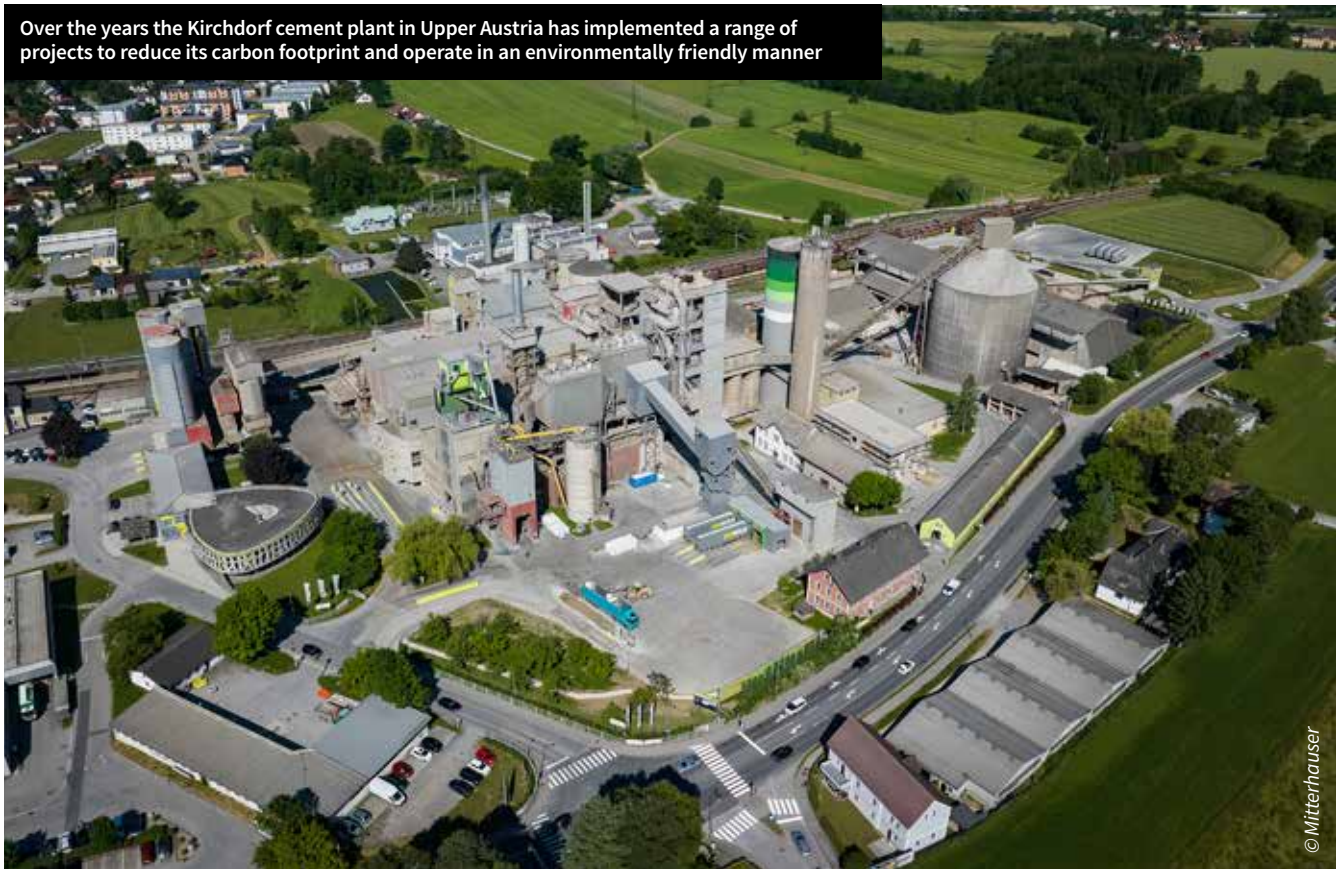
# Kirchdorfer's new standards

The Kirchdorf cement plant's latest investment in a fully-automated laboratory and a new control centre enables the Austrian cement company to produce higher-quality cement with increased efficiency. Additional investments in state-of-the-art environmental technologies have also helped the cement producer to reduce its carbon footprint.

■ *by **Kirchdorfer Zementwerk**, Austria*



Over the years the Kirchdorf cement plant in Upper Austria has implemented a range of projects to reduce its carbon footprint and operate in an environmentally friendly manner

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Part of the Kirchdorfer Group, the Kirchdorf cement plant in Upper Austria has made a name for itself internationally with its pioneering role in substitute fuels and raw materials. With a substitution rate of over 90 per cent for fuels and a share of almost 40 per cent of substitute raw materials, the family business scores highly in terms of environmental protection. Moreover, the high substitution rates make a significant contribution to reducing $CO_2$ emissions from cement production and promoting the circular economy. However, the plant's investments to achieve this low-carbon transformation reach beyond alternative fuels and raw materials.

## The path to low-carbon

The key to this pioneering transformation is the expanded central laboratory with modern offices for laboratory and production staff. The laboratory automation is where high-tech meets tradition through automated sampling, enabling very short analysis intervals that were previously unattainable. New, high-performance analysers enable precise and fast analyses, which are further processed by intelligent controllers and lead to efficient quality control.

The sophisticated control system technology of the central control room enables more precise control of the production processes, while the extended laboratory automation with state-of-the-art analysers provides fully-automated quality control for process monitoring.

"With the new central control centre and advanced laboratory automation, we are achieving a further increase in the quality of our products. Combining the laboratory with production creates valuable synergies that have a positive effect on communication and cooperation between employees," explains Wolfram Müllauer, laboratory manager at the Kirchdorf cement plant.

The project is also an essential component for the development of new lower-carbon cements and binders with consistent top quality.

## Investment in environmental technologies

However, the new central laboratory and central control room are only part of a much larger effort to reduce the plant's

The new central control room enables the plant's efficient production of low-carbon cements


carbon footprint. The Kirchdorfer Group has also invested in the introduction of alternative fuels and raw materials at the plant while its waste heat recovery (WHR) system provides a supply of waste heat to the town's district heating network.

**Alternative fuel use at Kirchdorf**

The use of alternative fuels such as rubber from used tyres and plastic waste makes it possible to cover the majority of thermal energy requirements without fossil fuels. Kirchdorf cement plant's thermal substitution rate (TSR) stands at approximately 90 per cent while the Austrian average is just under 85 per cent. This high TSR is the result of continuous investment in innovative technologies and processes.

With an investment of EUR9.5m in the burn-out line, the transfer and dosing system for the substitute fuels and the adapted transport concept, the Kirchdorf cement plant is consistently optimising its process. As a result, the company has been able to reduce CO emissions by another 17 per cent while further increasing the use of alternative fuels and reducing the share of fossil fuels. The burn-out line, which went into operation in 2022, enables the processing of coarser substitute fuels, which saves valuable energy during processing.

**Alternative raw materials conserve natural resources**

In addition to substitute fuels, the Kirchdorf cement plant also uses substitute raw materials such as brick chippings, bottom ash from biomass, fly ash from the paper industry and foundry sand. These materials, which previously often ended up unused in landfill sites, now replace a considerable proportion of natural raw materials. This conserves valuable resources and reduces the environmental impact of their extraction and transport.

**Waste heat recovery**

The traditional Upper Austrian plant utilises the waste heat from its production with a modern exhaust air purification system in several ways to efficiently recycle energy. The DeCONO$_x$ technology combines a clean gas catalyser with regenerative thermal oxidation. This means that harmful substances such as nitrogen oxides, organic hydrocarbon compounds and CO are almost completely removed from the exhaust gases.

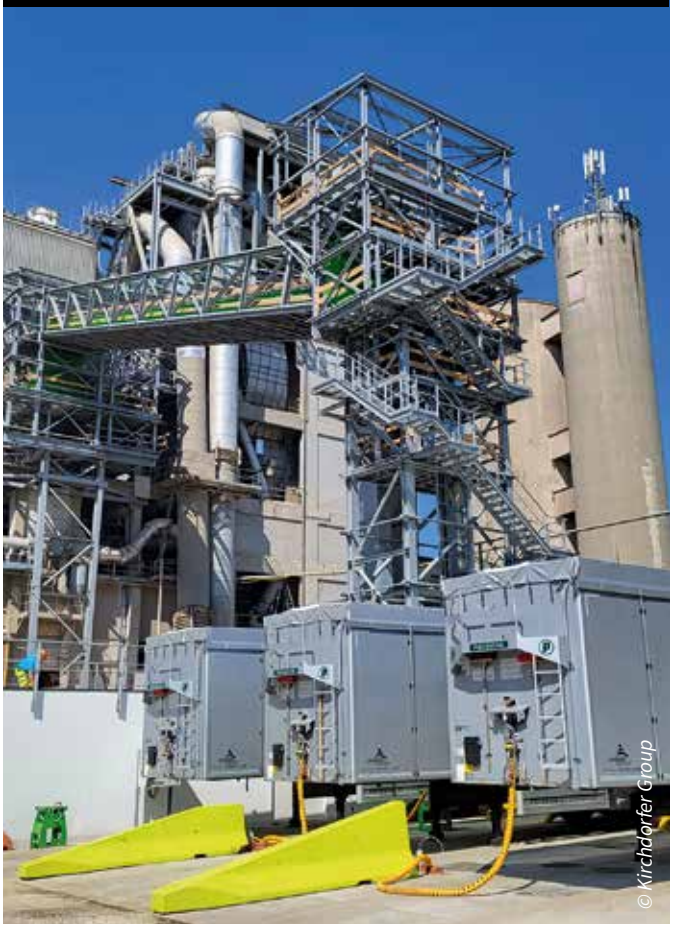
The resulting excess waste heat is extracted in a high-performance heat recovery system and fed into the district heating network of the town of Kirchdorf. In addition, the waste heat from the clinker cooler and the cement mills is extracted in further heat recovery systems.

Thanks to the implementation of WHR technology, the Kirchdorf cement plant covers the district heating requirements of almost 1000 households and in the summer months even the entire demand. This utilisation of waste heat is a "perfect symbiosis of economy and ecology".

## Ecology and economy go hand-in-hand

The investments of Kirchdorf cement plant in its laboratory and control room are improving the quality of cement produced at the plant. In addition, the investment in environmentally friendly practices such as the use of alternative fuels, substitute raw materials and WHR prove that the environment and economy can go hand-in-hand in the cement industry. Furthermore, being able to continue producing in an environmentally friendly manner ultimately also contributes to securing the plant's location. ■

A new burn-out line has reduced CO emissions by a further 17 per cent as well as increasing the use of alternative fuels



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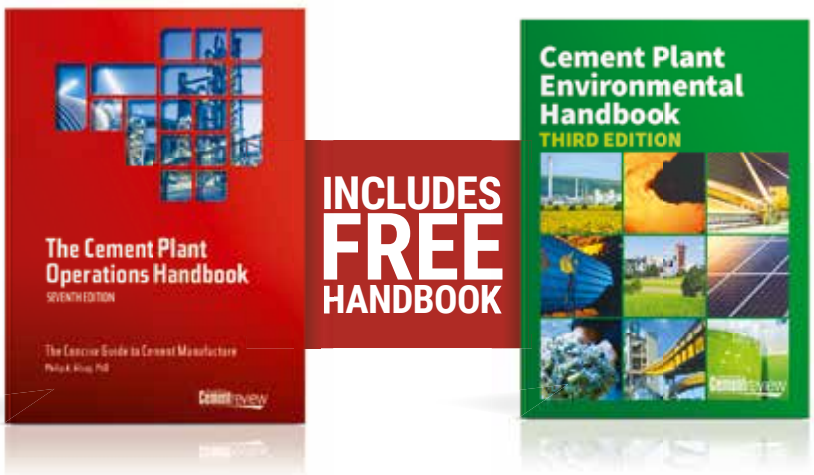


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