

# Economical solutions for a cleaner environment

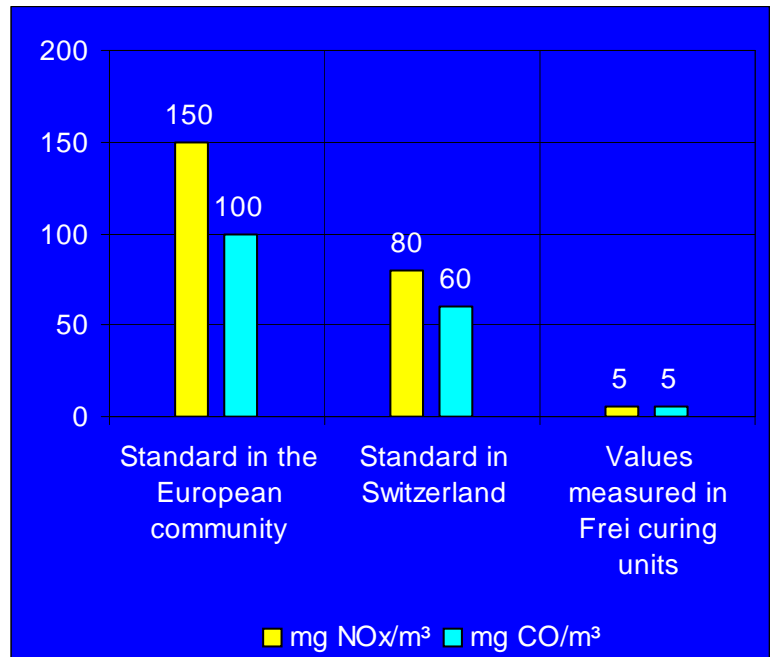
Frei AG manufactures side seam protection systems for welded three-piece cans, namely powder and liquid lacquer application units and curing systems to match the many different production speeds of various welding machines.

When developing the technology for the latest seam protection units Frei AG left no loose ends. The gas burner heating system conforms to the strictest legislations.

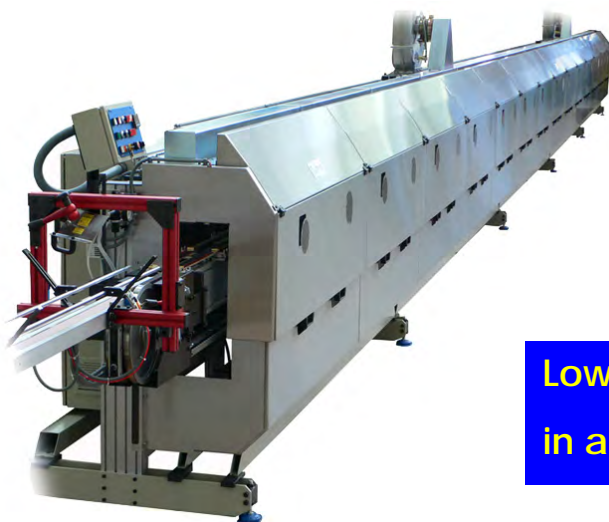
In today's competitive marketplace it makes a lot of sense in either economic or in ecological terms to choose a state-of-the-art curing unit with lowest exhaust values, low energy consumption and no need of cooling water.

Frei's curers certified CO concentration is less than 5 mg/m<sup>3</sup> (4 ppm) and less than 5 mg/m<sup>3</sup> (2.5 ppm) for the NO<sub>x</sub>. These figures are valid for natural gas as well as for LPG.

Electric turbo-heating elements with forced air convection instead of gas burners are also available for very short curing times.



European emission limits for gas burners



ECM gas curing system for high-speed can production lines.



ACM gas or electric curing systems for seam protection lacquers and powders.

**Low NO<sub>x</sub> burners  
in all Frei curers !**

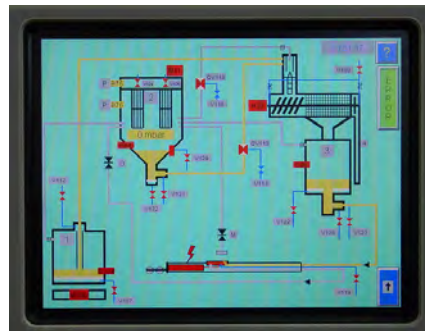
## Protection of welded seams

Frei AG offers a range of liquid lacquer and powder seam protection systems to the can making industry.



Welder with Frei's XPC high-speed powder coating system with integrated powder monitor and automatic drum evacuator.

To obtain an optimized and pore-free seam that withstands the flanging, necking and beading processes as well as the aggressivity of the product itself powder has to be used. Today, not only mechanical properties count; also the environmental aspects play an increasingly important role. Powder virtually eliminates solvent emissions because there is no need to exhaust volatile organic compounds (VOCs).

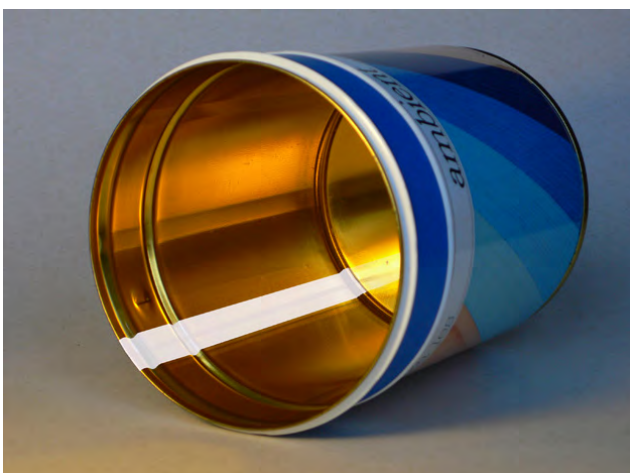


Touch-Panel with process value display, error message management and integrated user manual.

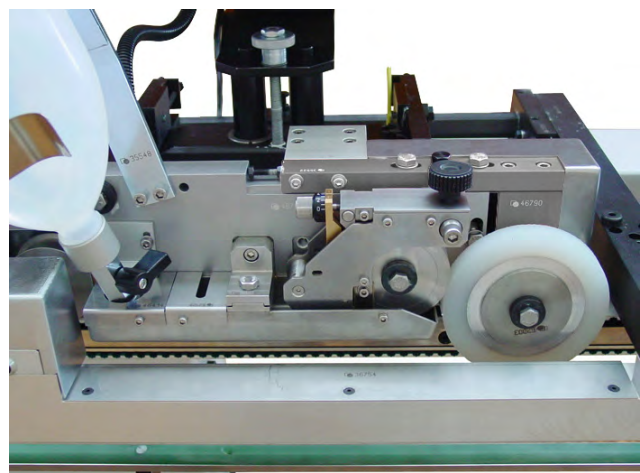
Key elements of our quality concept are handling and reliability. A high-performance injector system for precise feed rating makes it possible for the operator to determine the required quantity of powder fast and simple. Optionally available is a powder monitoring system that measures the high-density coating of the powder stripe before the powder particles are fused.



savePro® Powder Monitor. Measured data are visualized on touch screen.



Inside powder side stripe on welded seam.



Outside roller coating unit for water and solvent based lacquers.

## Powder and lacquer curing



Depending on the required curing time, which is matched to the welding speed, the indi-

vidual modules are assembled into a complete configuration for straight line or u-shaped curers. All heating zones can be equipped with separate hot-air and pressure controls permitting precise adjustment of the required temperature profile.



Downline of practically all known welders Frei curers can be added. Frei offers



also curers for welders that run with "seam down" and are especially used for larger can diameters and thicker sheet materials.

## Embossing

Registered embossing of cans provides important product differentiation for premium brands. The process is suitable for either steel or aluminum cans in standard wall thickness. The concept offers the possibility of embossing over almost the entire surface of the cylindrical part of the container. Embossed contours such as logos, texts or images can be regular, circular or asymmetrical.

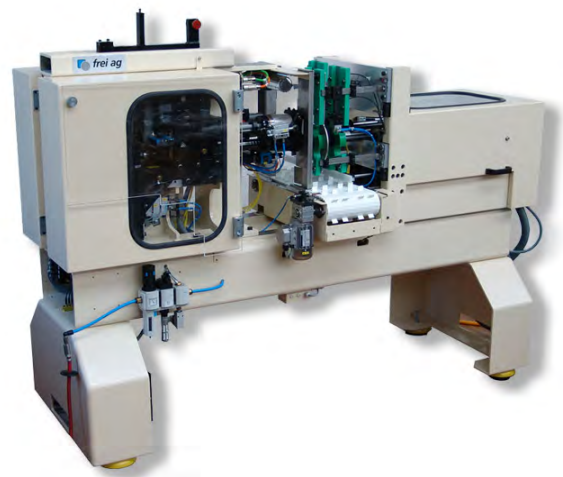


Embossed monobloc cans with "grip".

The embosser is primarily designed for aluminum monobloc aerosol cans, but can also be adapted to welded 3-piece cans.



The production capacity on two parallel horizontal embossing stations is 70 - 80 cpm. Proper pattern orientation is achieved by the engagement of the matching inner spreading cylinders and outer tool rolls.



HE2 twin-headed embosser.



Frei AG Maschinenbau Wittenbach/St. Gallen.

## Aluminium membrane sealing

Frei AG offers an aluminium membrane sealing technique for welded cans to pack dry products such as milk powder, coffee, tea, instant soup, peanuts, candies, biscuits and the like. The new technique is an alternative to the traditional composite can, the easy-open system, the conventional membrane carrier ring and



the glass packaging. The membrane with tear tab is directly sealed onto the curled flange or on a specially formed shoulder made out of the

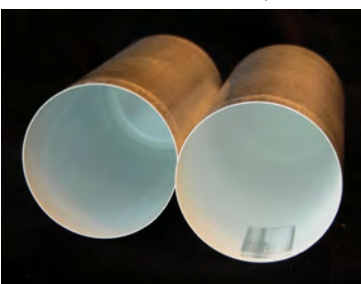
can body. This guarantees clean and secure initial opening. Induction sealing allows the application of aluminium and plastic foils. No hold-up edge hampers the complete emptying of the can.



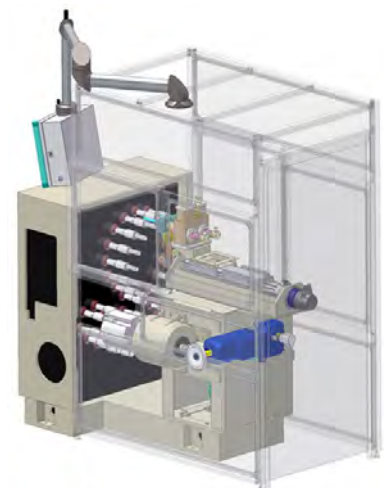
## 360° inside powder coating of monobloc cans and flexible tubes

Rising costs for lacquers containing solvents and stricter regulations to reduce volatile organic compounds (VOCs) will cause can manufacturers to invest in new technologies in the future. Frei AG has developed a new system to powder coat the complete inside of aerosol cans and tubes starting from diameter 28 mm up to 57 mm.

The machine concept consists of a horizontal chain conveyor or an existing older rotary spray machine on which the rotating cans travel in horizontal



position past a group of parallel powder guns. The guns move along with the cans or tubes as they reciprocate in and out of the can bodies. In order to guarantee the industrial hygiene each coating station is provided with a dust extraction system adapted to the respective can diameter.



IAP-S06 Powder Coater for 120 tubes/min.