling makes use of ambient air when outside temperatures are low.

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"Our goal is to be an energy efficiency pioneer among injection moulding companies. Keeping electricity consumption as low as possible is a constant drive."

Hannes Jungmair, Global Facility Management

starlim

At the plant in Weißkirchen, a 600 m³ water basin allows saving energy from the lower temperatures during the night and morning hours for cooling during the day, thus reducing the operating time of the cooling units by one third and saving around 150 MWh/year.

Saving with more efficient compressed air

The pressure in the compressed air lines was decreased from 8.2 to 7.0 bar – leading to lower losses and electricity savings of almost 40,000 kWh per year. At the location in Marchtrenk, electricity savings of 4% were achieved with this measure alone.

Fossil fuel-free operation

The sites in Weißkirchen and Lambach, which are mostly dedicated to production and have limited office space, already operate entirely free of fossil fuels. Waste heat from the production process and a water-to-water heat pump cover the heating demand.

Efficiency with extra benefits

The new ventilation systems in the production halls are not only more energy efficient, they also ensure better air quality. The conversion of the lighting to LED increased light quality and employee comfort in addition to saving electricity.

Solar power from the rooftops: 1.5 MWp

Three large rooftop PV installations with a total of 8,400 m² produce over 3% of the total electricity consumption. 100% of the PV electricity is used on-site, saving 330 t CO_2 per year. The company's vehicle fleet also benefits from the renewable electricity: Starlim purchased electric vehicles for traveling between company sites. The vehicles can be charged with fossil-free electricity at charging stations in Marchtrenk and Lambach.

There is more to come!

In addition to continuously improving the control technology and ongoing energy efficiency projects, Hannes Jungmair wants to replace the heating system at the Marchtrenk plant with a water-to-water heat pump (1,500 kW). This would enable an even better use of waste heat. The return flow of the "hot" production processes can cover the base heating load. Fossil fuels would then only be needed to cover peak loads. Further building areas will be converted to LED. The ventilation systems and controls are also constantly being renovated and optimised.

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The company – key facts & figures

Starlim Spritzguss GmbH

Founding year:
1974: STERNER Werkzeugbau GmbH established by Franz Sterner as Franz Sterner GesmbH
1984: STARLIM Gummi- und Kunststoffverarbeitung GmbH (today STARLIM Spritzguss GmbH)

Employees:
1,500 (1,000 in Austria)

Annual sales:
Around 220 million €/year

Ownership structure:
Family owned and managed

Export:
90% (Europe, America, Asia)

Industrial sectors:
Automotive (47%)
Life science (30%)
Industry (furniture components, telecommunications, sanitary, 23%)

Processes:
Silicon processing (Starlim)
Tool making / Tool manufacturing (Sterner)

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