

Think different  
Cool different  
Revolutionizing  
plastic processing  
and rubber industry





## Boosting efficiency in plastic processing

In an era marked by environmental challenges, sustainable processes have become increasingly prominent in our collective efforts to protect and preserve the Earth. As our world grapples with issues such as climate change, resource depletion, and pollution, recycling emerges as a powerful tool with the potential to mitigate the impact of human activity on the environment. Manufacturers of extruders and injection molding machines are embracing innovative technologies to boost performance, enhance efficiency, and reduce environmental impact. At the heart of this transformation lies the role of electric motors, driving change, bringing unparalleled efficiency, precision, dynamics, and sustainability to extrusion and injection molding operations.

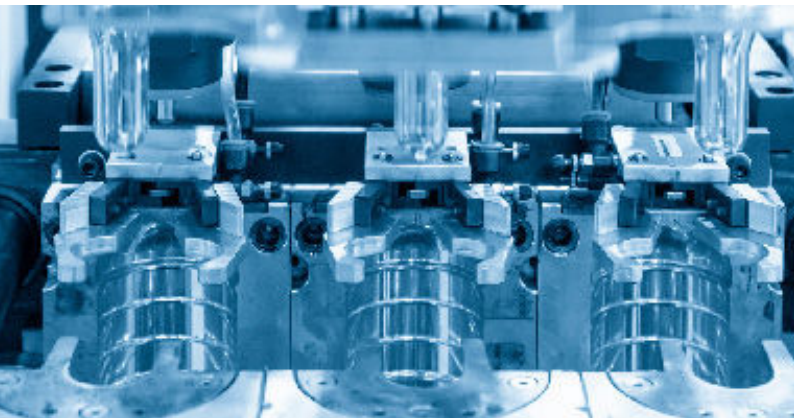
# The power of electric motors

Electric motors are the workhorses of mixing, extrusion and injection and blow molding machines, converting electrical energy into mechanical power. From the design of the motor to its final delivery, it is paramount to ensure that this fundamental component has been meticulously crafted to meet the process requirements accurately.

The process begins with selecting an electric motor that harmonizes perfectly with the task. Be it mixing, extrusion, injection molding, or blow molding, choosing the suitable motor is a fundamental element in avoiding potential pitfalls and ensuring the overall success of your project. The heart of the matter lies in the pursuit of precision, as high torque and dynamic prowess are critical in shaping the ultimate quality of manufactured plastic products.

Throughout this process, it is crucial to proactively address potential issues that may disrupt the smooth operation of your manufacturing process. Overheating and reduction are adversaries that should be vanquished through advanced cooling techniques and an optimum operating point. Selecting an appropriate electric motor means steering clear of these hazards to avoid wear and tear, increased downtime, and maintenance expenses.

Precision is paramount in the realm of plastic processing, and electric motors excel in this domain. With unparalleled control, they ensure product uniformity, minimize material waste and offer real-time adjustments that optimizes the entire manufacturing process.



# The importance of efficient cooling

Whether electric motors power an extrusion line, an injection molding machine, or other essential plastics processing equipment, the performance and longevity of these electric motors are paramount. Efficient cooling of these motors plays a crucial role in ensuring their reliability and, by extension, the success of your operations.

Electric motors are the workhorses that tirelessly convert electrical energy into mechanical power, driving the intricate processes required to mold, shape, and produce an array of plastic products. However, in their relentless pursuit of productivity, these motors generate heat – a consequence of energy conversion. If not appropriately addressed, this heat can lead to issues that impede your operations and incur significant costs.

Efficient cooling mechanisms are, therefore, the unnoticed heroes in this narrative. They are the silent sentinels that ward off the heat generated during operation, ensuring that your electric motors operate within their optimal temperature range. This, in turn, ensures that your plastic processing machinery performs at its peak, day in and day out. Effective and reliable cooling is not just a convenience but the cornerstone of cost savings, improved product quality, and longer motor lifespans.



### High Dynamics and High Torque

A motor with water cooling can operate more dynamically due to water's 25 times better thermal conductivity than air. The flow-optimized water jacket transfers thermal losses directly into the cooling medium and thus enables a higher power density. A compromise between a small motor with high dynamics but low torque and a large motor with low dynamics but high torque no longer must be found here.

### Independent of Cooling Air

In some areas of the plastics processing industry, the ambient air is very dusty. Air-cooled motors can whirl up a lot of dust, clog the motor, and become very warm on the outer surface, which – in the worst case – can cause air-dust mixtures to ignite. These problems do not exist with water-cooling. There are no dangerous ignitions, since the heat is dissipated directly via the water jacket, thus always ensuring a moderate surface temperature.

### Space Saving

The improved thermal conductivity allows building water-cooled motors to be significantly smaller and more compact than their air-cooled counterparts. This leads to a significant weight reduction and can deliver up to 50% more torque at the same frame size.

### Robust and Reliable

The water-jacket cooled motor is robust and prevents downtimes due to the wide openings of the separating bars in the cooling jacket. It's impossible for clogging to occur if the water is appropriately filtered before the inlet. The robust design, without any cooling fins, fan blades and cover, brings also advantages in vibrations and a significant noise reduction.

### 5. Energy Saving and Economical

The simple design of the motors scores with high economic efficiency and low maintenance effort. Hardly any energy is needed for cooling, e.g. no external fan, no air conditioner, no air exhaust system, which increase the total losses for the extruder system. By maintaining optimal operating temperatures, water-cooled motors experience less wear and tear, resulting in less frequent maintenance and downtimes.



## Customized electric motors for best performance

ELIN Motoren's dedication to sustainability aligns seamlessly with the plastic processing industry's aspirations for a greener and, therefore, environmentally conscious future. Our electric motors are designed to optimize energy usage, reduce waste, and diminish operations' ecological footprint, thereby nurturing a more sustainable manufacturing ecosystem. One of ELIN Motoren's key strengths is its ability to provide tailored solutions that precisely meet the diverse needs of the plastic processing industry. Recognizing that every manufacturer faces unique challenges and requirements, ELIN Motoren takes a consultative approach, working closely with clients to engineer motors and drive systems that seamlessly integrate into their processes. This customization ensures optimal performance, efficiency, and longevity, ultimately enhancing our customers' competitiveness.

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### MKS - Low voltage squirrel-cage rotor, water-cooled

- Performance range up to 3,000 kW
- Voltage up to 1,000 V
- Speed range in operation with VFD 300 - 2,000 r/min
- IEC size 630



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### HKH - High voltage squirrel-cage rotor, water-cooled

- Performance range up to 3,000 kW
- Voltage up to 3,3 - 10 kV
- Speed range in operation with VFD 0 - 2,000 r/min
- IEC size 355 - 560



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### MKH- Low voltage squirrel-cage rotor, water-cooled

- Performance range up to 2,500 kW
- Voltage up to 1,000 V
- Speed range in operation with VFD 0 - 3,000 r/min
- IEC size 200 - 500



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### MUP - Low voltage squirrel-cage rotor, oil-cooled

- Performance range up to 600 kW
  - Voltage up to 690 V
  - Speed range in operation with VFD 0 - 1,500 r/min
  - IEC size 250 - 355
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