Solid State Polymerization for PET

(SSP1 Line)

15,000 MTPY
Plant Overview

- Year Built: 1993
- Capacity: 15,000 metric tons/year
- Shut Down: 2009
- Raw Material: Amorphous PET Chips
- Produces: Bottle Grade PET Chips
- Technology: Bühler and Hoechst - with two separate crystallization process steps (Bühler) and reaction (Hoechst AG).
- Utilities: Nitrogen Process Gas, Cooling Water, Steam (21 bar), De-Ionized Water, Electricity
## Major Plant Equipment

- B805 – Amorphous chip Silo; 266 m³; 1.4571 SS
- B810 – Weigh tank; 2,400 mm x 5,100 mm; 16 m³; 1.4541 SS
- A812 – Bühler Crystallizer; Fluid Bed design; 5 m²; 1.4541 SS
- V814/815 – Nitrogen Fan; 132 KW motor; 36,120 m³/h; 1.4571 SS
- F813 – Cyclone separator (2,400 x 7,710); 1.4541 SS
- W816 – Bühler Nitrogen Heater; 38 m²
- C818 – KSK Plug Flow Reactor; 17.55 m³; 1.4541 S (Hoechst technology)
- F819 – Dust Filter; 75.5 m²; 5,600 Kg/hr; 0.9 bar @ 250°C
- W822 – Nitrogen heater; 100 kW; 1.4541 SS
- F863 & F864 – Mutschink spin dryer; Type R90/12; 3,000 Kg/Hr 1.4541 SS;
- B870 - Analytic silo; 48 m³; 1.4541
- B880 – PET silo; 355 m³; 1.4541
- Misc. plate and frame heat exchangers, centrifugal pumps, rotary valves filter, etc.
SSP1 Process Description

The Process is based on Bühler and Hoechst Technology, with two separate process steps. Preheating and crystallization of the amorphous chips runs in a Bühler OTW 500 and the final polymerization reaction in a reactor based on Hoechst AG technology. The nitrogen cycle of both steps is heated with steam / electricity.

*PET pellets are brought through their amorphous sticky stage with a 5 m² Bühler 1.4541 SS fluid bed crystallizer (OTW 500; rated 0.09 bar @ 200°C, with a 20 minute dwell time). The fluidized bed reactor type offers high mixing intensity with low mechanical degradation of the pellets. Foreign particles and fines are removed via the heated nitrogen gas flow in the crystallizer during fluidization.*

*The crystallized PET pellets are fed to a KSK 17.55 m³ moving bed reactor, 1.4542 SS (Hoechst technology, rated 0.9 bar @ 250°C). Dried and heated nitrogen process gas is supplied to the reactor in counter current flow. The design of the reactor insures the constant plug flow so residence time is constant through the reactor.*

*The chips are cooled with water and dried in two Mutschink spin dryers (3,000 Kg/h, 1.4541 SS), and then pneumatically conveyed to chip storage.*

Washing and oxygen reduction of the nitrogen cycle is realized by a glycol wash column and a solid catalyst reactor (one system for SSP 1 and 2).

Cooling of the washing glycol with cooling compressors (one system for SSP 1, 2 and 3A/B).
Contact IPP Today!

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