

Solid Biomass for Process Heat in Europe: Sources and Technologies

I. Malico^{1,2}, R. Nepomuceno Pereira¹, A.C. Gonçalves^{1,3}, A.M.O. Sousa^{1,3}

¹Universidade de Évora, Escola de Ciências e Tecnologia, 7000-671 Évora, Portugal.

²LAETA, IDMEC, Instituto Superior Técnico, Universidade de Lisboa, Lisboa, Portugal

³ICAAM, Núcleo da Mitra, Apartado 94, 7006-554 Évora, Portugal

The European Directive 2009/28/EC established the global target of 20% share of renewable energy sources in energy consumption to be met by 2020, but EU countries have already agreed on a new, more ambitious goal by 2030: at least 27% of final energy consumption in the EU. With regard to final energy consumption per sector, industry was the second largest EU energy consumer in 2015, with a 25.3% share in final energy consumption [1]. This sector is strongly dependent on fossil fuels and is dominated by heat consumption. These facts express the importance that heating in the industrial sector has on the EU energy consumption (around 18% of the EU energy consumption). Promoting changes in the way energy is used and generated in the European industry is therefore central to achieve the EU goals in terms of renewable energy penetration.

Today, biomass is the only renewable energy source that does not have a negligible use in the European industry. It is widely employed in some industrial sectors (for example, it is the main energy carrier in the European paper and pulp industry); however, in other energy intensive sectors, it has no important expression. In this work, the current status of the use of solid biomass by the European Industry for the production of process heat is presented. The availability of solid biomass in Europe is assessed and a description on the available conversion technologies is undertaken. The different alternatives are compared in terms of performance and costs.

[1] Eurostat (2017). <http://ec.europa.eu/eurostat/>. Last accessed on 06 February 2017.