Energy efficiency: An industry lighting the way

For some years now, Europe’s pulp and paper industry has been working hard to improve its energy efficiency with notable results. Investments in combined heat and power (CHP) generation mean that European pulp mills now produce 50% more energy than they use, a valuable bioenergy resource which gets sold to the local community. CO₂ emissions have fallen significantly – specific emission of CO₂ per tonne of paper produced has fallen by more than 40% since 1990.

In CEPI’s 2050 Roadmap, the target is to reduce the industry’s CO₂ emissions by 80% by 2050. The Two Team Project has delivered several mind-blowing ideas on how to achieve this while adding 50% more value to the industry. These concepts are now being pursued by several consortia with a view to turning ideas into demonstration plants in the future and to reduce the sector’s emissions further still.

Energy efficiency in action

Thanks to the Dalkia CHP biomass plant located at Smurfit Kappa’s Cellulose du Pin pulp and paper mill in France, over 90% of the mill’s electricity and all steam is generated from biomass, which means emissions are drastically reduced. The Dalkia biomass plant is home to the largest biomass boiler used for energy production in France. Bark and sludge, both by-products of the pulp and paper mill, are combusted, while sister company Comptoir du Pin provides fuelwood from forest residues. In fact, with a power capacity of 124 MW, it is among the biggest in Central Europe. The CHP plant produces 50 MW of electricity for the national grid and 74 MW of process steam for Smurfit Kappa’s paper mill. A second turbine (21 MW) gets the steam it needs from Smurfit Kappa’s recovery boiler, and the black liquor produced in the pulping process is used in the power boiler.

Partnerships through the chain

Swedish forest products company SCA and Sundsvall Energi have taken their energy partnership to the next level. With new investment, the joint delivery capacity of district heating from the industrial plants in the Sundsvall region has been expanded to 400 GWh. Two thirds of the increase comes from two boilers at the Ortviken paper mill, which have been converted so they use wood pellets instead of oil. The remaining third comes from deliveries of recovered heat from the Östrand pulp plant. Since SCA’s mills are supplying so much energy, Sundsvall municipality no longer needs to spend €100 million on a new boiler for biofuels. Great news for the local economy as well as the environment.
Fossil-fuel free pulp from Finland...

The Joutseno pulp mill in Finland no longer needs any fossil fuels to run its day-to-day operations, thanks to a large investment in biofuel generation which means it no longer needs oil and natural gas. Instead of fossil fuels, the mill has a new gasification plant which uses bark to produce bioenergy. Over half of the bark comes from the mill itself as a by-product from the pulp process. A large energy consumer in the pulp mill is the lime kiln, which is part of the process for recovering chemicals. At Joutseno, the lime kiln now runs on bio-gas rather than natural gas, and that represents big savings and energy and environmental efficiency.

...and paper from the UK

Iggesund’s Workington Mill in the UK runs entirely on renewable energy, thanks to a new biomass boiler installed in 2013. Workington is powered by biomass such as willow, forest residues and sawmill by-products. The investment has reduced the plant’s fossil fuel emissions from close to 200,000 tonnes per year to zero.

Less is more

LC Paper in Spain has been working hard to engineer a tissue paper production process which uses exceptionally little energy and water compared to traditional grades. Called the OnePly® tissue paper, the product is a mono-layer (as opposed to a multi-layer tissue) which reduces the need for raw materials, energy and water.

Partnering with the local community

Alto Garda Power, which belongs to Italian papermaker Cartiere del Garda and Alto Garda Servizi, installed a combined heat and power (CHP) plant to meet the paper makers’ steam and power needs and Alto Garda Servizi’s hot water needs for district heating in the town of Riva del Garda. The new plant replaced a thermo-electrical power station which served just the steam and power needs of the paper mill. Now, with the new CHP plant, more than 250 large consumers (large residential buildings, hotels, public swimming pool, etc.) get their heating pumped as a by-product of the mill in the form of recovered process steam.

More information at

www.cepi.org/resourceefficiency