

# Factsheet for Biomass Solutions in Industry

Biomass is another source to diversify industrial heating and cooling with a renewable technology. In 2021, biomass was the **largest alternative solution to fossil fuels** for industrial process heat because forest industries used internally generated residues and by-products to such as, dry timber in sawmills and produce process steam in pulp & paper mills. Biomass is mainly interesting to decarbonize industrial processes requiring **100-200°C**. Occasionally, it can go even above 500 °C.

In 2018, 81% of the biomass used in energy consumption by European industries went into the pulp and paper sector, along with the wood and wood product industries. Non-metallic mineral industries like glass, ceramics and cements represent the third largest sector consuming biomass in industry. Chemical, petrochemical, iron and steel – heavy industries- are used at insignificant amounts.<sup>1</sup>

Given the various forms that heat generated by biomass can take, its application is **particularly diverse**. For instance, wood pallets or bio-methane provide solutions ranging from processes related to glass and ceramics to sectors requiring less heat.

To illustrate the use of biomass in industrial processes, the example of a **potato processing company** in the Netherlands can be of interest. Biomass is used as a baseload heat source reaching 215 °C, for peak load, gas substitutes the RHC technology.<sup>2</sup>

Moreover, the **Milaki cement plant of Hercales-Holcim** in Greece uses biomass for co-processing in the cement industry. Cement production requires high amounts of energy – mainly heat – and consequently that heat represents a high amount of production costs. Hence, next to the obvious motivation of replacing fossil fuels for the heat production by a renewable source, the cost dimension emphasizes the benefits of biomass. In total, €2 million have been invested which will reduce 70,000 tons of CO<sub>2</sub> per year and require 75,000 biomass annually.<sup>3</sup>

Another example features the **largest bakery in Switzerland**, Coop Group. The project uses 50% wood chips and 50% grain residues to further upstream the supply chain at a mill. In 2018, already 70% of the heat produced were provided by biomass. The installation generates up to 2.5 MW thermal oil at about 285 °C and up to 400 kW hot water at 145 °C. With this project, the large company is able to reduce its emissions of the bakery processes.<sup>4</sup>

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<sup>1</sup> RE4Industry (2023).

<sup>2</sup> IEA Bioenergy (2021).

<sup>3</sup> RE4Industry (2023).

<sup>4</sup> IEA Bioenergy (2016).