

Innovative dryer cuts costs while improving DDGS quality

Ethanol production process from grains such as wheat, maize, sorghum, cassava, and rice produces waste at the back-end of the process - distillation. Called stillage, this residue is rich in protein and can be used as animal feed or protein supplement for humans.

Stillage from distillation columns contains lot of water, which is separated from protein rich mass using centrifuges or decanters. The reject phase from centrifuges/decanters is concentrated in an evaporation process and the concentrate is mixed with accept phase from centrifuges/decanters. Called wet distillers grains and solubles (WDGS), this mixed semi-solid mass contains around 75 percent water thus the shelf-life of WDGS is very short as it starts to mould within few days. In order to increase its shelf-life, WDGS is dried down to 10 percent moisture using rotary drum or tube bundle dryers to produce dry distillers grains and solubles (DDGS). However, the conventional drying process is not very energy efficient, has lot of emissions, fire and explosion risk and destroys product quality.

Sweden-based dryer technology developers Swedish Exergy AB has developed innovative and emission free process for production of DDGS using its Exergy Superheated Steam Dryer (SHSD) process. The process uses superheated steam as the drying medium in an air free closed loop system. Together with a short residence time this ensures a 100 percent emission free drying process, with no fire and explosion risk and improved product quality as the product does not get oxidised and the protein content is protected. This protected protein in animal feed is called 'by-pass protein'. According to Swedish Exergy, the net energy consumption is only 20 percent of traditional drying processes.

A commercial dryer plant has recently been installed at a Tereos grain



ethanol production plant in Saluzzo, Italy. France-headed Tereos SCA is a major producer of alcohol, sugar and starch products with 49 production facilities in 16 countries. The installed capacity of the steam dryer is 10 tonnes per hour of WDGS at 75 percent moisture content. This is dried to 10 percent moisture content using steam. The low-pressure (LP) steam produced in the process, is then used in the ethanol destination process and evaporators.

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