

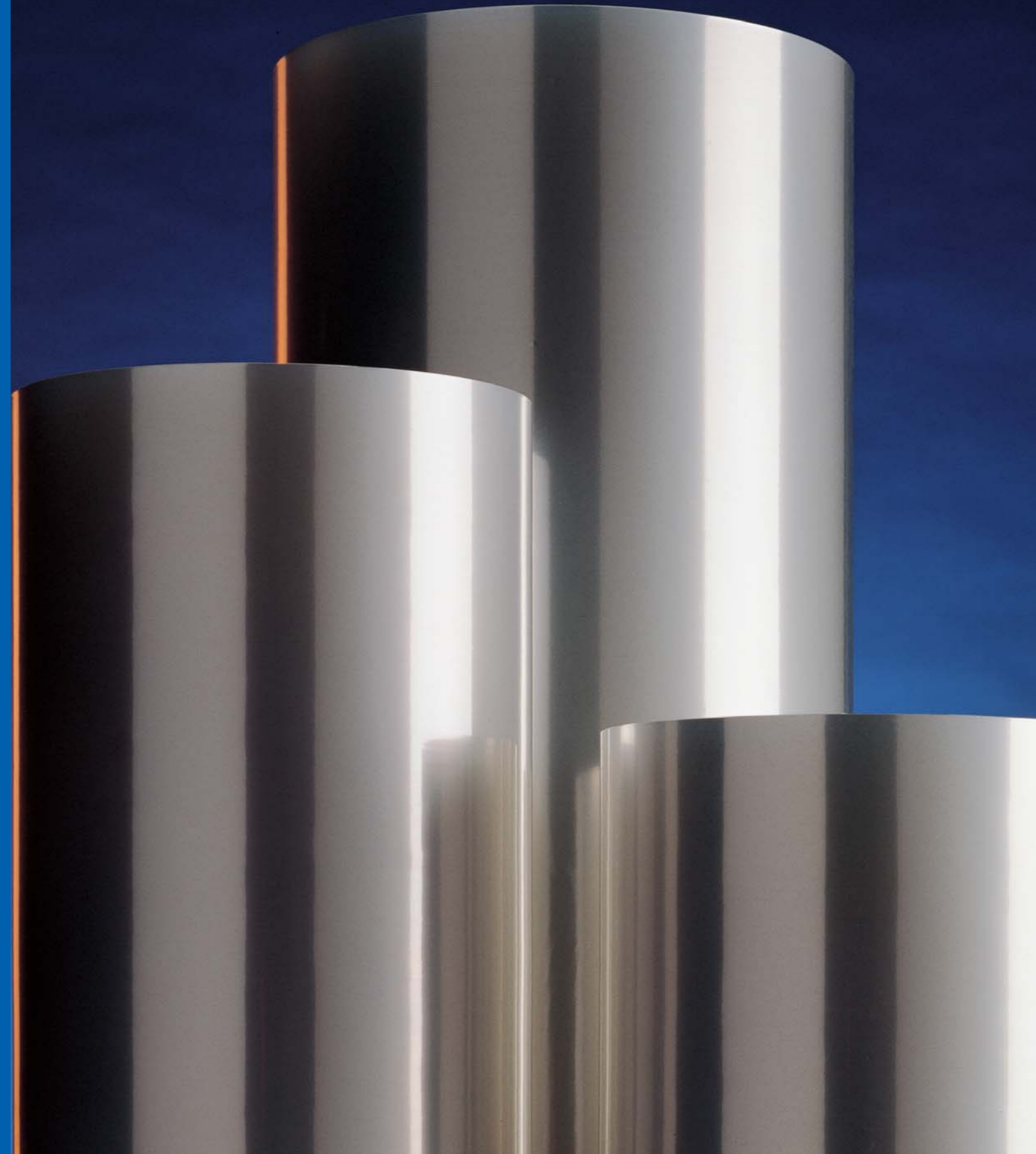


Biaxial orientation lines

for Shrinkable Packaging

■ **TCE production program includes:**

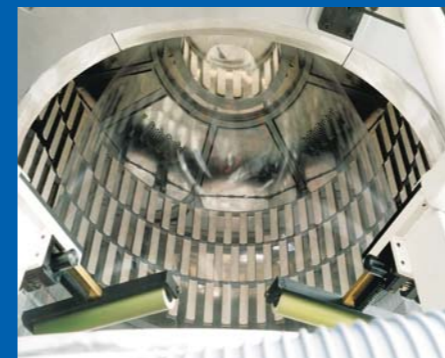
- CAST lines for stretch
- CAST lines for CPP film
- CAST Lines for Barrier film up to 7 layers
- BIAxIAL ORIENTATION lines (Double Bubble) for POF film
- BIAxIAL ORIENTATION lines for ARTIFICIAL CASING
- BLOWN FILM lines up to 7 layers
- EXTRUSION COATING & LAMINATING LINES
- WINDERS and UNWINDERS
- IMPREGNATION LINES FOR " MASKING TAPES " PAPER PRODUCTION
- HOT MELT ADHESIVE COATING



Double bubble lines

General overview

Biaxial orientation is the process of stretching a hot plastic film in two directions - machine and cross direction - under proper physical conditions. This process results in ordered molecular reorientation useful to enhance certain properties of the finished product. The Double Bubble process is based on circular die extrusion, calibration and cooling of a primary tube. Through heating and injection of pressurized air the primary tube inflates and consequently is subject to simultaneous orientation in both directions. The resulting bi-axially oriented film "bubble" can then be cut in two sheets and wound in the form of shrink film or annealed in- or off-line. Machines based on this technology for polyolefin shrink film (POF) were first marketed in the beginning of the 70ies by Prandi Officine Meccaniche Spa, under the name of Double Bubble lines. Tecno Coating Engineering continues this tradition providing their Customers with the widest range of solutions, from extrusion equipment to complete business models for Double Bubble applications validating its unquestionable leadership on the international markets.



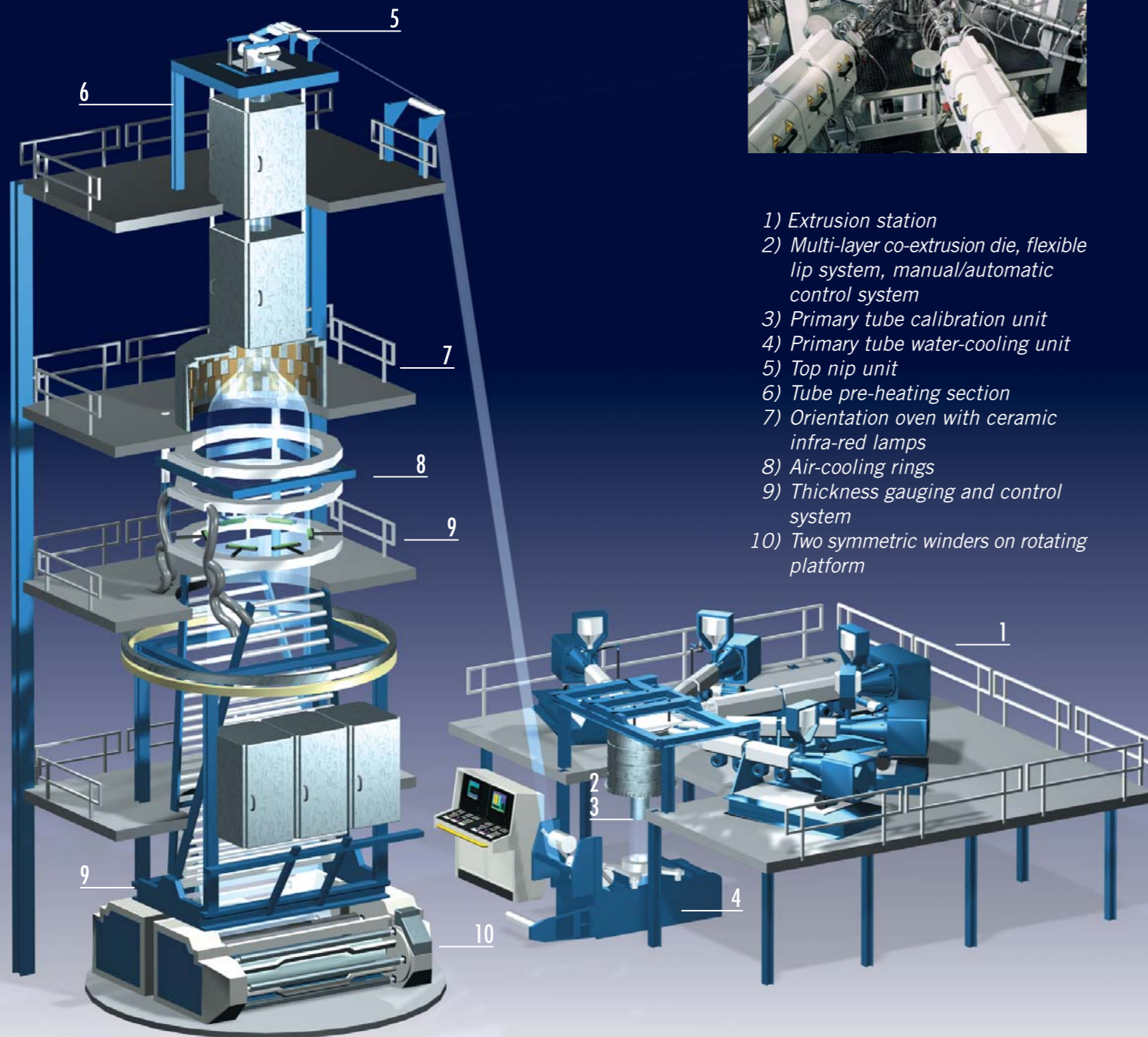
Line Key features

High speed performance up to 200 m/min or 450 Kg/h product specific, custom designed automatic die for up to 7 layers film product specific screw designs optimized primary tube calibration and cooling system residual shrink of finished product between 20 and 60 % inline edge trim recovery full automatic line control system comprising three TCE exclusivities:

AB-TC™ (Automatic Bi-O Thickness Control): film thickness control and regulation through joint action of ovens sectors and die bolts

AB-PC™ (Automatic Bi-O Process Control): automatic preservation of the orientation process guaranteeing stability of the bubble

AB-RC™ (Automatic Bi-O Ramp Control): full automatic system to increase or decrease line throughput at constant, stable process parameters multiple human-machine interface systems (main supervisor and operator panels) on board electric wiring with certified fire, moisture and oil rating



Applications

Shrink wrap, skin packaging, premium shrink, barrier shrink, display films and automated packaging process applications which require superior strength, perfect conformation to product shape, excellent optical qualities, gas and water vapor barrier i.e. Exclusive and brand name non-perishable products also in collated for:

- Cosmetics
- CD's, Books
- Magazines and journals in general
- Chocolates and cookies
- Electronics
- Toys
- Dry grocery
- Cans and fruit juice bottles, etc



Barrier food packaging with or without trays using the Flow Pack system under MAP (Modified Atmosphere Packaging) or vacuum
Barrier film to be used as cover directly sealed on the barrier trays (lidding).



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