

TECHNOLOGY IN ACTION



Improving the energy efficiency of electric motors



Orgalim's Technology in Action case studies showcase how the technology industries we represent are shaping a future that's good for Europe's economy and society - and how the right policy framework can help them do even more. They are extracted from our Technology at Heart series, available in full online at orgalim.eu/technology-heart.



Challenge

There are about eight billion electric motors in use in the EU, consuming nearly half of all the electricity the EU produces. Increasing the energy efficiency of these motors therefore represents a major opportunity for energy savings and thus the reduction of greenhouse gas emissions.

The EU estimates that increased energy savings of 110 terawatt hours of electricity and 40 million tonnes of avoided CO₂ emissions can be achieved annually by 2030 through more energy efficient motors, reducing the annual energy bill of households and industry by around €20 billion.

Solution

Slovenia's Domel has been working on improving the energy efficiency of its motors for decades, going well beyond the required standards. It makes motors for vacuum cleaners and other household appliances, garden equipment and power tools; heating, ventilation and air conditioning (HVAC) motors in buildings and auxiliary motors for the automotive industry. "Through optimised design, our motors are highly efficient from the energy consumption and material usage side," says CEO Matjaž Čemažar.

Its vacuum cleaner motors can be up to 30% lighter than imports from outside the EU, which means less iron and copper used and also less waste to recycle. Its industrial and buildings motors are also increasingly connected,

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Total cost of ownership may be a buzzword, but many people have not really taken it on board. There are plenty of motors running for hours each day with a huge potential for energy savings.

Matjaž Čemažar, CEO, Domel



enabling Internet of Things applications to further optimise efficiency, predictive maintenance and other Industry 4.0 benefits.

The efficiency improvements are particularly striking in buildings. The company estimates that all of the ultra-high efficiency, IE5-rated HVAC motors it has sold over the last five years have delivered savings of more than 200 GWh of electricity in 2020, translating to 67,628 tonnes of avoided CO₂ emissions in one year.

Moreover, Domel's HVAC motors, designed and manufactured in Europe, achieve that high level of efficiency without the use of rare earth magnets, by using ferrite magnets instead, making them less dependent on critical raw materials.

Policy implications

1. Reward materials efficiency and circularity. "We had high expectations that the energy label would limit cheaper and less efficient products coming onto the market but we have been disappointed," says Čemažar.
2. Support greater energy efficiency across the EU: Domel sees significant variations in awareness of the importance and value of energy efficiency across EU member states.
3. Fair, free and open trade and an efficient Single Market – exports represent 92% of Domel's turnover, 74% goes to the rest of the EU.

Related Orgalim EU policy positions

- [Circular Economy Action Plan](#)
- [Sustainable, Safe and Affordable Transport](#)
- [Energy Efficiency](#)
- [Sustainable Finance](#)



Hybrid mid-drive for e-bikes

Powering e-mobility

Domel is also bringing its expertise on efficiency to e-mobility. Besides auxiliary motors for EVs, the company has developed an e-bike drive motor, a hybrid mid-drive system for e-bikes and an in-wheel motor for new electric scooter.

The new e-bike mid-drive, developed in collaboration with partners, is one of the most powerful available in the fast growing market for electric mountain bikes. It received the gold award for innovation from the Slovenian Chamber of Commerce.

About Domel

DOMEL®

Domel is a strongly innovative company focused on energy efficient electric motors and the technologies around them. It is a development leader in the vacuum motor market and creates motion in professional and home appliances, in HVAC, in mobility, in industrial applications, in medicine and healthcare and in alternative energy sectors.

Nearly a third (32%) of products are less than three years old. Based in the small town of Železniki where it is the largest employer (1,400 employees), the company sets a high priority on being socially responsible. "Each family in this town is somehow connected to the company, so for us, it is not only about profit but also about the wellbeing of our employees and the community," says CEO Matjaž Čemažar. Sustainability is a core tenet of the company's strategy and it has set a goal to halve its own carbon footprint by 2027 (from a 2019 base).

domel.com

Orgalim represents Europe's technology industries, comprised of 770,000 innovative companies spanning the mechanical engineering, electrical engineering, electronics and ICT, and metal technology branches. Together they represent the EU's largest manufacturing sector, generating annual turnover of over €2,076 billion, manufacturing one-third of all European exports and providing 11.33 million direct jobs. Orgalim is registered under the European Union Transparency Register – ID number: 20210641335-88.