Ceramic Membranes
in Starch Syrup Industry

BACKGROUND

Starch syrup is a kind of sugar syrup which is mainly produced from agricultural products such as corn, wheat, rice, potatoes or cassava (the most important one is corn starch), by technology of hydrolysis and transformation of biotechnology.

In modern industry, enzymatic process is widely used to produce starch syrup such as glucose/fructose/maltose syrup, etc. All these processes mainly include: making starch slurry, liquefaction(saccharification), clarification/filtration, decolorization, ion exchange, concentration, among which, clarification/filtration of liquefaction/saccharification liquor is one of the key steps, and the filtration effect directly affects the post-refining cost and product quality.

TRADITIONAL FILTRATION FOR SACCHARIFICATION LIQUOR CLARIFICATION

The liquefaction/saccharification liquor contains a certain amount of impurities such as proteinaceous matter, fat, unhydrolyzed starch, polysaccharides, enzyme fragments and other impurities, which increase the color of the liquefaction/saccharification liquor and the subsequent refining difficulty, degrade the product quality, and must be removed. Traditional filtration technology for liquefaction/saccharification liquor mainly includes Filter Press Filtration, RVDF (Rotary–Drum Vacuum Filter), with perlite/diatomaceous earth in it. For these filtering techniques, the filter residue containing filter aid or activated carbon can't be further exploited such as animal feed, and only can be discarded as solid waste which is not environmentally friendly. At the same time, frequent replacement of filter aids increases production costs.

NEW FILTRATION TECHNOLOGY WITH CERAMIC MEMBRANE

In a very short duration, cross flow membrane filtration has become a mainstream process unit operation in the Starch & Sweetener industry. The process eliminates use of diatomaceous earth (kieselgur) in rotary vacuum filters, while at the same time producing a superior quality product. Ceramic membrane by its versatility and unique separation techniques have gained wide acceptance. Membrane filtration find its niche either by itself or in combination with other more established technologies.

TFT has developed a starch hydrolysate clarification ceramic membrane which has superior performance in starch hydrolysate filtration and purification with stable flux rate and high impurity removal rate.
CRM CERAMIC MEMBRANE ADVANTAGES

Compared with traditional filtration technology, ceramic membrane cross flow filtration has many advantages:

- A green technology without filter aids (perlite/diatomite)
- A reliable filtration for syrup clarification with less product loss
- Good quality of filtrate syrup with high light transmittance
- Decrease consumption of downstream active carbon
- Less contamination to Ion exchange resin and prolong the resin life
- Less waste disposal cost
- Less CPEX and OPEX
- Easy maintenance, Low labor cost
- Compact design with less footprint

LABORATORY TESTS AND ONSITE PILOT TESTS

In order to determine the flux, permeate quality and other operational parameters, TFT offers its customers laboratory tests and on-site tests. For this purpose, TFT has developed all kinds of small filtration units for meeting the demands of customers.

Nanjing Tangent Fluid Technology Co., Ltd. (TFT) is a producer for ceramic membranes, a solution provider of membrane filtration & separation technology in process industry. TFT has been producing and developing MF/UF tubular ceramic membranes, which have been widely applied for solid-liquid separation in food & beverage, petrol chemical, pharmaceutical and waste water treatment.

TFT membrane products and equipment have been exported to more than 40 countries such as America, Germany, Russia, Italy, etc.

TFT can act as an OEM manufacturer to design and customize MF/UF/NF/PV membrane filtration machines as per customer’s requirement. We can offer full range of membrane products and technical service for our clients and business partners.

TFT has a professional management and technical team with extensive membrane experience of 20 years and hundreds of references on membrane technology. Working closely with partners, we endeavor to offer you special and professional technical service and support, like evaluation, design, installation and commissioning. TFT team is willing to share and cooperate with you on efficient and integrated membrane technology for separation, purification, dehydration & concentration.

Come to be a partner of TFT, let’s share the benefit of membrane technology. You will find a solution in TFT.