CASE STUDY

MAKING THE PAPER AND PULP INDUSTRY MORE SUSTAINABLE

Replacing fossil brown coal by renewable biocarbon

CLIENT: VPK PACKAGING GROUP

VPK Packaging group is an international packaging supplier, employing more than 6.000 people in more than 65 plants in 20 countries. Their roots trace back to 1935. The VPK product range covers tailor-made solutions for corrugated board and solid board packaging, cores and edge protectors. All of these products are fully recyclable. Furthermore, VPK paper is made of exclusively recycled fibres, which underlines their determined ambition to operate within a circular economy.

TORRCOAL

CHALLENGE: REPLACEMENT OF FOSSIL BROWN COAL BY A RENEWABLE ALTERNATIVE

At the VPK plant in Oudegem (B), fossil brown coal is used to generate heat for the production of paper. VPK already partially used secondary (recycle) fuels for alternative heat generation. Always on the lookout for more sustainable production methods, they learned about the process of torrefaction. Their search for torrefied sustainable fuels eventually led them to Torr-Coal. When both companies learned about their mutual interests, it was decided to start a project together. The challenge of the collaboration: To produce an artificial coal that is not only sustainable, but is also fully exchangeable with brown coal powder and can be processed in the existing supply chain of VPK.

APPROACH: CLOSE TECHNICAL COOPERATION BETWEEN TORRCOAL AND VPK

After months of testing, TorrCoal managed to develop a recipe for a promising biocarbon: It had the same energy properties as brown coal powder: around 22 GJ/t. A waste stream of wood chips from mixed European trees (including bark) was used as raw material, making it fully renewable. To end up with the same specifications as the already used brown coal powder, VPK needed this newly produced biocarbon to be grinded down to average 150 micron particle size. But lack of space in Oudegem meant VPK could not mill it down on their own site. VPK together with TorrCoal managed to engineer a solution for their placement problem: A dedicated mill was designed directly after TorrCoal's torrefaction proces, right at the TorrCoal site in Dilsen-Stokkem. End 2010 the construction of this special mill was completed and trial deliveries began.

RESULT: TORRCOAL BIOCARBON REPLACED FOSSIL BROWN COAL SUCCESSFULLY

The produced biocarbon was audited on sustainability (both process and raw materials) by an independent Belgian institute. TorrCoal biocarbon powder passed the test: Belgian government granted a considerable sustainability subsidy per produced ton. After a few logistical challenges, the mutual efforts of VPK and TorrCoal paid off: A reliable supply chain of biocarbon. Shipping records show a steady and stable stream of close to 450 truckloads during 2011, 2012 and 2013. biocarbon During the 3 year project, 6000 tons of biocarbon powder found its way to VPK, using its existing supply chain. It was transported with the same trucks and received in the same storage silo's as the fossil counter part brown coal powder. This means Torr-Coal biocarbon is not only a co-firing solution for coal fired furnaces, but it is a true replacement alternative for fossil coal.

Feedback from Johannis Bol (VPK Packaging Group)

"The burners operate without any problem on TorrCoal biocarbon. Moreover the combustion properties with TorrCoal biocarbon are better for the burners than with brown coal: there is more stability in the combustion process (dixit Pillard). This is clearly a success. We did not need any changes in our installation, only an adaptation of our software was required to adjust the process to suit the parameters of TorrCoal biocarbon. This is positive. In terms of logistics it's required to have the silos emptied before before switching from brown coal to biocarbon and vice versa. Otherwise, unnecessary time is spent running on a partial load with mixed product. In respect to the burners, the first tests show a slight profit in NOx with biocarbon, compared to brown coal. The burners completed the tests at full load without any problem"