



Ji'nan ShengTai Painting Equipment Co.,Ltd.

Address: East of the intersection of Dongwaihuan Road and Wenhua Road in Wenden, Diaozhen Street, Zhangqiu District, Jinan City, Shandong Province

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Constant Temperature System in Electrophoretic Coating

The constant temperature system used in electrophoretic coating equipment operates by compressing refrigerant through a compressor into a high-temperature, high-pressure gaseous state. Controlled by a four-way valve, the refrigerant passes through the condenser, capillary tube, and filter, where the flow direction is changed. When the refrigerant transitions from gas to liquid, it releases a large amount of heat; when it changes from liquid to gas, it absorbs a large amount of heat.

Through a heat exchanger that directly exchanges heat with the bath solution, the system achieves both cooling and heating of the electrophoretic bath, ensuring precise temperature control throughout the E Coating process.

Ensuring E-Coating Film Quality

The temperature of the electrophoretic bath has a significant impact on coating thickness, smoothness, gloss, and adhesion. If the temperature is too high (e.g., above 32 °C), bath stability decreases, which may cause thicker and rough coatings, orange peel or particle defects, and even bath coagulation or precipitation. If the temperature is too low (e.g., below 23 °C), paint solubility decreases, electrodeposition is reduced, coatings become thinner, recessed areas may not be properly coated, and defects such as low gloss or trapped bubbles may occur.

A constant temperature system stabilizes the bath temperature within the ideal range of 25–32 °C, ensuring uniform and stable coating quality and meeting the technical requirements of the E coating line.

Improving Production Efficiency

A stable temperature environment supports smooth and continuous operation of the E Coating process, reducing production interruptions or adjustment time caused by temperature fluctuations. In cold seasons, additional time may be required to heat the bath, while in hot conditions cooling is necessary—both of which disrupt production rhythm. An automatic constant temperature system continuously regulates bath temperature, enabling efficient, uninterrupted production, improving equipment utilization and overall output of the E coating line.



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Extending the Service Life of E-Coating Paint

Excessively high temperatures accelerate solvent evaporation and coating aging, shortening paint life, while excessively low temperatures may affect chemical stability. By maintaining an optimal temperature range, the constant temperature system slows paint degradation, extends service life, and reduces paint replacement frequency and operating costs within the E Coating process.

Protecting Equipment and System Reliability

High temperatures can accelerate aging and damage of components such as ultrafiltration membranes and anode systems, while low temperatures may reduce bath fluidity, increase pump load, or even cause pipe freezing and equipment failure. By stabilizing temperature, the constant temperature system reduces thermal and mechanical stress, extends equipment service life, and lowers maintenance costs and failure risks across the E coating line.

Adapting to Environmental Temperature Changes

Seasonal temperature variations, workshop ambient temperature changes, and heat generated from electrical energy conversion and mechanical agitation during the E Coating process all affect bath temperature. The constant temperature system continuously monitors and adjusts bath conditions, effectively offsetting external influences and ensuring stable operation of the E coating line in all seasons and environments.

In summary, the constant temperature equipment and system of an electrophoretic coating line are critical to ensuring coating quality, production efficiency, and equipment safety. The investment cost is far lower than the potential losses caused by temperature instability, such as coating defects, equipment damage, and production downtime.

ShengTai Heating & Cooling Heat Exchanger

The ShengTai heating and cooling heat exchanger offers high energy conversion efficiency, requires no manual supervision, and operates safely and reliably. It is an ideal solution for automatic temperature control of electrophoretic baths in the E Coating process.



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Key Advantages:

Dual heating and cooling functions

One unit with two functions, capable of bidirectional temperature regulation, reducing overall investment costs.



High efficiency–Performance Equivalent to conventional systems where 1P equals approximately 3P. Using a high–efficiency heat exchanger, a typical 3–ton bath would normally require a 5P unit, whereas ShengTai's 3P heating and cooling exchanger easily meets production demands of

the E coating line.

Fully automated operation

An intelligent control system automatically switches between heating and cooling once the set temperature is reached, achieving over 30% higher efficiency compared with standard market equipment.

Safe compressor heating

Heating is achieved through the compressor and heat exchanger without electric heating elements, eliminating fire hazards and enhancing operational safety.

Please provide detailed information so that we can provide you with a more accurate solution:

1. What are the Maximum and Minimum dimensions of your workpieces (L × W × H)?
2. What is the maximum weight of each workpiece? If available, please also provide product photos.



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3. How many workpieces do you plan to coat per day (based on 8 or 16 working hours) or per month?
4. Which heating source do you prefer, such as electric power, diesel, fuel oil, or natural gas?
5. What are the dimensions of your workshop (L × W × H)? If possible, could you share a layout or drawing of the facility?
6. Prior to coating, do you require spray pre-treatment to prepare and clean the product surface?
7. What voltage and frequency standards are used in your country?

Please also share your WhatsApp or another instant messaging contact so we can communicate more efficiently.

Website: <https://www.stpowdercoating.com>

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