



Medical Line Extruders Medical Line Compounders Medical Line Presses Medical Line Calenders / Roll Mills Blown film lines (air-cooled / water-cooled) Strand lines



# MEDICAL · LINE



**Collin Medical Line** Extreme precision, homogeneous processing & high throughput.

The Collin Medical Line lines are explicitly tailored, designed and manufactured for the corresponding customer requirements. The total Collin portfolio can be designed for medical purpose – from the extruder, compounder and calender, presses or roll mills to complete strand and blown film lines.

Highest precision, tight tolerances, cleanness, process accuracy, good cleaning handling, clean room conformity, quick and excellent service and custom-designed customer training programs are a matter of course.

#### Your advantages

- Conforming to standards. Manufactured according to the guidelines of the FDA 21 CFR, ISPE, ISO 13485, DIN EN 10204/3.1B, cGMP/GMP.
- Sophisticated. Engineering & design correspond to hygienic standards.
- Individual. All systems are tailored to the customer requirements.
- **Permanent.** Lines, which can produce 24/7.



#### Extra options & features

- Cutting units
- Winders
- Teflon coating for hoppers

- Convenient. All lines can easily be dismounted and cleaned.
- Versatile. Enormous variability in order to produce different products.
- Homogenous. Continuous production, compliance with all tolerance values.
- Innovative. Development work for customers and pilot tests in the Collin lab.

#### **Technical basics**

- Medically approved stainless steel for all parts having contact with the product.
- All surfaces with low roughness for easy cleaning and disinfection.
- ▶ Optimal maintenance and operating conditions.
- Design adapted to the operating environment.
- Validation, qualification and documentation according to the standard.
- SCADA software solutions according to GAMP Guideline.
- Cooling bands
- Dosing units
- Several screws depending on the polymer



## Medical Line Extruders

Flexible & modular, for different fields of application

### E 12 P, E 16 P, E 20 P, E 25 P, E 30 P, E 45 P, E 60 P



Compact and modular – the Collin Medical Extruder Line. Inspired by an innovative concept, the lines can be used for many applications. Thus, many different downstream equipment can be connected and various additional equipment and features can be realized.

#### **Exemplary application**

- Multi-layer strand production
- Mono & multi-lumen hoses
- Mono & multi-layer applications

- Hoses for coronary vascular intervention, peripheral vascular intervention and ablation catheters.
- Catheter tubes

#### **Technical description**

- **Drive.** Compact gear motor or high torque motor.
- Feeding zone. With exchangeable smooth feeding bush, water cooling resp. temperature control via a mould cooling jacket made of aluminium, hopper made of medically approved steel.
- **Cylinder.** Hydraulic height adjustment of the processing unit.
- **Screw.** Especially at customer's request/material processing.
- Cylinder tempering. Heating by heating bands for high temperatures. Air cooling with an additional blower below the cylinder. Water cooling depending on the ISO cleanroom class.
- Clamping flange. Safe and easy coupling of dies with the cylinder. Optional heating of the clamping flange.
- Electrical cabinet. The extruder is mounted on a moveable electrical cabinet with power electronics, connections and main switch.



## **Medical Line Compounders**

Small & compact, ideal for pharmaceutical and medical technology

ZK 12 P, ZK 16 P, ZK 25 P, ZK 35 P



The Collin compounder is used for different types of application in the pharmaceutical and medical technology. Because of the compact design, the lines are easy to clean and are characterized by extremely short material change times.

#### **Exemplary applications**

- Agent incorporation into carrier material
- Degasing of volatile components
- Pelletizing of tab premixtures
- Mixing and dispersing of pigments
- Incorporating of solid and liquid additives
- Incorporating of organic and inorganic fibers
- Blending of polymers and pastes
- Continuous and reactive extrusion

#### **Technical description**

- **Different cylinder elements.** These are connected via a clamping flange resp. flat flange.
- ► Flexible screws. Consisting of individual elements for any configuration.
- Convenient tempering. Tempering is effected via heating cartridges resp. cooling bores which are transversely mounted in the cylinder.
- ► Axial movement. The axial movement allows an extremely quick disconnection. Easy removal of the cylinder and screw by moving on linear slides over the entire screw length.
- ▶ **Highly dynamic drive.** AC-servomotor with planetary gear, exact speed settings as well as quick limitation of the maximum torque.
- Height-adjustment. The complete processing unit is hydraulically height-adjustable optimization of the distance of the downstream equipment and easy cleaning of the machine.
- Electrical control cabinet. It forms the movable base cabinet on which the height-adjustable processing unit is mounted.
- ► **Hygienic cover.** The cover on all sides on the machine allows easy cleaning after the end of the process.



# Medical Line Presses

#### Convenient & quiet hydraulic system & ergonomic door

#### P 200 S, P 300 S, P 400 S, P 500 S



The Collin Medical Line Presses integrate all advantages of Collin presses – and are especially characterized by their convenient hydraulic system, the modern design and the vertically moveable door.

#### **Exemplary applications**

- Clean-room technology design for the production of medical or pharmaceutical products
- Quality control of materials
- Production of test sheets/samples

The Collin Press Type S mainly convinces by the quiet hydraulic aggregate, which is not permanently running. This aggregate has a servomotor and a double gear pump, the pressure control is effected with a servo controller via the motor speed.

Moreover, an oil cooler is not necessary, which results in a decreasing cooling water consumption. The high pressure accuracy of +/- 0.5 bar and the reduced energy consumption of the motor also speak for themselves. The press can be used for temperature ranges of 20 up to 300°C. Optionally, higher temperatures are possible. Another advantage is the vertically moveable ergonomic door. Visually, the Press Type S convinces with its futuristic and reduced design.

# Medical Line Calenders / Roll Mills

## Modular & compact to the complete line



Calenders and roll mills are essential elements for the prototype production in the development of pharmaceutical products or for the production of tablets in all forms and sizes.

## **Exemplary applications**

- Medicament carrier
- Tablets
- Prototypes
- Silicone mixtures

For more than 10 years, industry has been using Collin production calenders. By the combination with compounder, melt pump, flat film die and cooling belt, a complete production line is formed. A touch screen system controls the process and provides a wide range of parameters for archiving, evaluating and reporting.

Roll mills are based on the long-term experience of Collin. The small calenders are designed for the production of small batches, mainly in the pre-clinical selection phase. They can perfectly be combined with the small compounders. Completed with drying and cooling belts, complete production lines of a small size are created.

# Blown film lines (water-cooled / air-cooled)

With high quality standard, wide range of application

### BL 400 P, BL 600 P, BL 800 P, WBL 600 P, WBL 800 P

Compact design with small footprint, ease of use and exact, reproducible movements as well as quick change of products and parameters characterize the Collin blown film lines.

Blown film lines are used for functional tests of polymers and compounds, for the development of multi-layer films, for quality control of the color distribution, for the control of dispersion properties of compounders and extruders or for the production of small film hoses in the food and medical sector.

## Blown film lines with water cooling of the film



These Collin lines are frequently used for applications in the medical and pharmaceutical sector – as for example for the production of infusion bags or other mono or multi-layer products. Vertical extrusion into a water cooling ring provides optimal film transparency. The modular design of the individual line components creates enormous flexibility for production.



#### Blown film lines with air-cooling of the film

Blown film dies with a diameter of 20 up to 120 mm are suitable for the production of hoses with a lay-flat width of up to 750 mm. Mono and dual-lip cooling rings and a closed-loop system of the lay-flat width guarantee constant quality. The take-off height is adapted by a motor-driven height adjustment system in the take-off tower. Combined with a Collin online rheometer or an optical film control, the laboratory line can be used as continuous quality control.

#### **Strand lines**

#### Complete line from a single source

The unique characteristic of the Collin strand lines is that all production steps are from a single source – compounding, coextruding, take-off and cutting.

Furthermore, the vertical water bath is the highlight – a Collin innovation, which guarantees reliable roundness. Different take-off speeds are also possible.

For an exact throughput of the line, the extruders are equipped with melt pumps and pressure/speed controls. By using a multi-layer die, the strand is directly and vertically extruded into a water bath. This process eliminates all influences of a calibrating system. The gravitation guarantees high accuracy of diameter and roundness.

Moreover, a controlled water flow ensures an absolutely calm water surface when the product is guided into the cooling container. The touch screen control system is ergonomically designed and files all process and quality parameters.





## MEDICAL ·LINE

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