Putting Europe on track to net zero

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.

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
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.

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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.

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

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