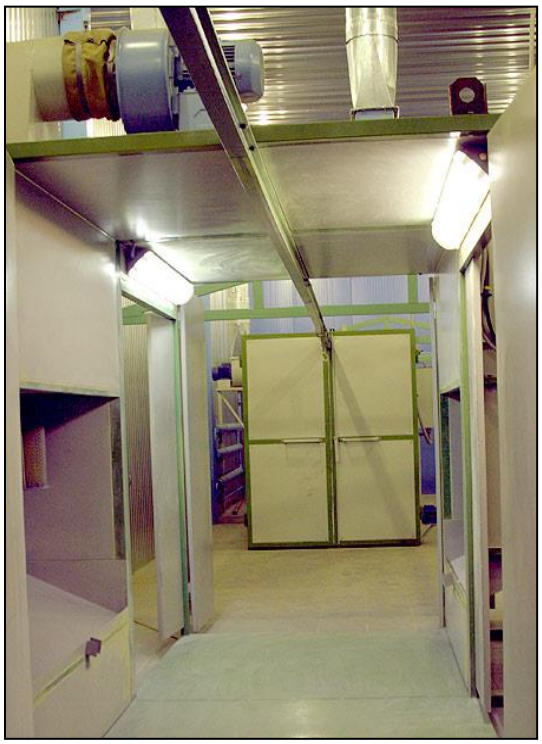
TECHNICAL DATA SHEET

SK1POPL

Powder painting lines

► DESCRIPTION



Powder painting is currently out of competition for technological, economic and environmental performance among other methods of industrial dyeing. The discovery of powder paints in the twentieth century greatly enriched the field of paint and varnish products.

The powder coating line allows to create high-quality protective and decorative coatings in construction, machine building, instrument making, and in the production of consumer goods.

Due to the fact that powder paints practically do not contain organic solvents or other volatile components, and also have high ecological purity indicators, the powder painting line constantly expands its field of application. The powder painting line is efficiently and economically used for painting: aluminum and steel profiles, household appliances, roofing materials, medical equipment, sports equipment.

In comparison with liquid paint and varnish, powder paints have undeniable advantages:

- powder paints do not require special preparation, dilution, viscosity control, because they are immediately ready for use;

- do not contain volatile organic substances;
- the industrial powder coating line allows the application of a single layer of powder paint to achieve high coating qualities and performance properties

- a modern line of powder painting produces products with high-quality impact-resistant coatings, which have high corrosion resistance.

Painting equipment is produced with the possibility of collecting different varieties of painting lines. The powder painting line can be assembled according to a typical or special project taking into account the specificity of production.

► TECHNICAL DATA

The line of powder painting has in its composition:

- powder painting chamber with a filtration system, where a process of spraying powder paint onto the treated surface occurs (Pic. 1)

- a polymerization oven or a polymerization chamber for powder paintings, where polymerization and reflow processes occur (Pic. 2)

- a transport system that is designed to optimize the movement of painted products (Pic.3)

Pic. 1

Pic. 2

Pic. 3

► POWDER PAINTING CHAMBER

Powder painting chamber is a place where the process of spraying paint onto the surface of the product occurs.

Without the use of a powder painting chamber it is almost impossible to collect non-settling paint on the product, and therefore, to reuse it. Loss of paint will cost a decent amount.

Our powder painting chambers have all the necessary functions:
- filtering
- ability to return the powder manually to work
- automatic cleaning of filters

Use of high-quality Italian pneumatic equipment makes the recuperation systems reliable and highly efficient.

► POLYMERIZATION CHAMBER

The polymerization chamber is a special equipment for powder painting. These devices are designed for polymerization of polymer coatings that have been applied to the product. The product itself can be made of any material that conducts electric current (metal, ceramics and glass and others). The polymerization chamber is one of the main elements of the process of painting the products with powder paint.

Types of polymerization chambers:

Polymerization chambers are classified as follows:
- by type of oven body (through-pass, dead-end or tunnel)
- by power level
- by heat carrier (infrared or convective).

In addition polymerization chambers can be divided into vertical and horizontal - this depends on the loading and unloading plane of the products to be painted.

The polymerization chamber has 2 types:

- pusher oven
- box oven

They can have a different design, but always meet certain standards. Heating occurs in a convective way, by air. But in some cases, infrared rays can be used. Heating method depends on several factors: heat capacity of the parts to be painted, degree of complexity of products to be painted, and so on.

In the pusher oven product to be painted is loaded and unloaded one way. This can occur on both the upper and lower transport system, which are rails with a trolley for loading and unloading.

Unlike the pusher oven, the box oven is capable of ensuring the loading of the products to be painted on one side and the output from the other side. During polymerization of first item, next trolley with another item is already ready at the input. Such type of polymerization chamber can significantly increase the level of productivity, because the painting process takes place continuously, immediately after painting and forming the coating of one product, painting and forming another begins.

Polymerization chambers arrangement

Oven body is a modular construction, made of welded frame with internal welded skins. External skins are made of portable panels, connected with screws to the structure. To minimize heat losses the gap between skins is filled with ecologically clean nonflammable thermal insulation from mineral fiber. The floor and roof as well as sidewalls, are filled with thermal insulating material.

Heating of oven workspace is realized by tubular heating elements mounted as units in boxes, placed at the lower part on the sides of a chamber. The boxes connected to blowing fans, provide circulation of heated air at oven workspace.

Polymerization chambers have a standard device:
- metal body
- external and internal welded skins
- heat-insulating layer
- automatic control unit
- fuser and other devices that provide heating of the camera.

Polymerization chambers for powder painting application are equipped with electrical equipment that automatically maintains a certain temperature and polymerization time. Use of timers and microprocessor thermostats allows easily and quickly to change the polymerization parameters. Chambers can be equipped with transport systems and trolleys to move the painted products.

Operating principle

The principle of operation is quite simple: product on which the paint layer was applied is placed in a polymerization oven where it is heated to a certain temperature (about 180-200 °C). Then the process of fixing the coating takes place. Temperature level depends on the type of paint that is used to color products. Some paint materials are able to form a finished coating at 90 °C, others need a higher temperature, for example, 250 °C.

Having reached the necessary temperature, the paint begins to melt, and evenly spreads over the entire surface of the product. This process is polymerization, it lasts about 12-15 minutes.

► TRANSPORTATION SYSTEMS

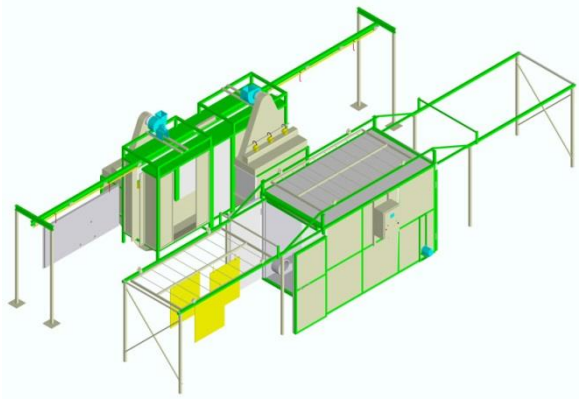
Transportation systems are the most important and last point in the organization of the powder painting area. A well thought-out transport system with a decent technological tool can increase productivity tenfold.

Scheme 1. Pusher chamber, continuous flow type. Standard oven is 3000x2000x1600, with three transport trolleys and two fixed powder painting chambers. Such workshop section is capable of performing up to 25 cycles of polymerization per shift.

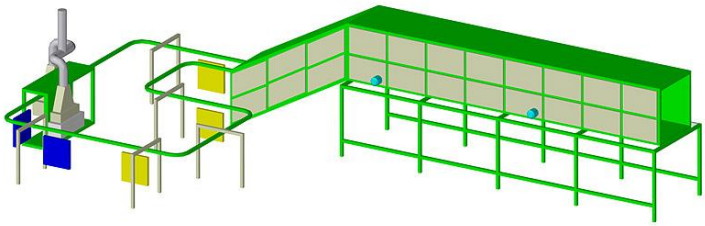
Scheme 2. Semiautomatic line. Depending on the required production capacity, conveyor speed, etc. Manufactured strictly by individual order.

Scheme 3. The transport system for the lateral and longitudinal movement of products is convenient for high-volume, heavy products.

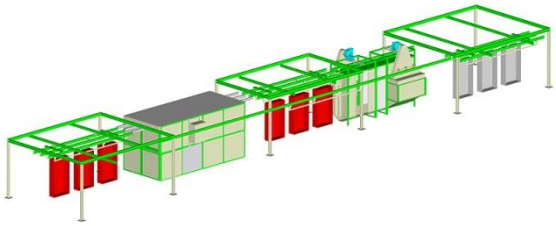
Scheme 4. Combined moving system: upper and lower transport trolleys. Lower transport trolleys are used for large-sized heavy products, upper for small and light parts.



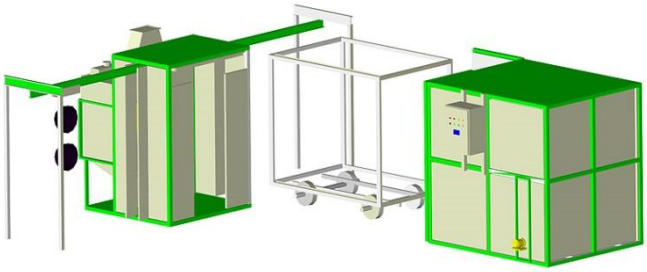
Scheme 1



Scheme 2



Scheme 3



Scheme 4

► **NOTE**

Please contact us for more detailed information as well as for system development according to your technical specification.

Standard warranty period: 12 months.