



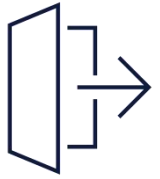
Thursday, July 18, 2024

— SOLIDIFICATION WITH STEEL BELT COOLING SYSTEM TECHNOLOGY

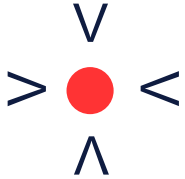
BY-BHAVIKSINH MAHIDA

IPCO PROCESS & BELT TECHNOLOGY INDIA PVT. LTD.

Safety first



Emergency exit



Assembly point



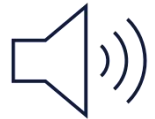
Protective Equipment



Emergency number



First aid kit



In case of emergency



Psychological safety



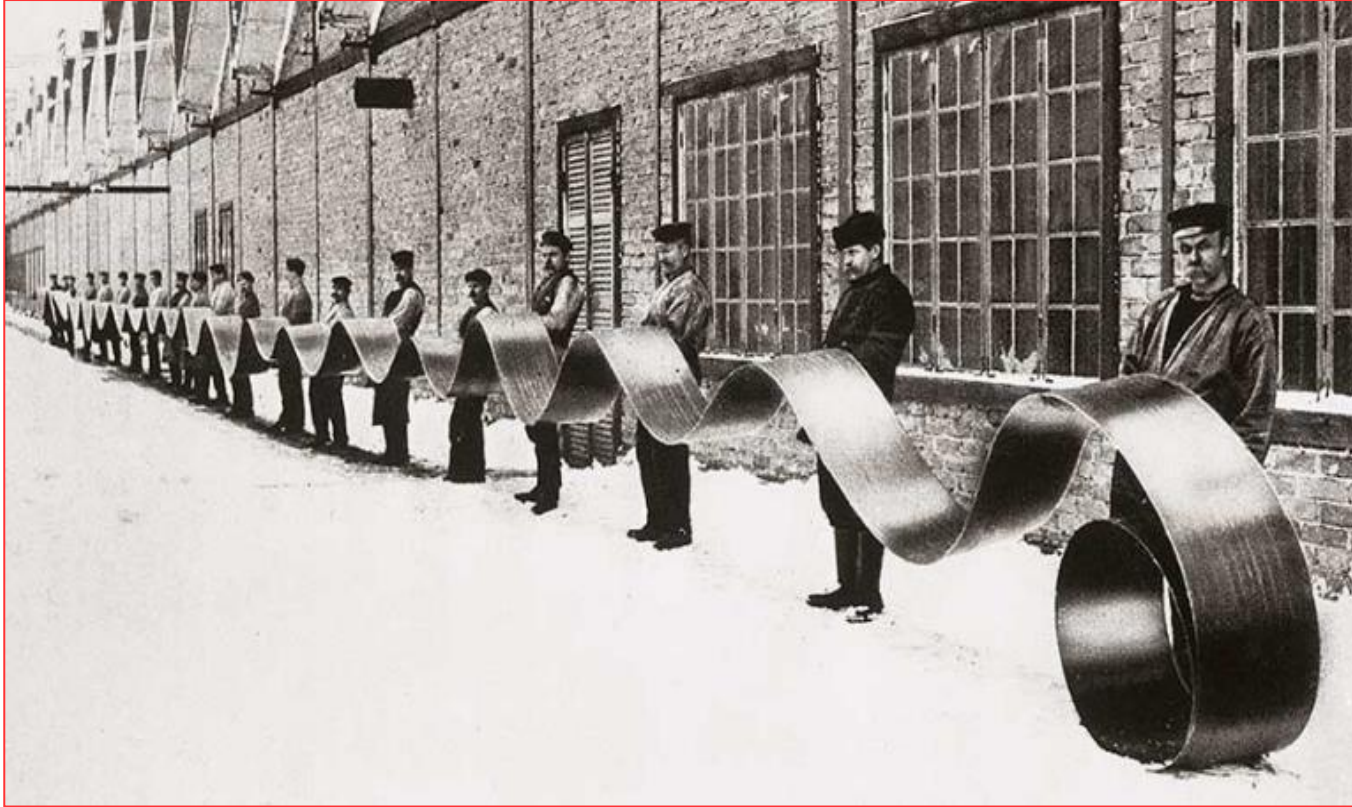
Health and wellbeing



Cyber security



The Glorious History of Steel belt Production



1901 World's first steel belt conveyor



Today World's best steel belt conveyor

Key segments

CHEMICALS

Bitumen
Fertilizer
Fine Chemicals
Hot Melts
Resin Granulation
Subcooling melts
Sulphur bentonite
Waxes and oleochemicals
Turnkey systems

SULPHUR

Sulphur processing & handling
Sulphur block pouring
Bulk material handling
Turnkey systems

FILM CASTING

Super mirror polished belts
Film casting solutions for filters
for pharmaceutical and food,
semiconductors, fuel cells,
solar cells, LCD top film,
Battery electrodes
Venturi Dryer

COMPOSITES

Double-Belt Press systems for
flooring solid surfaces, wall
claddings, advanced
composites applications such
as pre-pregs of fiberglass and
carbon fibers, non-wovens,
cross-ply, recycling and
composites with honeycomb
cores

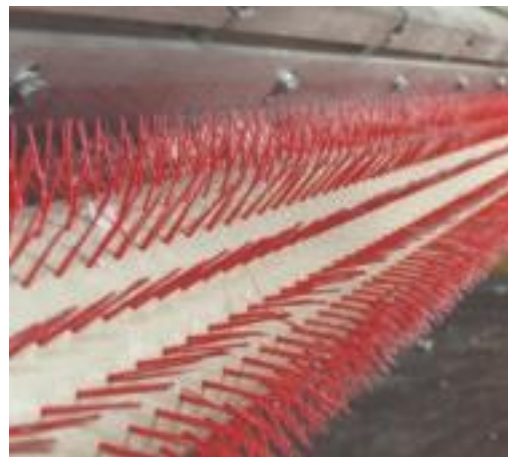
FOOD

Bake oven belts
Chocolate processing
Coffee freezing
Confectionary
Fruit & Vegetable drying
Tobacco processing
Tomato Processing

Key applications



Double belt pressing



Scattering



Pastillation



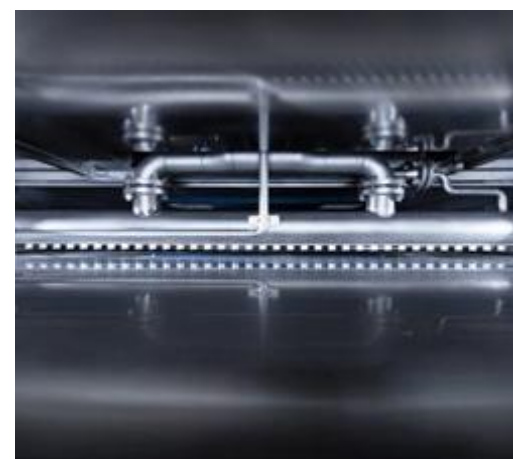
Film Casting and drying



Extrusion

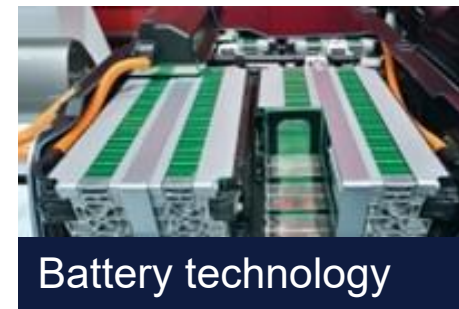


Drum granulation



Cooling

Industries and materials we work with | Examples

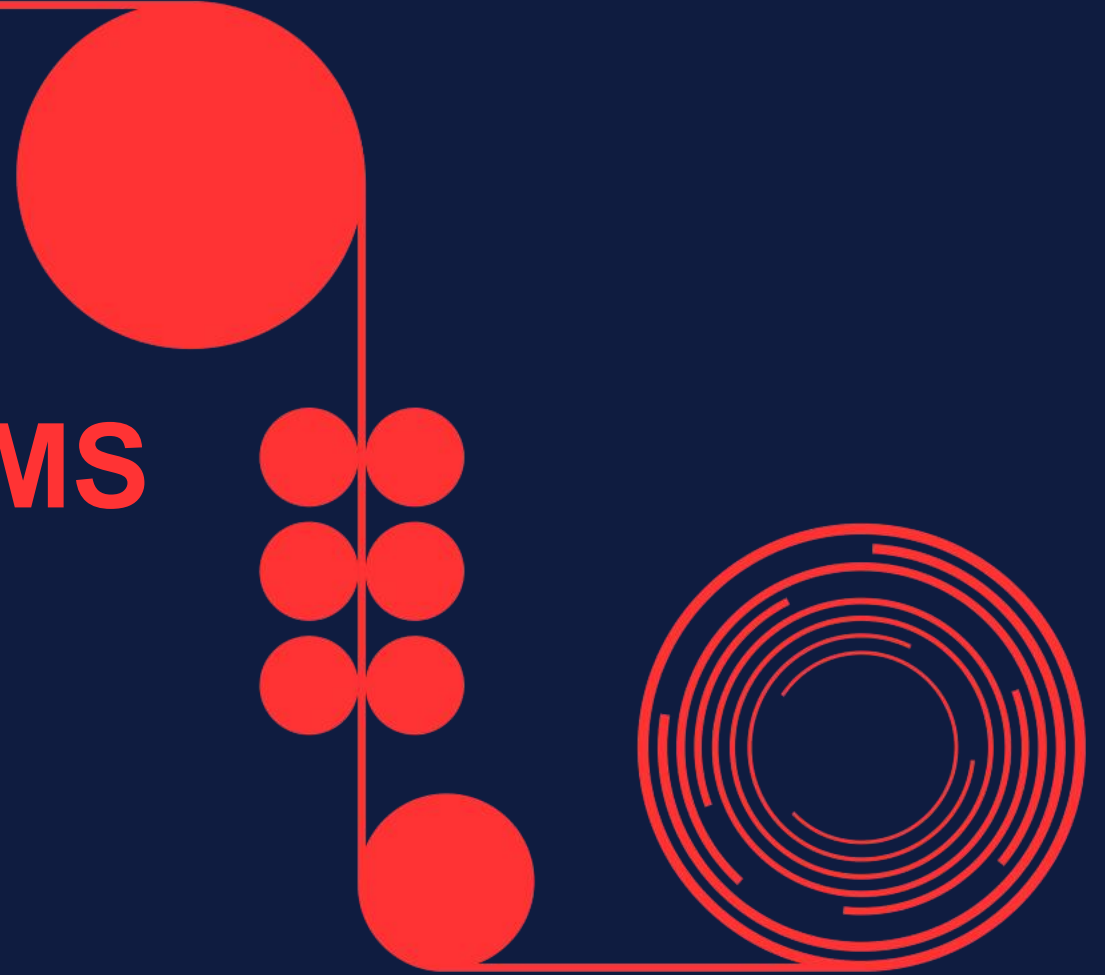




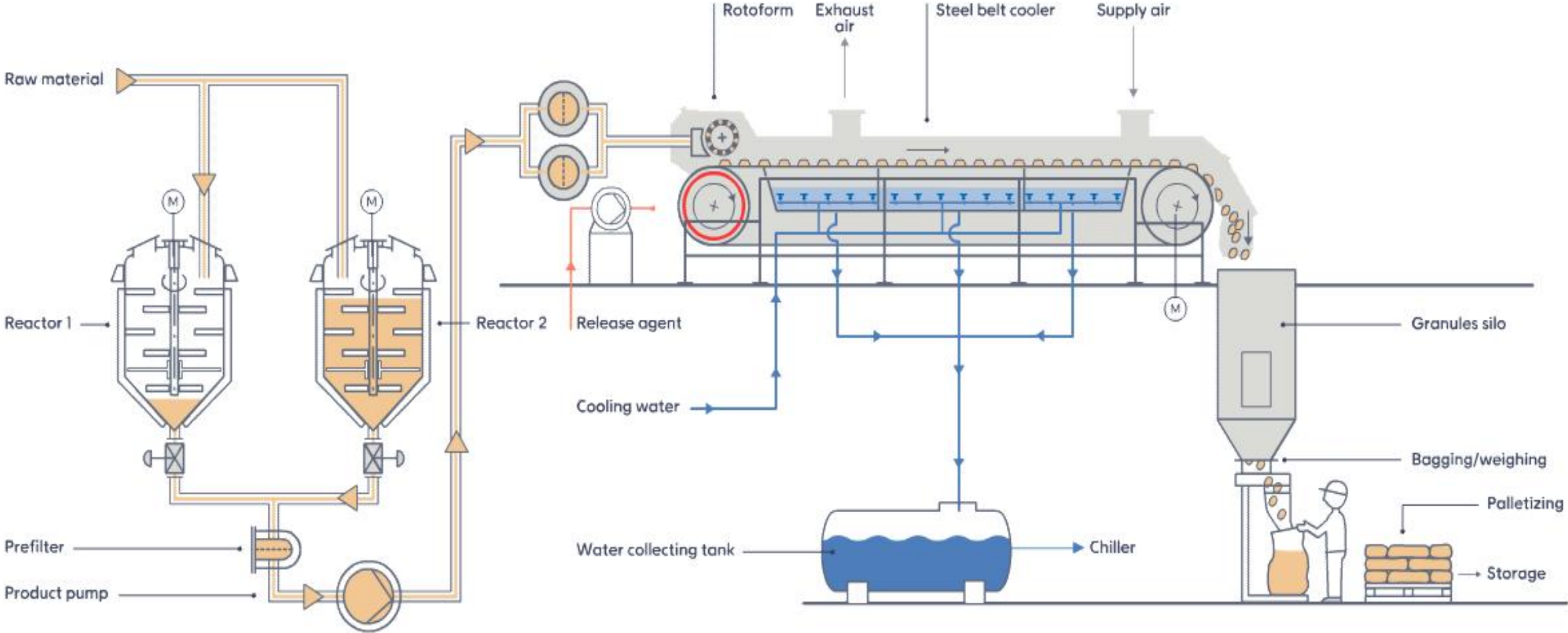
— SOLIDIFICATION OF CHEMICALS— PASTILLES AND FLAKES



PASTILLATION SYSTEMS



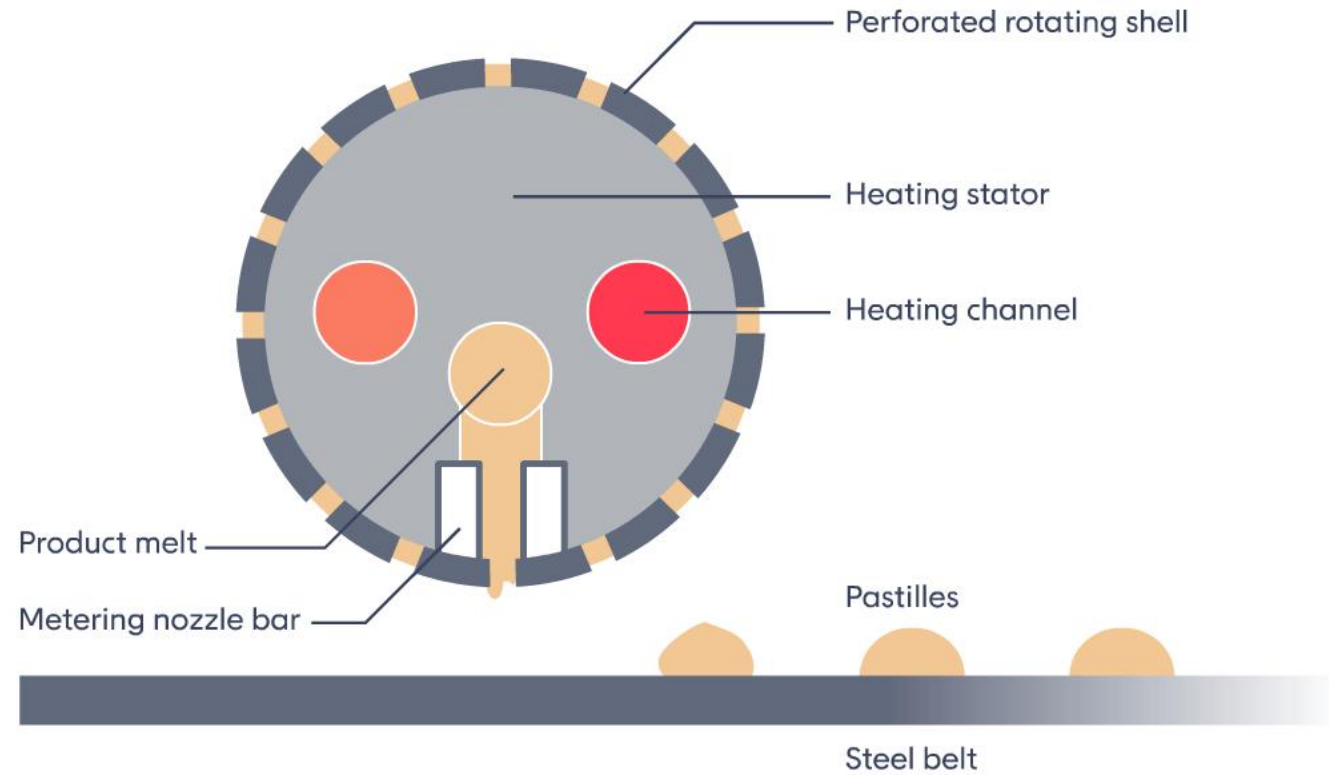
IPCO pastillation technology - typical turnkey plant



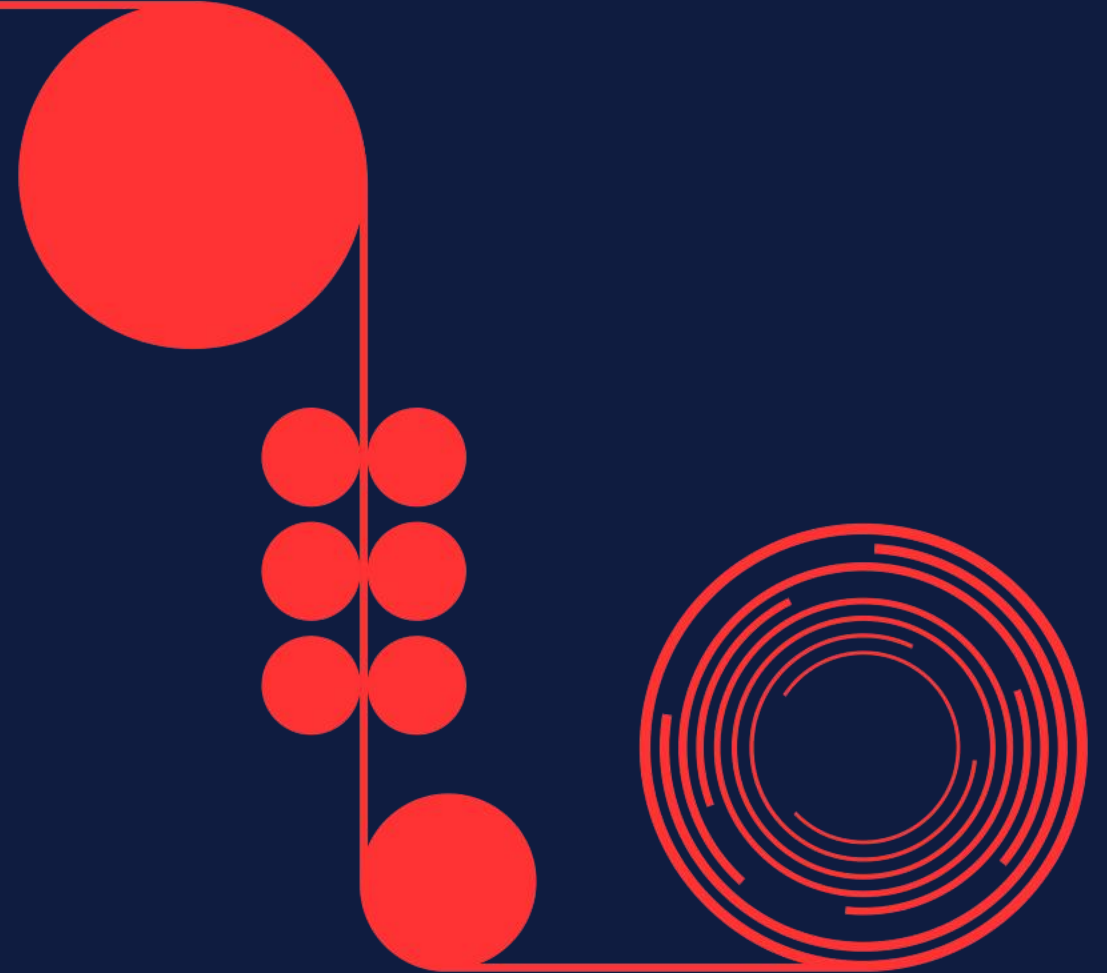
Principle of Rotoform pastillation

Rotoform Key Process Parameters

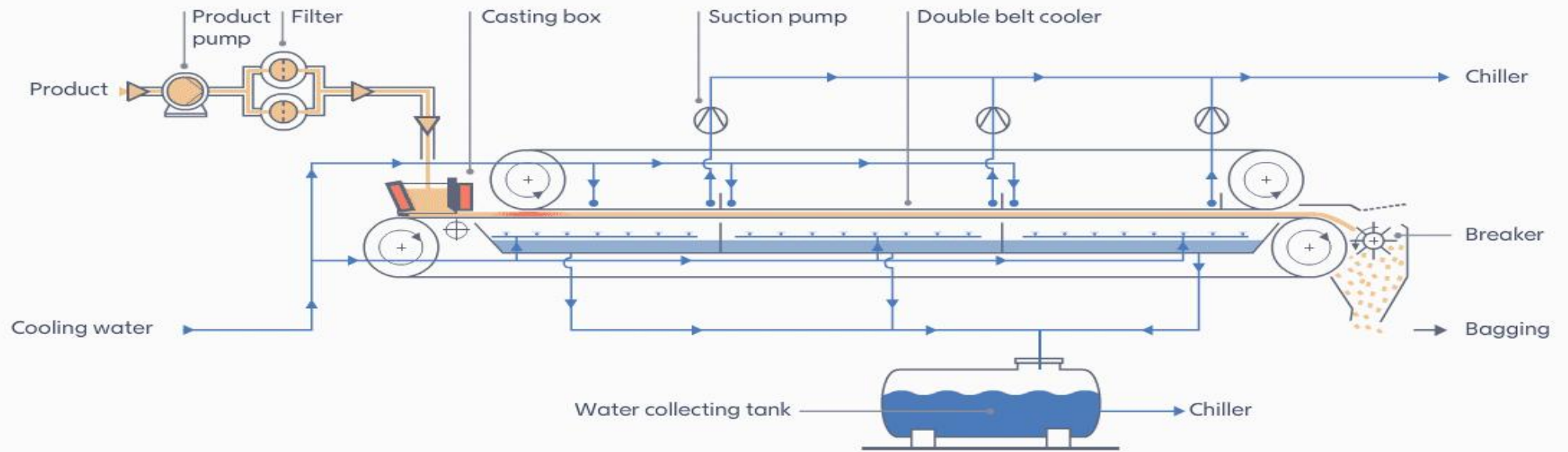
- Product Pump Discharge Pressure
- Rotoform Speed
- Steel Belt Cooler Speed
- Product Feed Temperature / Viscosity
- Cooling Water Temperature



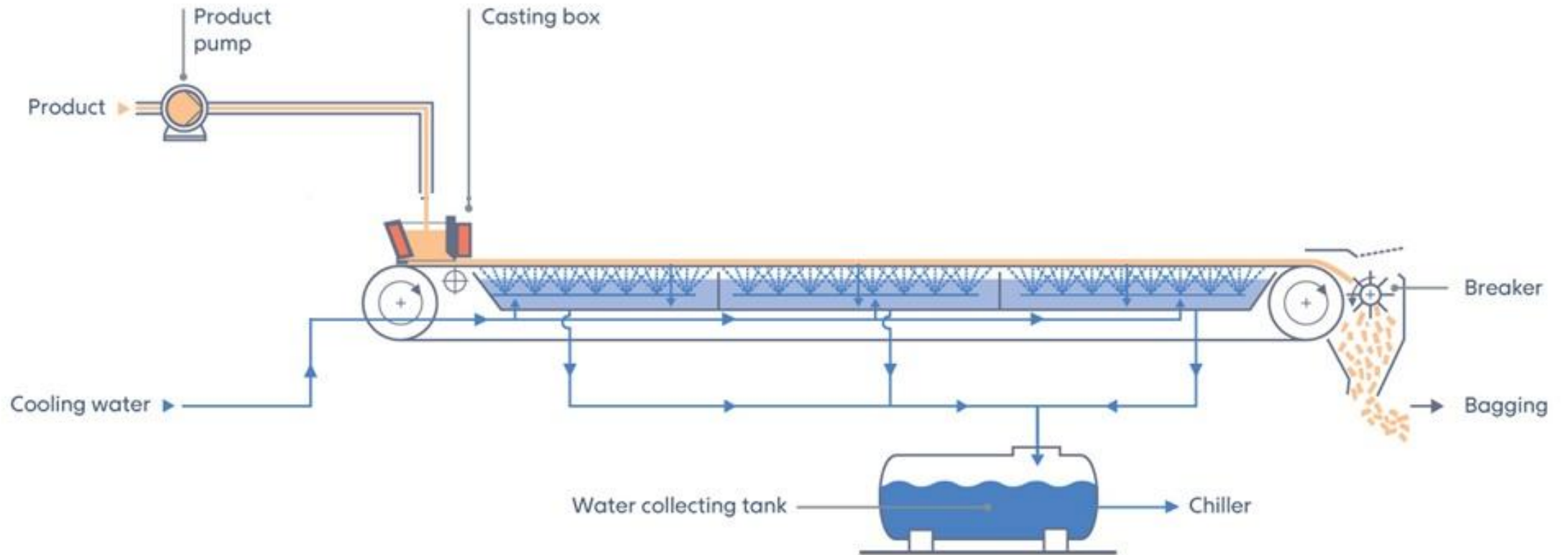
– CHEMICAL FLAKING SYSTEM



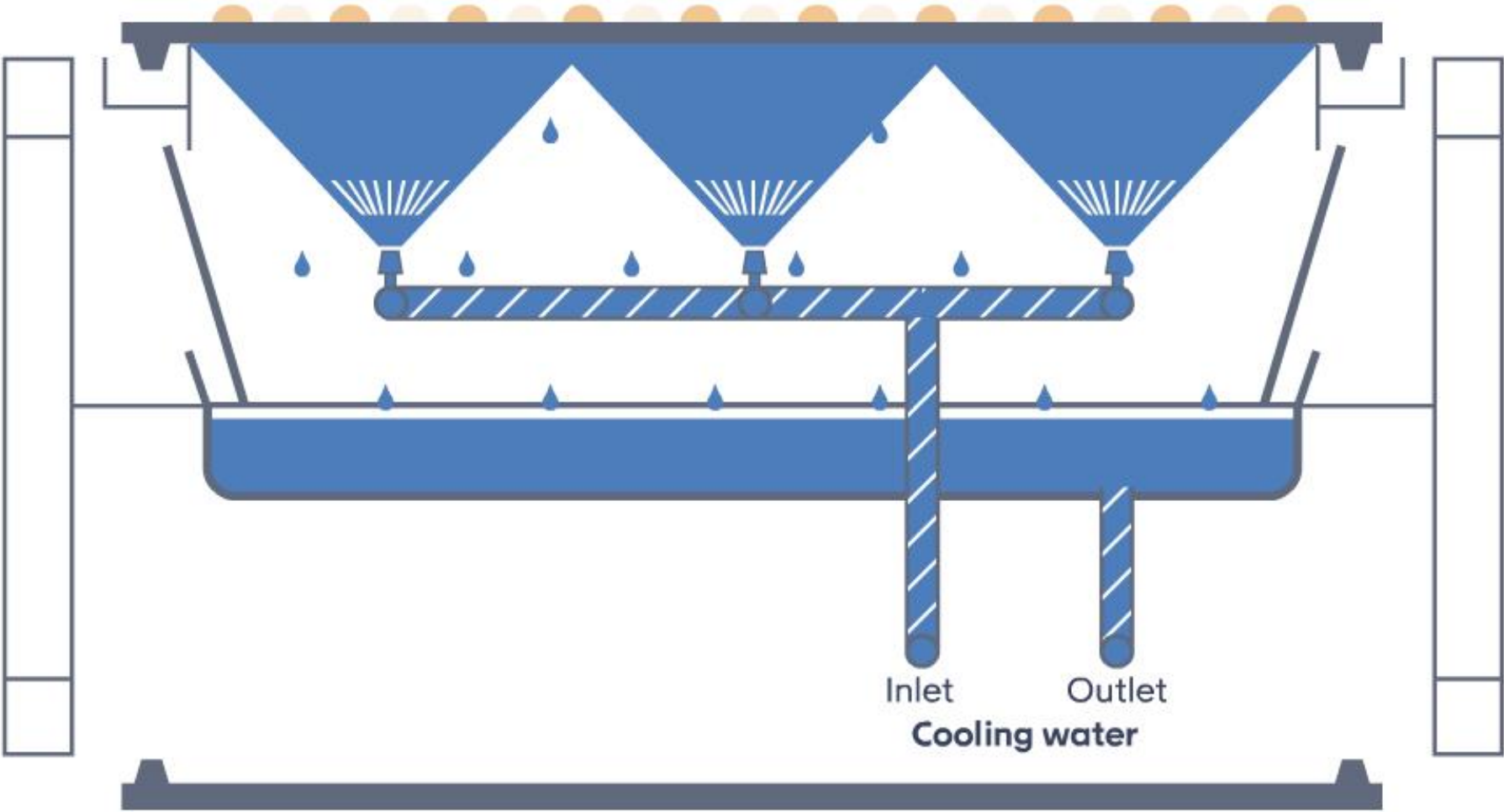
Double belt cooling technology



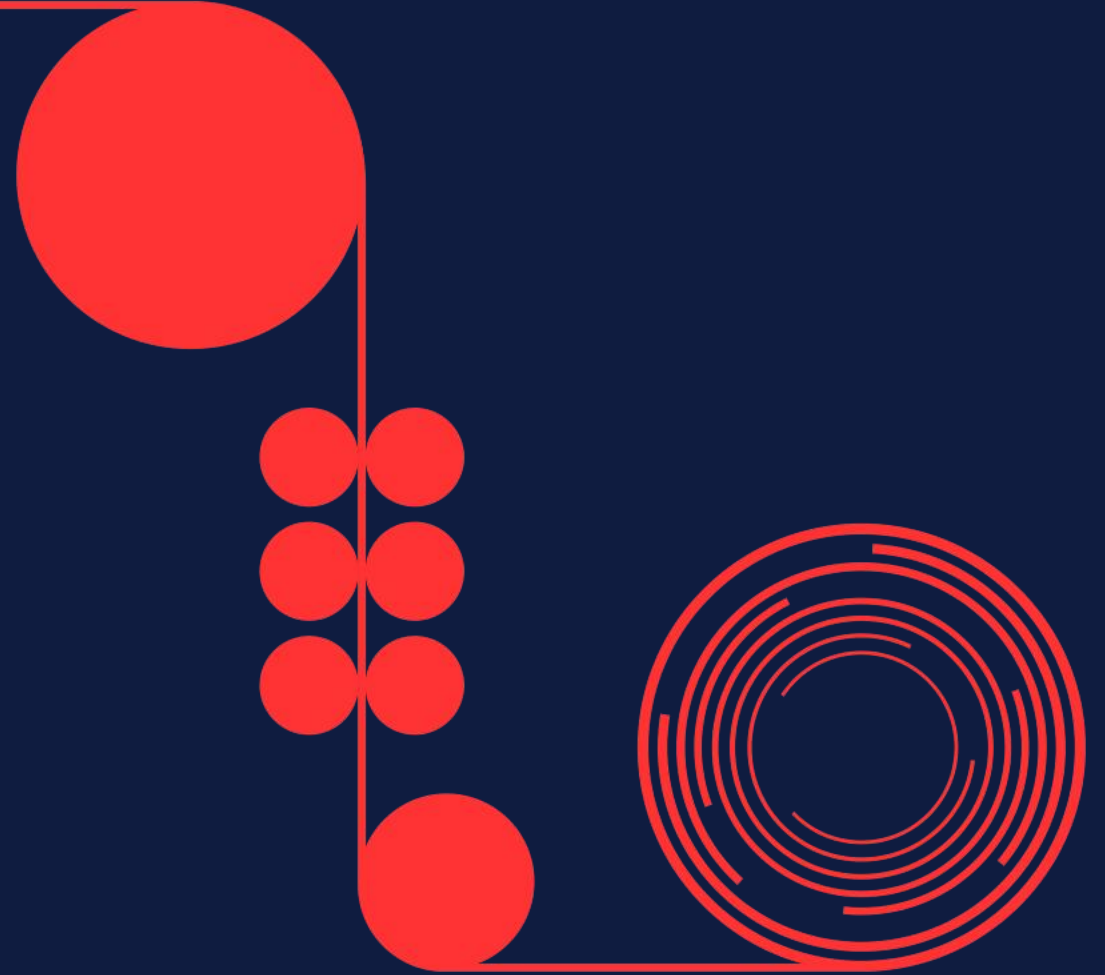
Single belt cooling technology

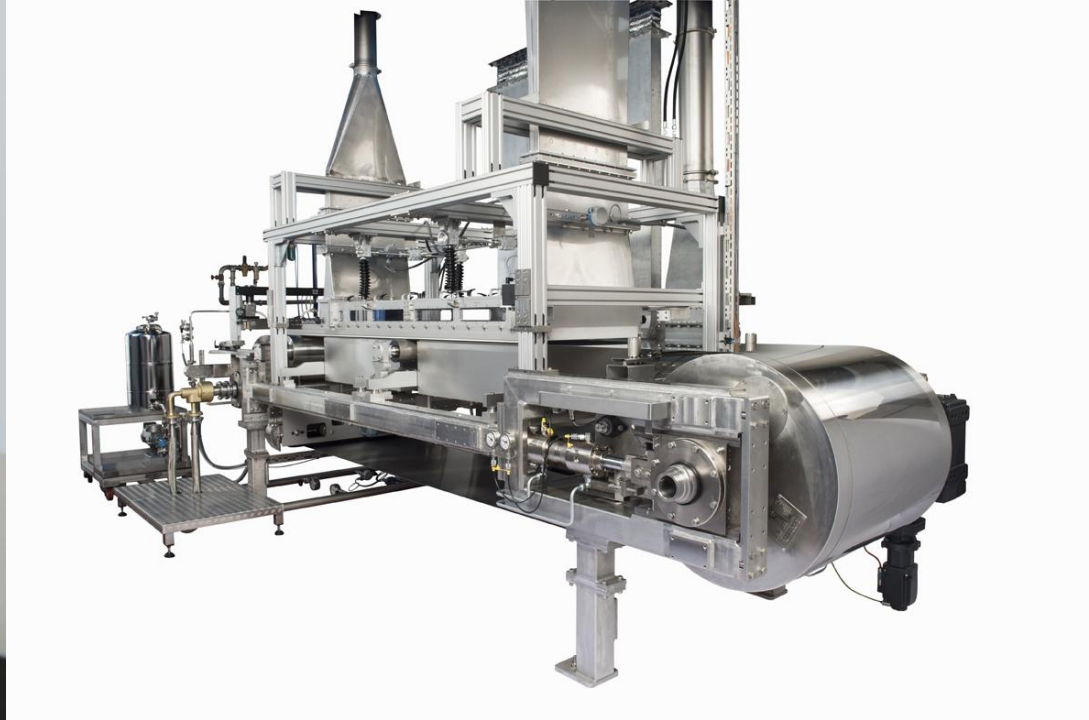
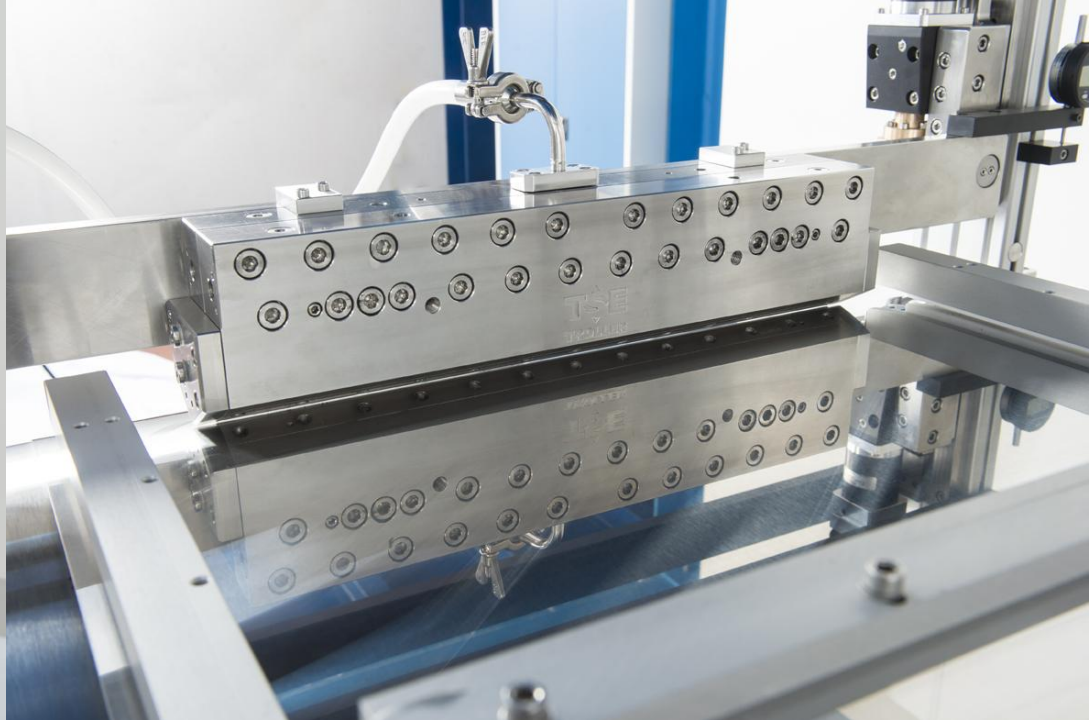


Indirect water cooling



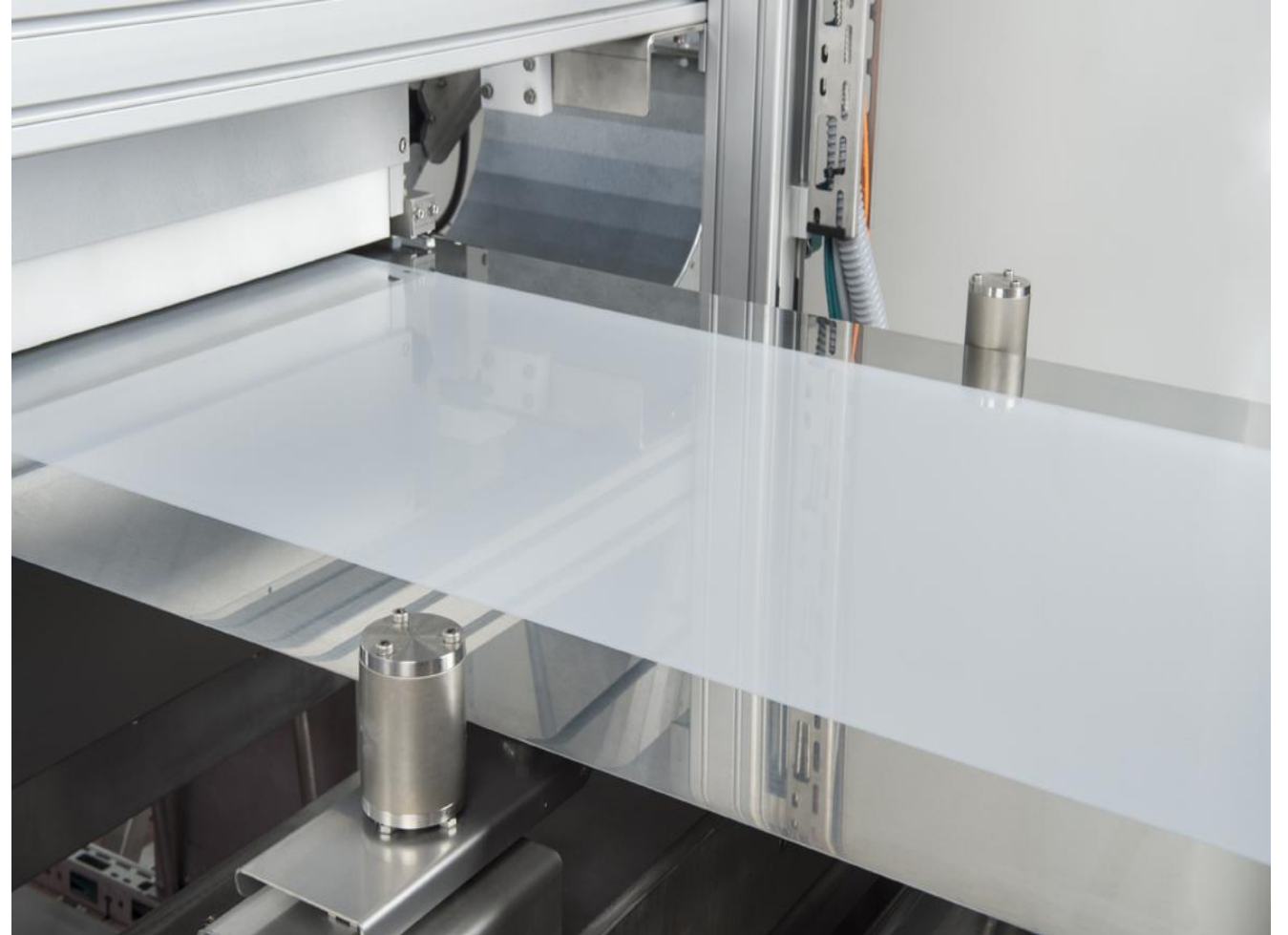
FILM CASTING TECHNOLOGY





Applications

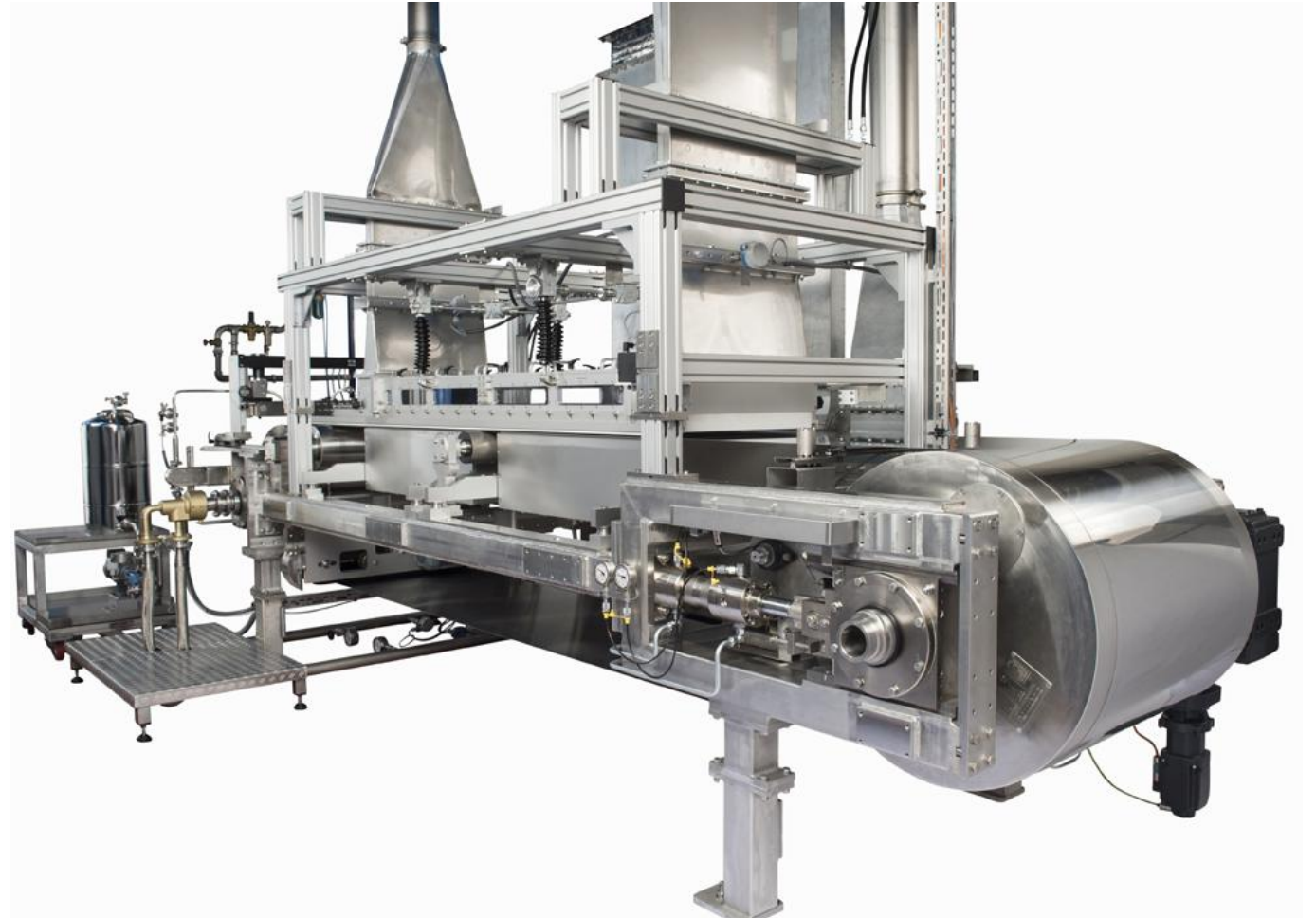
- Manufacture of thin high-precision films
- Ceramic tapes for the electronic industry
- Films for LCD / LED displays
- Organic LEDs (OLEDs)
- Separator membranes for fuel cells + batteries
- Filter membranes (medical)
- Pharmaceutical and medical films, drug patches
- Water soluble films for laundry packaging



Applications

Examples

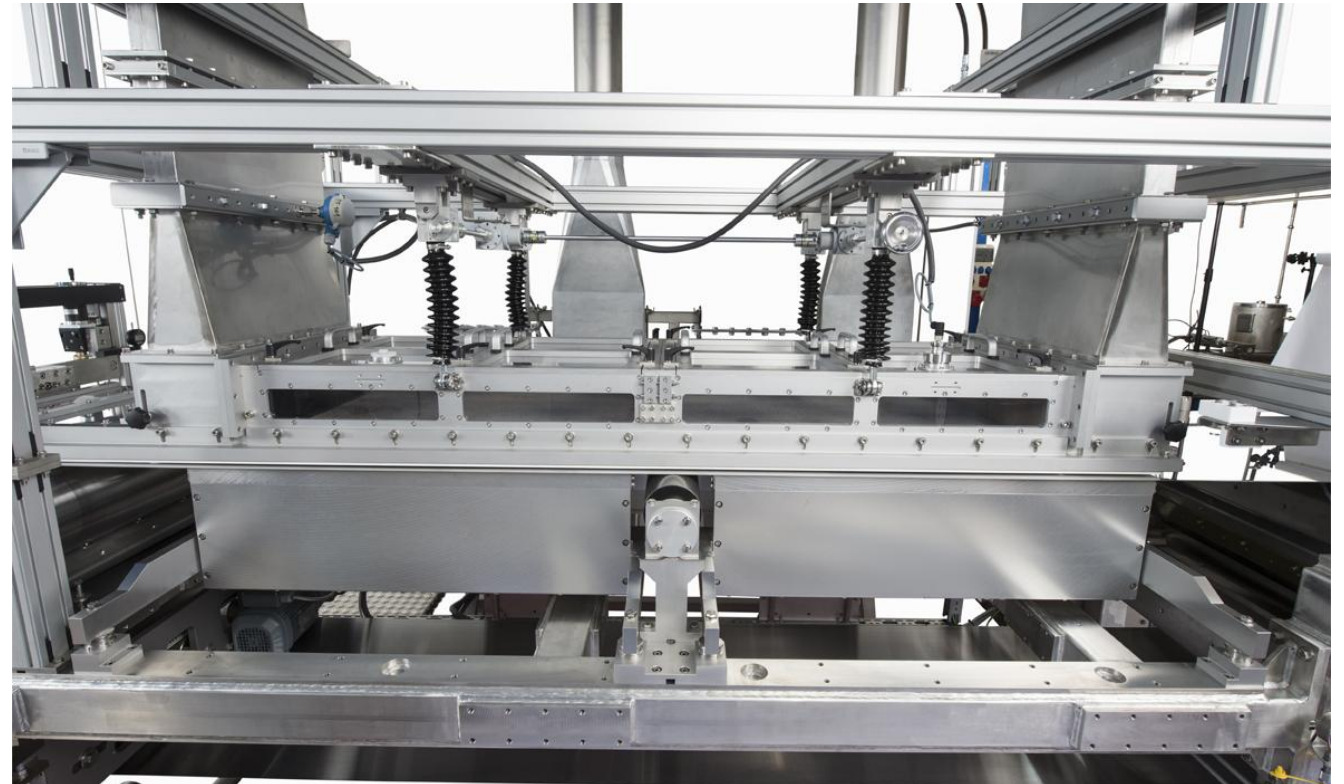
- **Polyimide (PI)**
Flexible printed circuit board, high temp insulation
Film thickness: 10 - 175 μm
- **Cellulose Triacetate (TAC)**
LCD display film, photo film,
Film thickness: 40 - 200 μm
- **Polyvinyl Alcohol (PVOH)**
LCD display film
Film thickness: 20 - 50 μm
- **Polycarbonate (PC)**
High-capacity magnetic data storage, CD, DVD,
LCD Substrates



Applications

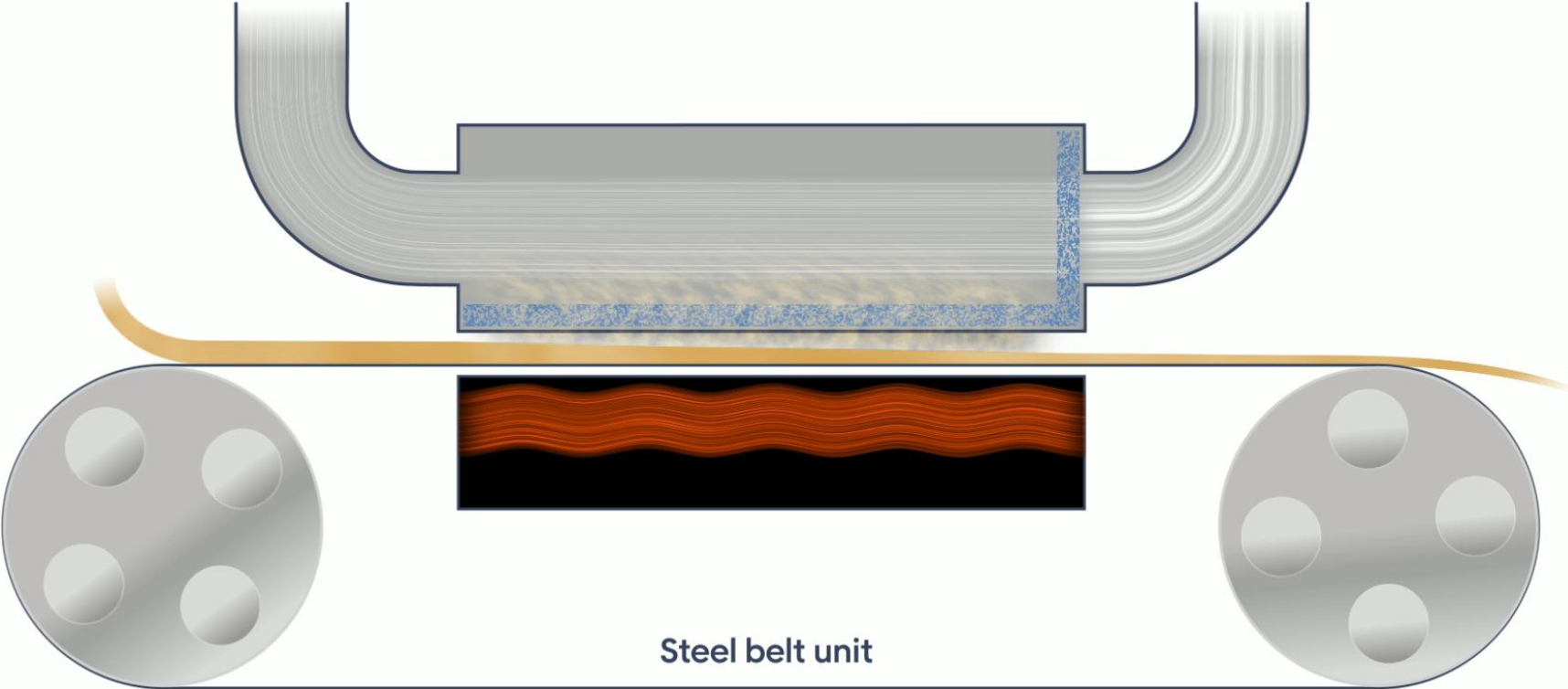
Examples

- **Filter membrane (cellulose nitrate/acetate)**
Filters for pharmaceutical and food applications
Film thickness: 40 - 100 μm
- **Ceramic tape (polymer resins)**
Semiconductors, fuel cells
Film thickness: 100 - 300 μm
- **Edible films (water soluble polymers)**
Pharmaceutical capsules, pills, laundry packaging
Film thickness: 20 - 50 μm



Principle of IPCO Venturi dryer

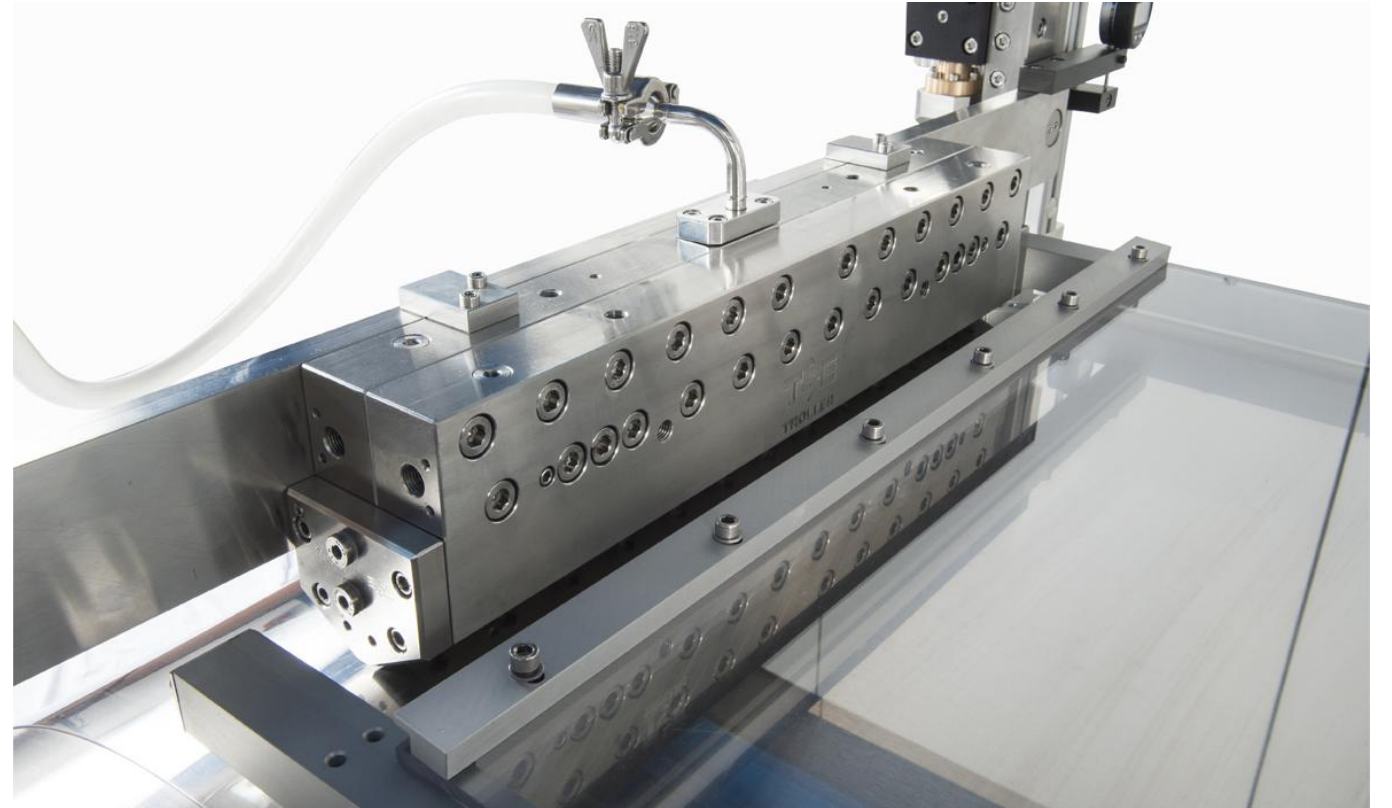
Venturi dryer



Steel belt unit

Product feeding

High precision slot die coater placed on a film casting unit





IPCO POWDER PAINT TECHNOLOGY

Powder Coating

Powder coating is a type of dry coating applied as a free flowing dry powder. It is a dry finishing process using finely grinded particles of pigment and resin which are electrostatically charged and sprayed onto the part to be coated. The charged particles adhere to the parts then the parts are baked in ovens until the powder melt and cure creating a tough and hard surface.

The main difference between a conventional liquid paint and a powder coating is that the powder coating does not require any solvent to keep the binder and filler parts in a liquid suspension form.

The powder may be a thermoplastic but usually is a thermoset polymer.



Types of thermosetting powder coatings

- Epoxy powders
- Polyester powder
- Epoxy Polyester hybrids powders
- Acrylic powders

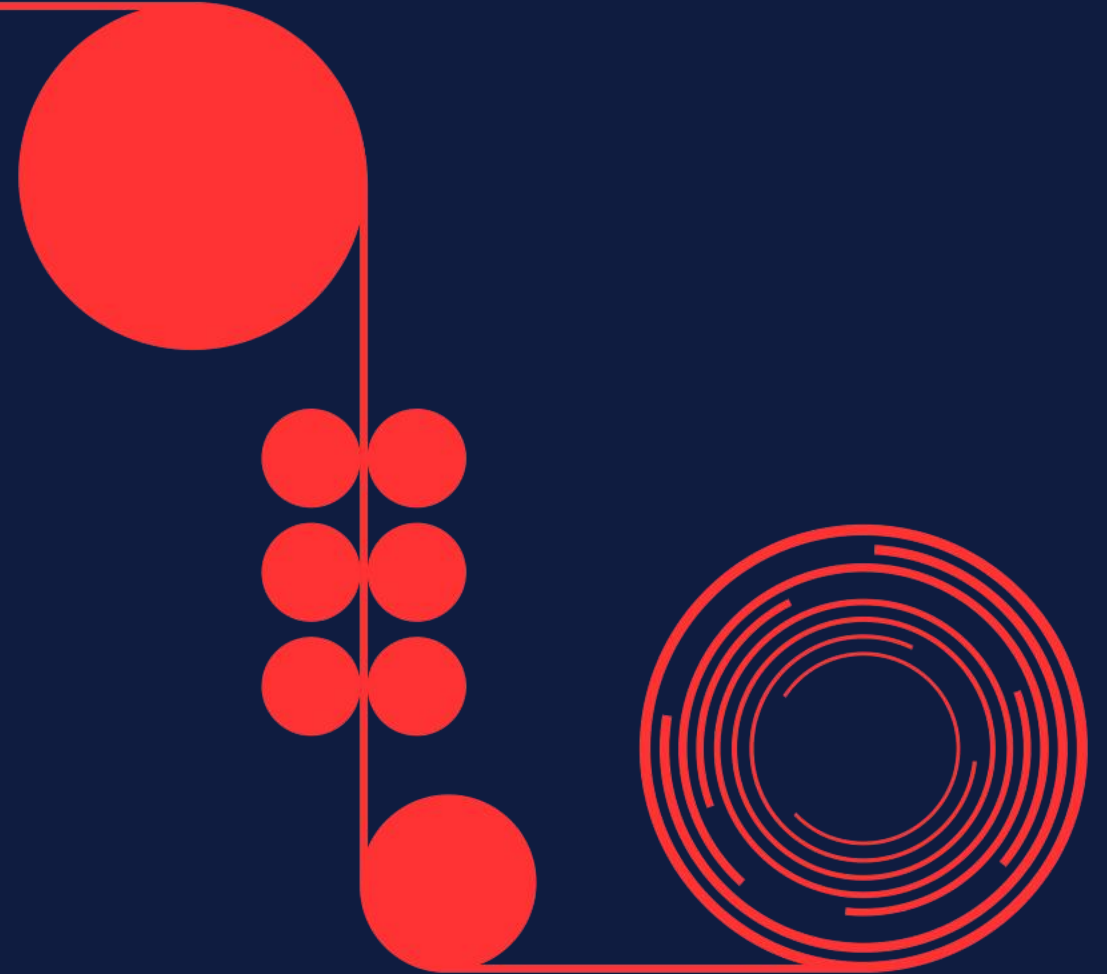


Advantages of powder coating

- 👤 👤 Powder coatings emit zero or near zero volatile organic compounds 👤 VOE 👤 👤
- 👤 👤 Powder coatings can produce much thicker coatings than conventional liquid coatings 👤
- 👤 👤 Powder coating overspray can be recycled and thus it is possible to achieve nearly 👤 👤 👤 👤 use of the coating 👤
- 👤 👤 Powder coating production lines produce less hazardous waste than conventional liquid coatings 👤 water pollution caused by paint residue 👤 👤
- 👤 👤 A wide range of specialty effects is easily accomplished 👤 which would be impossible to achieve with other coating processes 👤 wet paints 👤 👤



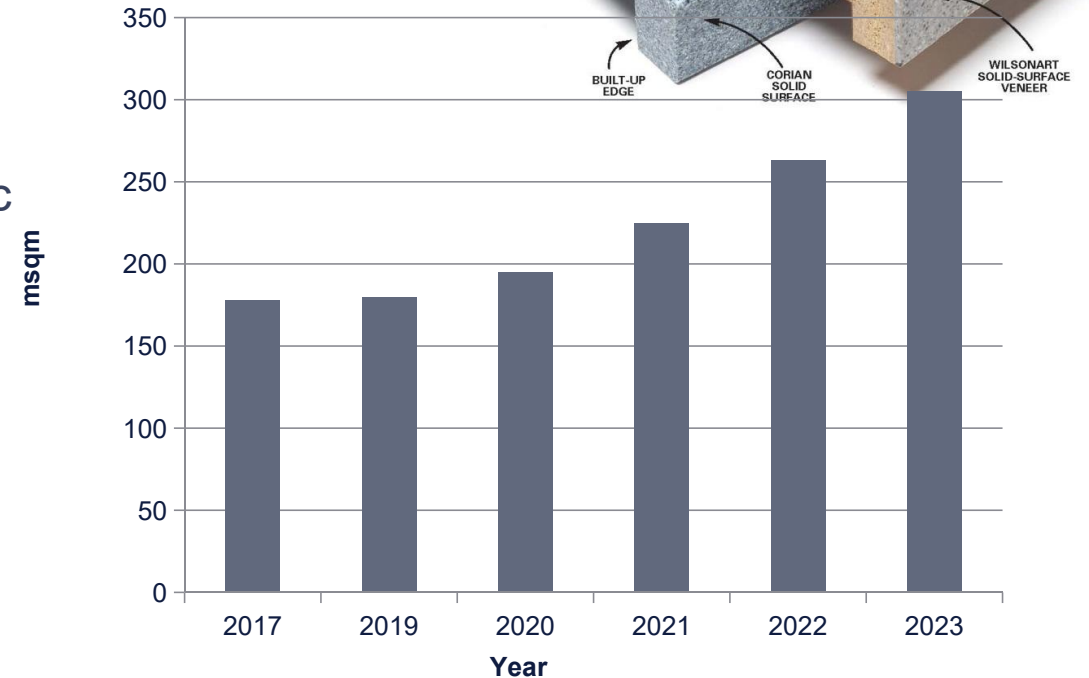
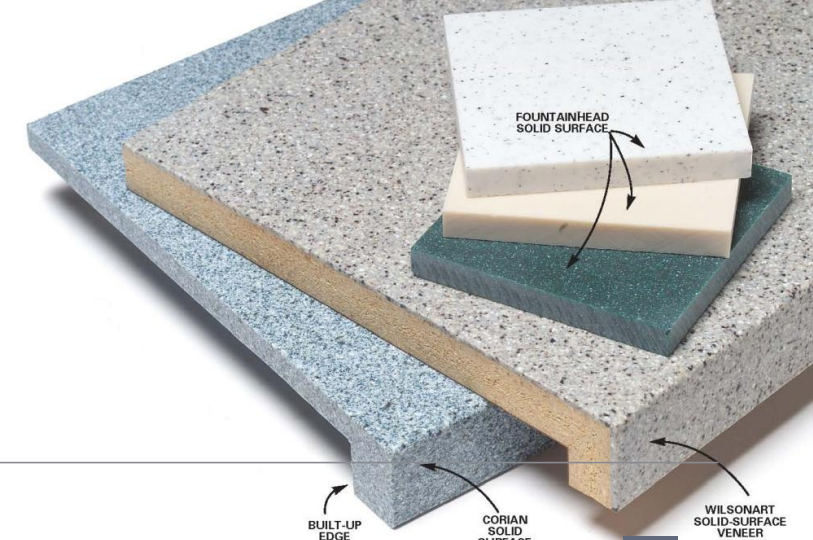
SOLID SURFACE DOUBLE BELT PRODUCTION LINE (DBCU)



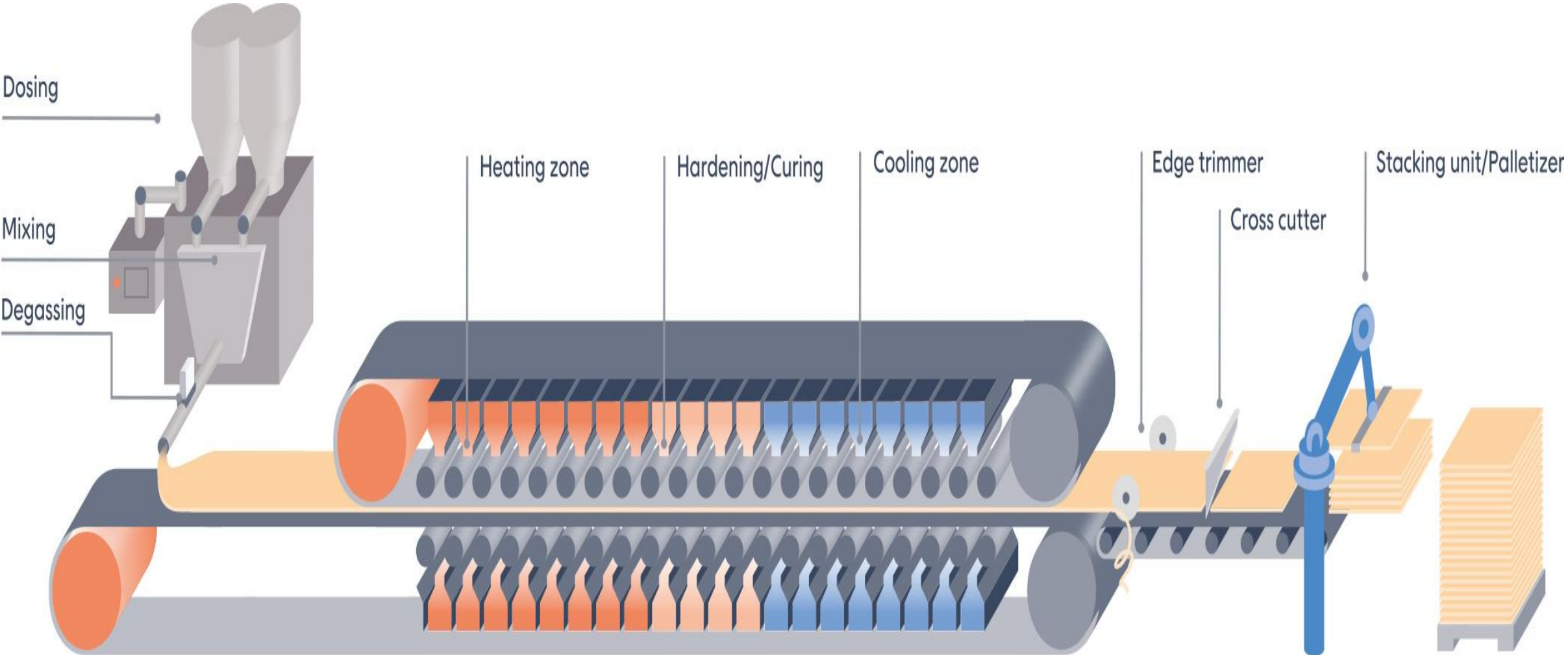
Solid Surfaces

Worldwide market for artificial stones

- Market growing by 8% /year until mid 2000's; there from over 50% in China
- In western world saturation for solid surfaces,
- Trend towards engineered stone >70% sold in Asia/Pacific
- 60% are solid surfaces
- Meanwhile again more attention towards solid surface
- Low cost competition for solid surface in China
- New trends and product developments for solid surfaces, driven by main players Du Pont and LG



Double-Belt Production Line



— **THANK YOU**