

Application Success Stories

Smoke exhaust articles coated with Enamel powder



High productivity
and consistent quality

Less manpower

Green process

Application Success Stories

The history of the industry

Many companies are manufacturer of stove pipes in a different material: stainless steel, steel coated with liquid enamel, stainless steel in a flexible format, brass material.

The volume of production is more than 2 million parts per year in many companies.

The total production of enamelled components can be 50% of the total amount.

In order to improve quality and productivity, in the past different new machinery were installed that processed production by means of laser welding.

After that type of investments, these companies were focalized onto the enamel department that was organized and used very old process and technology with the following technological cycle for different enamel color.



Application Success Stories

A new process for quality improvement and cost saving

Traditional process with liquid:

- ❑ Enamel preparation with mixers.
- ❑ Loading of workpieces in containers fitted for pre-treatment tank plant.
- ❑ Pre-treatment & pickling of steel with complexity and cost of water treatment plant.
- ❑ Unloading workpieces from containers and loading onto overhead conveyor of the enamel line.
- ❑ Enamel coating with flow coat technology for hose pipes.
- ❑ Enamel coating with immersion of bents and accessories.
- ❑ Manual cleaning of difficult area of parts.
- ❑ Drying of liquid enamel before firing in order to eliminate water at the temperature of 120°C for 10 minutes.
- ❑ Transfer to the fire line overhead conveyor.
- ❑ Firing at the 840° temperature for 4 minutes.

Application Success Stories

A new process for quality improvement and cost saving

The new technology with powder enamel:

- ❑ Loading of workpieces onto overhead conveyor.
- ❑ Automatic enamelling with powder in a dedicated powder booth for pipes and accessories.
- ❑ Transfer to the firing line overhead conveyor.
- ❑ Firing at the 840°C temperature for 4 minutes.

Application Success Stories

Powder Technology Advantages

Cost saving & advantages:

- ❑ Less manpower, thanks to the automation
- ❑ Less energy consumption, thanks to the efficiency of the new solution
- ❑ Process simplification
- ❑ Material handling
- ❑ Closed process without waste treatment
- ❑ Quality increase
- ❑ Ready for the automatic part loading
- ❑ Additional products value with the “Green Process” label declaration.

Application Success Stories

Approach to the enamel powder technology

Customers started to make test with traditional application technology with guns feeder by means of venturi injectors.

This standard powder coating technology did not reach the customers specification of minimum 100 microns of thickness inside the stove pipes due to the need of very high powder flow and low air spray velocity at the nozzle of the guns.

These two specifications needed in the same time, cannot be performed with any venturi injector.

Other applications, with guns extensions inside stove pipes, were rejected due to very complex installations, low productivity, complex & expensive process control for different shapes of workpieces.

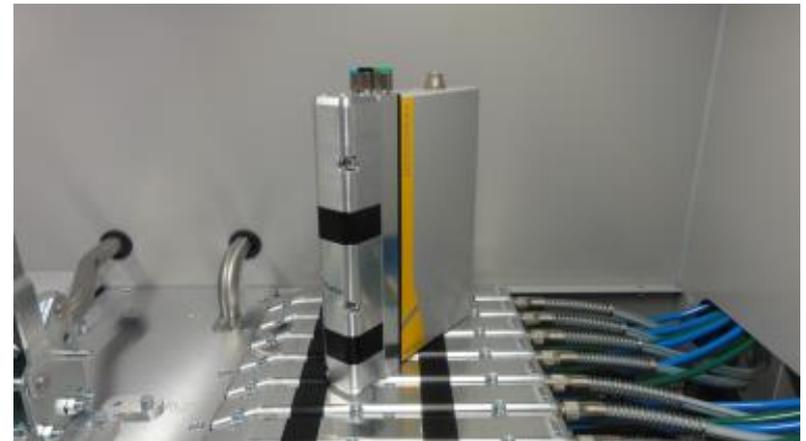
Application Success Stories

The Gema solution

Gema understood that the real solution for these customers specification was the industrialization of the new dense technology powder pumps OptiSpray AP01-E and was able to reach the customer specifications in the Lab of St.Gallen.

The specifications were reached with different enamel color: matt, grey, black, brown with productivity asked by the customers 600-800 stove pipes x hour with minimum inside pipe enamel thickness of 100 micron.

This technology fitted for a fast application equipment, color change was associated with a new fast color change booth for enamel application.



Application Success Stories

Installation Key Data

Customer no. 1

Parts: Smoke Exhaust pipe

Parts Sizes: H 1.000 mm

W 200 mm

Conveyor Speed: up to 2,0 m/min

Productivity: up to 600 pieces/h

Scope of delivery - Color Change Booth:

1x MagicCompact BA04-E

4x Filter for 12.000 mc/h

1x OptiControl CM22 + Light Barrier

2x OptiCenter OC03 + US06

1x OptiFlex AS08-26 Aut. + 1 Man.

2x ZA07/13 + YT 10/10

4x ZA07/13 + XT 10/10

4x FPS16 BigBag

Customer no. 2

Parts: Smoke Exhaust pipe

Parts Sizes: H 1.000 mm

W 200 mm

Conveyor Speed: up to 2,0 m/min

Productivity: up to 600 pieces/h

Scope of delivery - Color Change Booth:

1 x MagicCompact BA04-E

4 x Filter for 12.000 mc/h

1 x OptiControl CM22 + Light Barrier

2 x OptiCenter OC03 + US06

1 x OptiFlex AS08-26 Aut. + 1 Man.

2 x ZA07/13 + YT 10/10

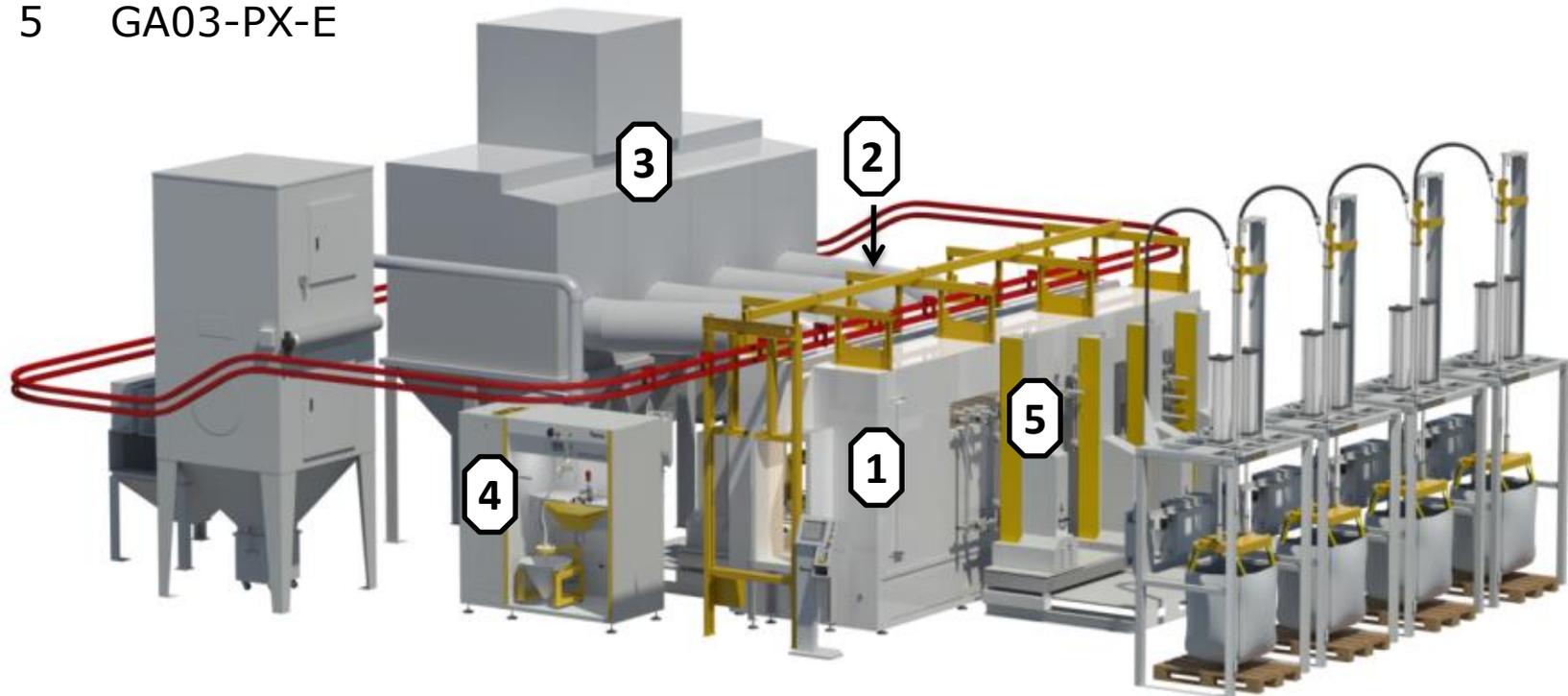
3 x ZA07/13 + XT 10/10

4 x FPS16 BigBag

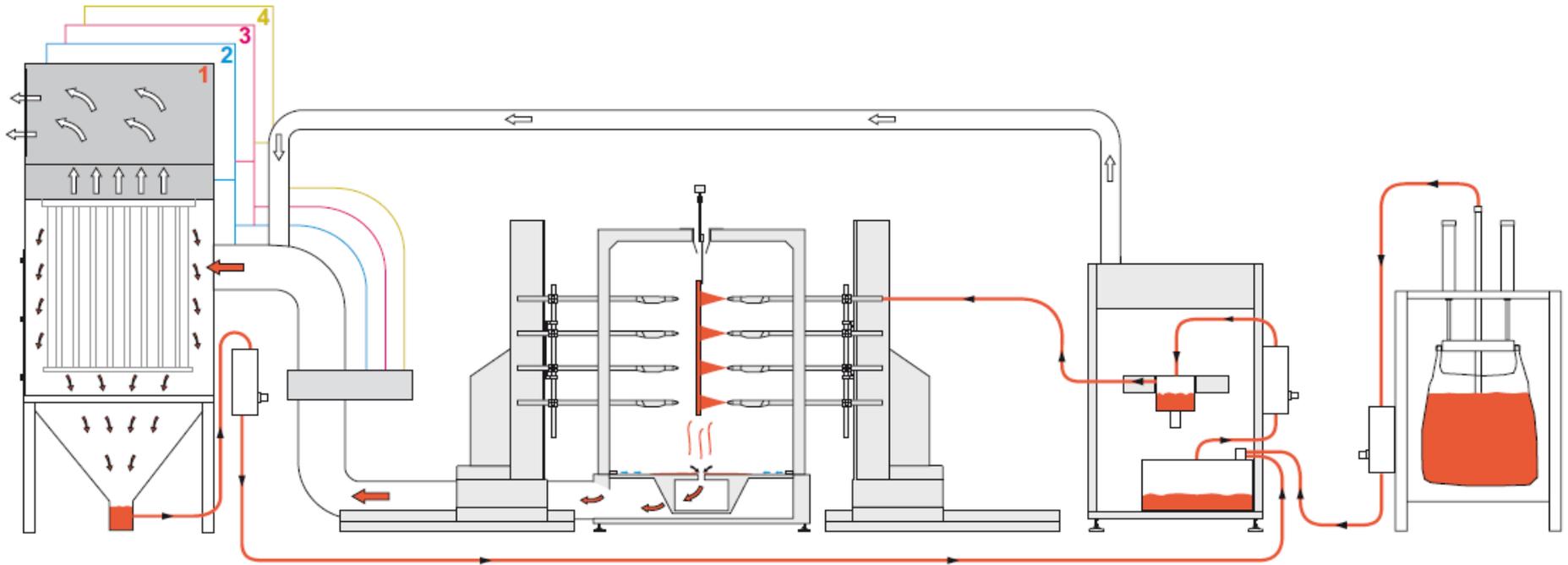
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General Layout

- 1 Magic Compact BA04-E
- 2 Switching unit
- 3 Multi color after filter
- 4 OptiCenter OC03 equipped with AP01-E
- 5 GA03-PX-E



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Powder circuit MagicCompact EquiFlow BA04-E booth - multi-color application

Application Success Stories

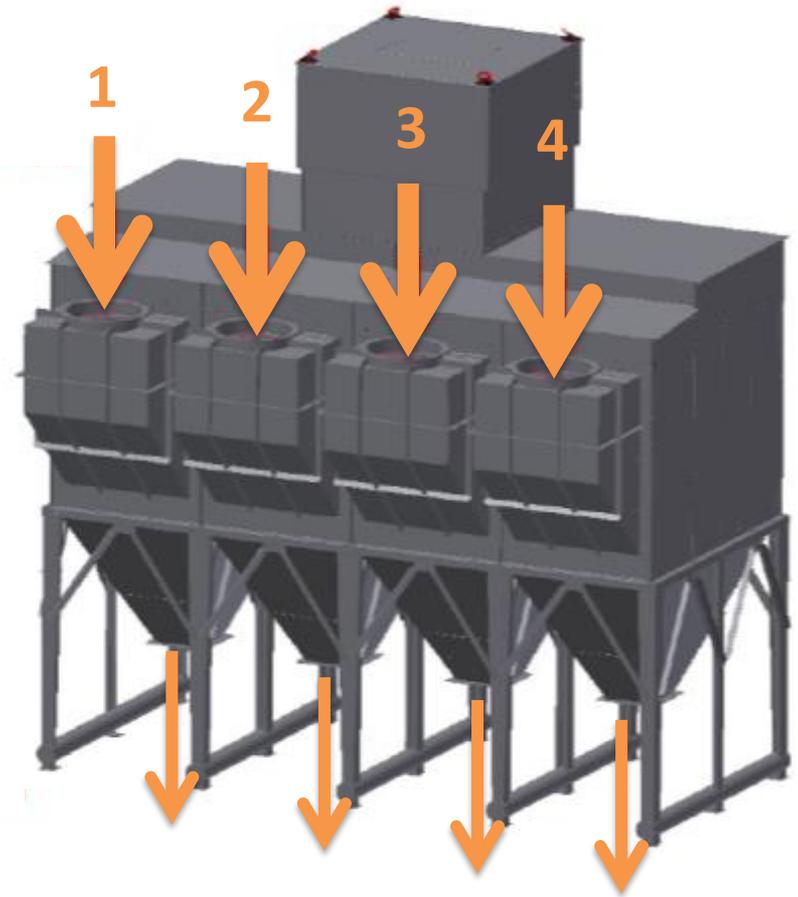
Double OptiCenter for fresh and recovered enamel



Application Success Stories

Features:

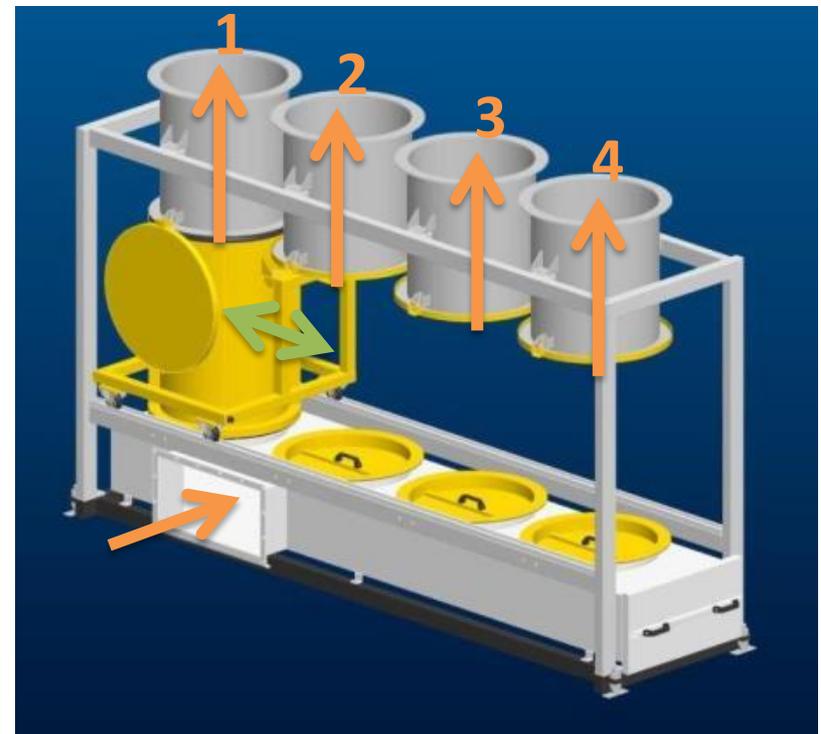
- System handles up to 4 colors
- Filter chamber for each color
- Common clean air chamber/ 1 fan for 12'000m³/h
- 4 PP06-E recovery pumps



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Features:

- System handles 4 colors
- Manual switching of the sliding connection unit
- Sensor detected position

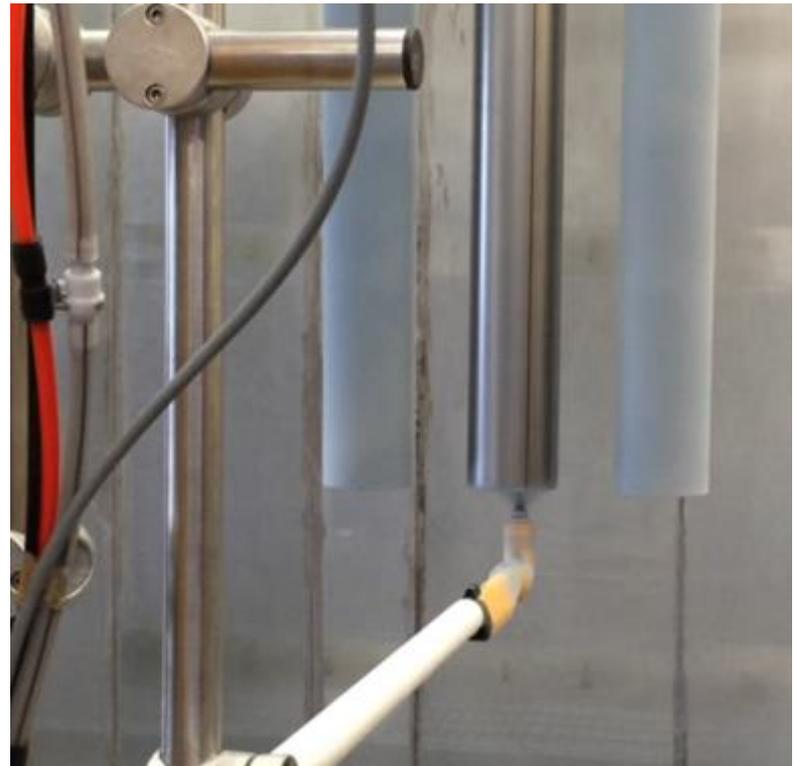


Application Success Stories

Stove pipe application inside top



Stove pipe application inside bottom



Application Success Stories

Outside application



Outside application



Application Success Stories

Application on the accessories

