

TECHNOLOGY IN ACTION



Putting Europe on track to net zero



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

Transport accounts for around 29% of all EU carbon emissions and is one of the only sectors where emissions are rising, mainly because of forecast increases in the aviation and road transport modes. Rail, currently the most sustainable motorised mode of transport, is key to rapidly decarbonising transport.

But for rail to fulfil its central role in Europe's mobility future, it needs to become even more efficient, available and attractive. Take rail freight. The market share of rail freight has been shrinking in the EU, to 17.6% in 2019, down from 18.8% five years earlier.

Currently high-speed rail freight is about 70% more expensive than the conventional lorry but emits 80% less CO₂ emissions.

Solution

There are numerous factors holding back the shift to both passenger rail and rail freight, some of them regulatory. From a technological viewpoint, braking is a key opportunity area for improvement, especially as rail speeds push higher.

Enter Slovenian metalworking company Kovis, which produces brake discs for all types of railway vehicles: from locomotives, trams and metro lines to high-speed trains.

Since the air resistance of brake discs is up to 4% of the total drag of high-speed trains, if you can reduce that

air resistance, you can significantly improve the energy efficiency of trains, explains the company's CEO, Alen Šinko.

Kovis' latest innovation is its Flex brake disc. Brake discs traditionally have three main components: the brake plates, the hub and the connection elements. The new Flex disc is manufactured as one piece, enabling more than 20% lower mass, 35% lower ventilation losses, 22% longer lifetime and 25% better cost-effectiveness, Kovis estimates. Crucially, take 64 such discs in operation over a typical lifetime of 2 million km, and you are looking at energy savings of 107,200 kWh and emissions savings of 20.6 tonnes of CO₂.



A major step in the transition to a low carbon economy was made by changing our smelting unit from a cupola to induction furnaces, which no longer use fossil fuels and thus reduce our carbon footprint.



Alen Šinko, CEO, Kovis



Kovis factory

On top of that, the lower mass saves energy and emissions savings in material melting, which Kovis now does in electric induction furnaces instead of fossil fuel-fired traditional furnaces.

What is more, the company can boast 100% circularity, thanks to a briquetting machine that gathers all the waste metal from the manufacturing process ready to be re-melted, and a pledge to customers to take back the discs at the end of their life for recycling into new products.

Kovis has also developed a new brake disc for rail freight, as part of the Horizon 2020-funded Futura project. The disc achieves not only energy, emissions and material savings but also noise reduction for improved quality of life for people living near train tracks.

Policy implications

It is important to recognise the importance of foundries in the value chain in the European Green Deal, says Šinko, as this sector is key to the production of high-tech products in the railway industry, robotics, mechanical engineering, the automotive industry, agricultural mechanisation and more, thus strengthening the EU's competitive advantage and resilience.

Related Orgalim EU policy positions

- [Circular Economy Action Plan](#)
- [Energy Efficiency](#)
- [Sustainable Finance](#)



About Kovis

Founded in 1976, Kovis is one of the leading companies in Europe for the development and production of components for the railway industry, such as brake discs, axle boxes, and different parts for the railway industry and other industrial sectors. A strong focus on sustainability is a key driver of its strategy, from Industry 4.0 processes to improve efficiency and reduce materials and energy consumption, to robotisation of welding processes and the use of high performance CNC machines and induction furnaces. Kovis sells its products in 34 countries, with Europe being its most important market. 96% of revenue is created from sales on foreign markets.

kovis-group.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.

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