Small-scale ethanol manufacturers benefit from cost effective solution to produce animal feed by-products

Achieve throughputs of up to 60 gallons per minute and recover up to 90% waste water with the Russell Finex Liquid Solid Separator™

Ethanol, also known as ethyl alcohol or grain alcohol, has seen an exponential increase in production over recent years. It has been used for various applications, including pharmaceuticals, cosmetics, solvents and chemicals. However, the two main uses of ethanol are in the production of alcoholic beverages and fuel, with ethanol being one of the most widely used biofuels today.

Ethanol can be made from a variety of agricultural crops, including corn and sugar cane. Therefore, particularly in America, corn farms and co-operatives are increasingly producing ethanol from their excess crops as a source of additional revenue. In line with the expansion of ethanol production, there has been a rapid increase in the quantity of ethanol by-products being produced. Extra revenue can also be derived from further processing the by-products to create animal feed.

There are several stages in the production of ethanol for use in alcoholic beverages. Corn, or other starchy grains, are ground into flour and slurried with water to form a mash. Enzymes are added to convert the starch to dextrose and ammonia is also added for pH control and as a nutrient for the yeast. Once the mash has been processed in a high temperature cooker, the cooled mash is added to a fermenter with yeast, where the conversion of sugar to ethanol and carbon dioxide begins.

The resultant beer is then processed to extract the ethanol. One of the most common forms of separation techniques is distillation, whereby mixtures are separated into component fractions of desired purity. In distillation, the ethanol is separated from the beer, and is mixed with 5% denaturant, in order to render it undrinkable and thus not being subject to beverage alcohol tax.

The remaining residue, known as stillage, consists of water and coarse grain. It is processed to remove 40% of the water and produce wet distillers grains (consisting of 60% water).

In order to further process the stillage by-products to create animal feed, a centrifuge has traditionally been used for high volumes. However, this is a very expensive investment that is usually too prohibitive for small operations. One alternative for small-scale producers is using a Liquid Solid Separator™ from Russell Finex. This allows farms and co-operatives to earn incremental income without committing to a substantial capital outlay for a centrifuge.

This unique machine is able to remove fine solids from liquids using the centrifugal action of its impeller. It can provide high capacity separation down to 10 micron and with its variable speed drive and angle adjustment, provides complete control over moisture content of solids while maintaining constant solids removal. It can deal with soft and fibrous oversizes, making it extremely versatile.

Russell Liquid Solid Separator™

- Produces stillage with optimum moisture content for the distiller grains needed in animal feed
- Cost effective alternative to centrifuges for small-scale producers
- Enables up to 90% of water to be recovered and re-introduced to the ethanol process

www.russellfinex.com

Russell Finex Ltd. UK
Tel: +44 (0) 20 8818 2000
e-mail: sales@russellfinex.com

Russell Finex N.V. Belgium
Tel:+32 (0) 15 27 59 19
e-mail: info@russellfinex.be

Russell Finex Inc. USA
Tel:+1 704 588 9808
e-mail: sales@russellfinexinc.com

When the stillage is processed, the resultant wet distillers grains can then be supplied in two different forms: Wet Distillers Grains plus Solubes (WDGS) and Dried Distillers Grains plus Solubes (DDGS). These are good protein and energy sources being largely used in livestock rations, particularly for cattle.

It is imperative to achieve the right consistency in the animal feed in order for it to be transported and sold, and to avoid storage problems. In addition, the water that is extracted from the stillage needs to be clean enough for re-use in the formation of mash.

The Liquid Solid Separator™ continuously separates the water and mash and produces cleaner water (less than 5% solid content). The machine is also flexible enough to get the 60% water content in the WDGS just right. The water that has been extracted can then be re-introduced into the mixer to help form the mash.

One company that used the Liquid Solid Separator™ for this purpose achieved throughputs of 60 US gallons per minute. They not only were able to convert the by-products into animal feed, but also recovered about 90% of their water, which was mostly re-introduced into their ethanol production processes.

For over 75 years, Russell Finex have manufactured and supplied innovative filters, sieves and separators to improve product quality, enhance productivity, safeguard worker health, and ensure liquids and powders are contamination-free. Throughout the world, Russell Finex serve a variety of industries with applications including food, pharmaceuticals, chemicals, adhesives, plastisols, paint, coatings, metal powders and ceramics.

For more information, contact your local sales office

RUSSELL
www.russellfinex.com

Russell Finex Ltd. UK
Tel: +44 (0) 20 8818 2000
e-mail: sales@russellfinex.com

Russell Finex N.V. Belgium
Tel:+32 (0) 15 27 59 19
e-mail: info@russellfinex.be

Russell Finex Inc. USA
Tel:+1 704 588 9808
e-mail: sales@russellfinexinc.com