BILFINGER TEBODIN

BIOMASS ENERGY: FIRST-OF-A-KIND PLANT IN ROMANIA

Bilfinger Tebodin is providing EPCm services for a new full-scale commercial plant for the production of 2nd generation bio-ethanol from agricultural residues. The new plant, with an annual production capacity of 50,000 tons, will be built in the Craiova region of Romania by Clariant, the one world's leading specialty chemical companies.

When in operation, the plant will be confirming competitiveness and sustainability of the Clariant sunliquid® technology at commercial scale. At full capacity, the new plant will process approximately 250,000 tons of wheat straw annually, which will be sourced from farmers within the region. The straw is converted into cellulosic sugars followed by fermentation of cellulosic sugars to cellulosic ethanol. The waste stream from the process (lignin) will be used for the generation of renewable energy in a combined heat and power plant (CHP) with the goal of making the plant independent from fossil energy sources. Therefore, the resulting cellulosic ethanol is an almost carbon neutral advanced biofuel.

The investment brings economic and environmental benefits to the region. By locally sourcing feedstock, greenhouse gas savings can be maximized and additional business opportunities arise in the region along the value chain. The technology (called sunliquid®) of the full-scale commercial plant is based on the 5 year experience in Clariant's running pilot plant in Straubing, Germany.

Bilfinger Tebodin is performing the Engineering, Procurement and Construction management from offices in the Netherlands and Romania. An international team of Bilfinger Tebodin is assisting Clariant in optimizing and freezing basic design for this first-of-a-kind plant, taking into account a cost effective design. The functional design is completely performed in COMOS while the spatial design is done using a 3D environment consisting of E3D, Revit and Advance Steel.

> At full capacity, the new plant will process approximately 250,000 tons of wheat straw annually

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