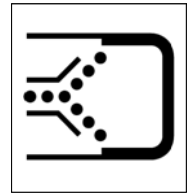


IPC

360° Powder Coating System
for cans, tubes and cartridges.



High-precision, dust-free powder coating technology to protect the inside of monobloc aerosol cans, tubes and cartridges as well as drawn steel food cans



Frei AG Powder Technology: Leadership through innovation

Economy and Environment

Rising costs for lacquers containing solvents and stricter legal regulations to reduce volatile organic compounds (VOCs) will cause can and tube manufacturers to invest in new technologies.



Frei AG has developed a new system to powder coat the complete inside of mono-bloc aerosol cans, tubes, cartridges and drawn steel food cans.

Besides the most economical consumption of powder, a main criterion is the absolutely secure mastering of the process and the maximum operational availability of such a system in a production line.

In order to achieve thin film thicknesses, very fine ground powders are necessary. However, the finer the powders are, the more important industrial safety becomes, i.e. if the particles are so small that they become respirable the new coating systems have to be designed in such a way that the finest particles which are no longer adherent and are not electrostatically rechargeable can be disposed safely and dust-free during the process

Concept / Configuration

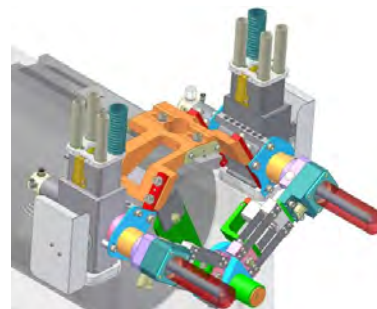
The rotating cans, tubes or cartridges travel in the horizontal position past two or three parallel powder guns. The guns move along as they reciprocate in and out of the can/tube bodies. The process cycle permits the individual control of the servo curves, switching points, electrostatic values, spraying times, number of revolutions, etc.



Integrated additional exhaust and cleaning modules guarantee an absolute dust-free environment for cans/tubes/cartridges and the whole machine.

A high-performance injector system for a precise adjustment of the powder discharge allows the user to define easily and exactly the desired powder quantity.

The system guarantees a very precise film weight distribution.



In order to guarantee the industrial hygiene each coating station is provided with a dust

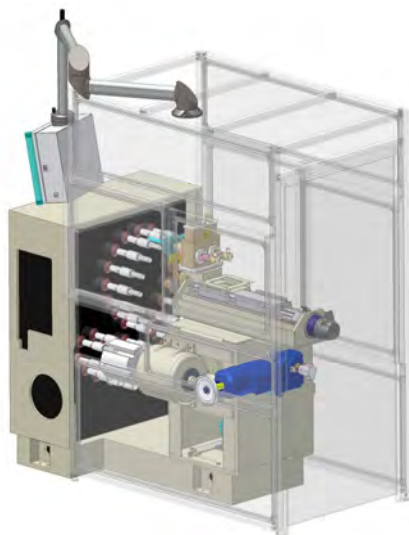
extraction system adapted to the respective can diameter. The efficiency is nearly 100 %, i.e. practically no powder is wasted and no powder escapes to the environment.

The precisely adjustable coating parameters are operated via a state-of-the-art control technique and a user-friendly touch screen.



The gun positions can be set easily and quickly to the respective can or tube heights. Each gun coats one can/tube in a single stroke. A process program for each can or tube can be provided, which is called up on the touch screen.

Frei AG is not only a supplier of components of proprietary developed powder guns but offers a complete system including machine and safety engineering, controls, etc.



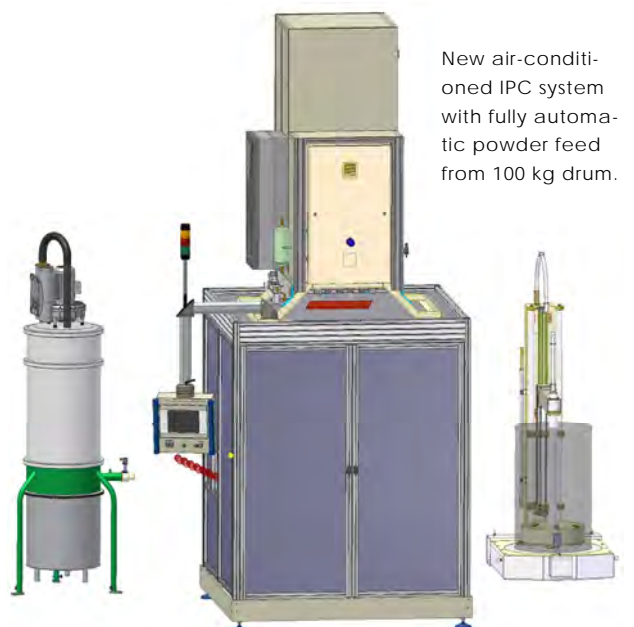
The first systems were designed as test units for the integration in existing, modified spraying machines in order to prove the suitability in a production line.



Example: Frei IAP-S06 powder coating system mounted on an old automatic wet lacquer spraying machine for tubes with membrane.

In future the further development of the concept will allow to powder coat tubes without membrane and tubes with star orifice.

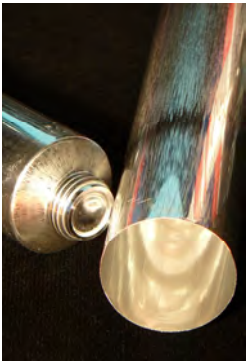
Another version is planned for drawn flanged and beaded steel cans.



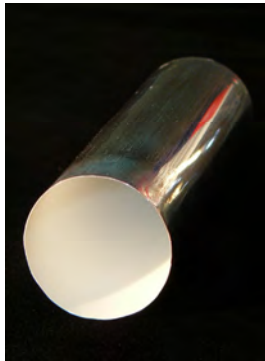
New air-conditioned IPC system with fully automatic powder feed from 100 kg drum.



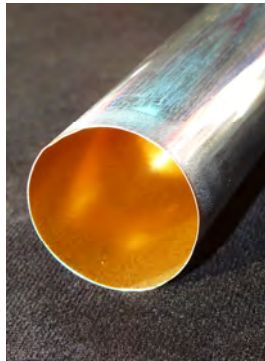
Powder coated
 2-piece can.
 Ø 73 x 110 mm



Before coating



Powder coated



Coated and cured



Powder vs. Lacquer

One of the main concerns in tube manufacturing can be eliminated: lacquer bubbling in the neck. Powder coated tubes do not show bubbles and the shoulder is evenly coated and shows a similarly perfectly distributed film surface as on the rest of the body.

Main Features

- Very precise film weight distribution.
- Selectable film thickness between 10 µm - 30 µm according to powder quality and set values.
- Porosity (Waco-Tester) max. 1.0 mA after curing the powder in the oven.
- Minimized air quantity and high powder concentration in the gun. Thus no powder cloud is generated but an annular powder jet that even allows a smooth coating of shaped can bottoms and tube necks.
- Dust-free coating of cans/tubes/cartridges without overspray.
- Atex and CE conformity.
- Production capacity: up to 210 cpm.

Product-line

- Powder seam coating systems for welded cans
- Wet lacquer seam coating systems for inside and outside seams
- Curing systems for seam protection
- Exit conveyors for welding machines
- Embossers for aerosol cans
- 360° inside powder coating system for monobloc cans, tubes and cartridges
- Aluminium membrane sealing machines for welded cans