



Welcome To Celanese Lanaken

General overview Acetate & Lanaken

Acetate products are made from cellulose – a renewable, sustainable resource sourced from managed forests.

- Environmentally responsible
- Compostable
- Breaks down into CO₂ and water



Acetate Flake

- Versatile, Eco-Friendly
- Used primarily for filter tow and Clarifoil® solvent cast film
- Used for BlueRidge® Cellulosic Pellets, a sustainable, compostable alternative to plastic; used to replace a range of conventional single-use plastics (both transparent and opaque) in difficult to recycle consumer applications

Acetate Tow

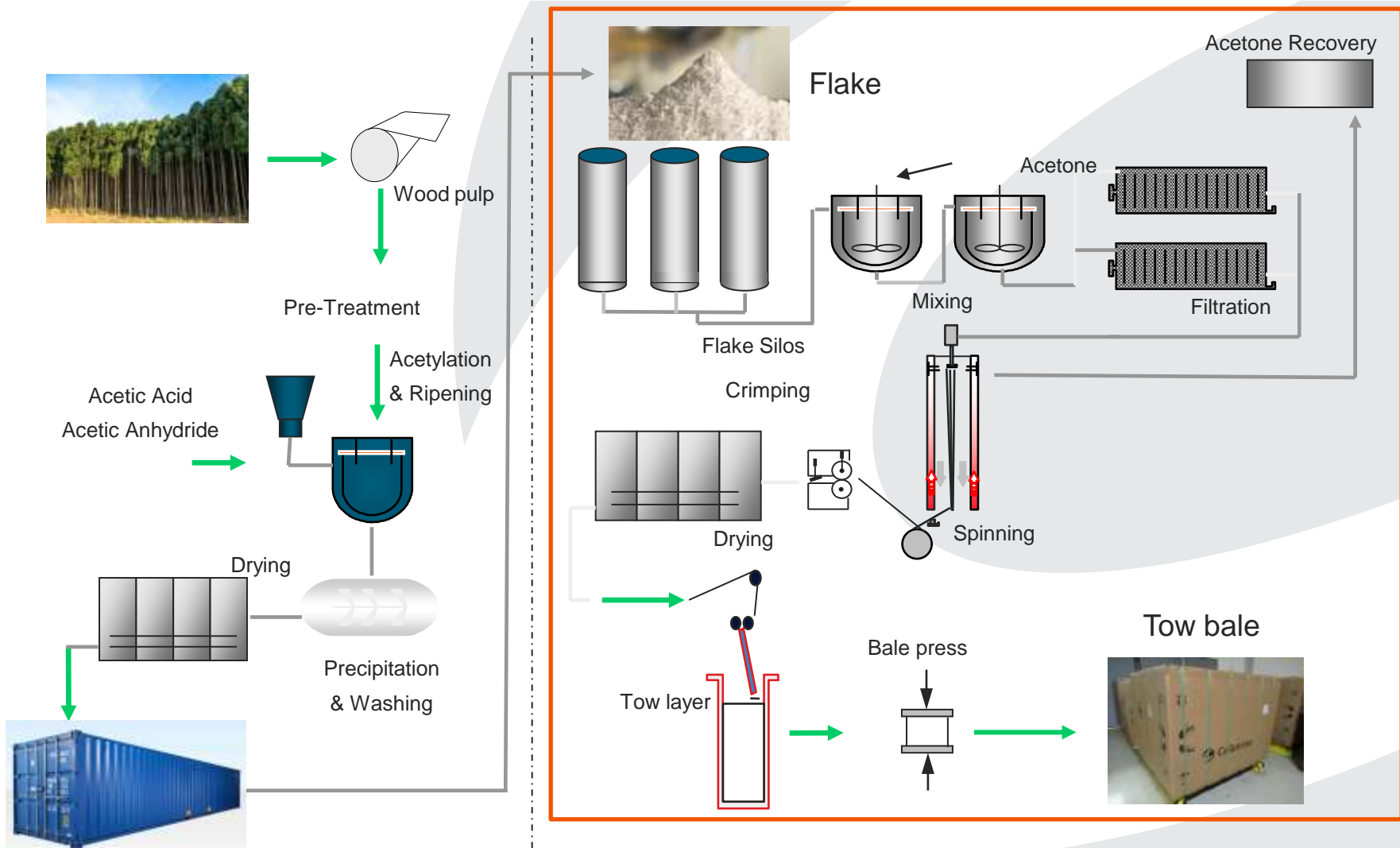
- Clean, soft, odorless and tasteless
- Environmentally friendly
- Natural product derived from purified wood pulp

- Celanese brings more than **70 years of experience** to acetate tow production.
- Cellulose acetate tow is made from **acetate flake** and is clean, soft, odorless and tasteless.
- Derived from highly purified **wood pulp** from re-forested trees, it is a natural and environmentally friendly product.
- Throughout the years we have set the **highest standards of quality**, so our customers get the most uniform cellulose acetate tow available.
- Our extensive product line of Celanese acetate tow has been engineered to run on the most demanding **high-speed production equipment** in use today for processing crimped tow.
- Our technical staff understands **customer requirements** and can select or design the exact combination of denier per filament (dpf), total denier, and other physical properties that are required for excellent performance.

Acetate Tow Global Supply Chain



Production process





Energy

Electric power

- ▶ Self consumption varies from 2,6 Mwh -> 3,2 Mwh
- ▶ 3 windmills connected to our site (used to be 4)
 - Max capacity 6 Mwh
- ▶ Own CHP on site
 - Gas fueled engine with 3,6 Mwh generator
 - Manual daily evaluation if CHP runs, depending on pricing
 - Automatic power control depending on injection prices
 - Steamgenerator produces 1,5 tons superheated steam

Steam / Heat energy

- ▶ 3 natural gas boilers (Total of 70 Mwh installed → average use 30 – 35 Mwh)
 - Superheated steam 200 PSI (12,5 bar – 320C°) -> Turbines
 - Saturated steam 50 and 25 PSI -> Heating dryers/metiers and Solvent Recovery

With heating comes cooling

Water / cooling energy

- ▶ Main source is Channel water
 - Limit of +/-56000 m³ per day
 - Used for cooling stream on heat exchanger, condensers and chillers

Filtration

- ▶ 2 filters are installed on inlet
 - “Brush” Filter
 - Air bubbles to push leaves and litter away
 - Grate blocks leaves and litter – brushes collect

 - “Rotation” Filter
 - Rotating grid via water turbine
 - Bottom in water and picks up litter
 - On top litter is washed of in collector



Channel water - Setup



Pumphouse

- ▶ 5 cooling water pumps
 - 2 x 200 kW
 - 3 x 160 kW

- ▶ 2 Diesel engine powered pumps
 - Only for Fire fighting water

- ▶ Adding of shellfish killing product

- ▶ Yearly cleaning of installation with divers

Demands from Celanese

- ▶ Able to work with channel water and fluctuating temperatures
- ▶ Frequency driven
- ▶ High efficiency
- ▶ Low GWP refrigerant



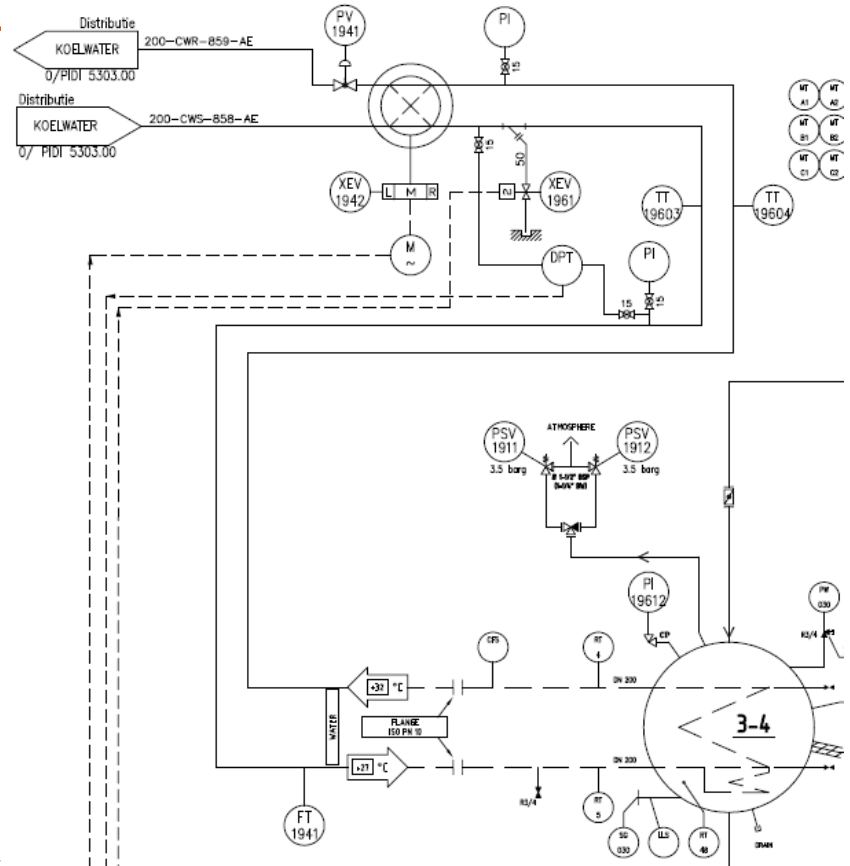
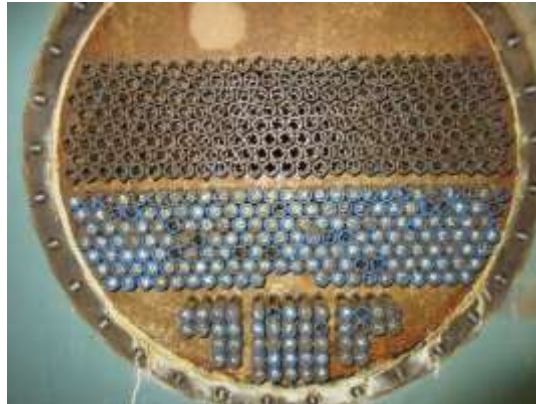
Setup / demands

- ▶ Marinebox on Condensor and Evaporator
 - Frequent opening for cleaning and inspection
 - Installation of brush system
 - Placement of sacrificial anodes
 - (Coating on marine boxes for corrosion protection)

Channel water - Chillers

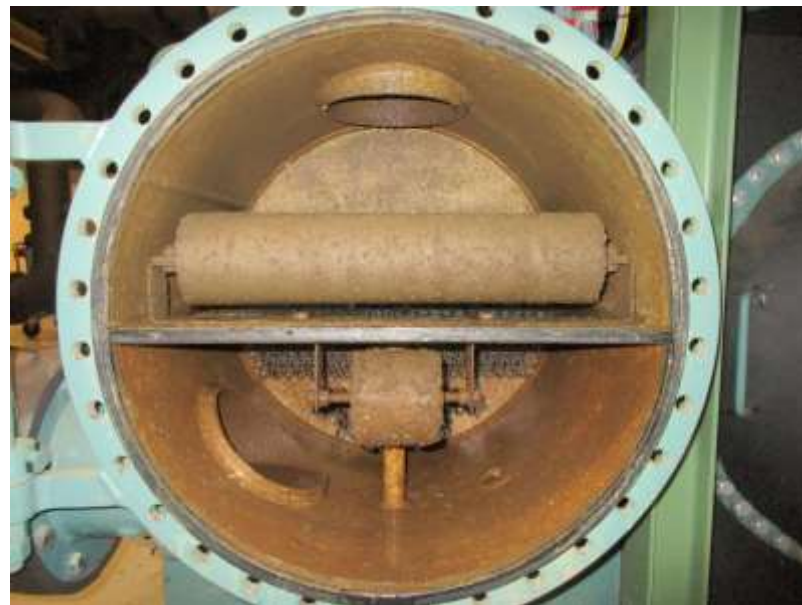
Brush system on Condensor

- ▶ Per tube 1 brush and 2 holders on each side
- ▶ Flow reversing valve



Corrosion protection

- ▶ Coating of water in and outlets
- ▶ sacrificial anodes





Questions