STORM POWER COMPONENTS

Applications Note

Expansion of Powder Coating Tank & Process Capacity Streamlines Production, Saves Cost, and Improves Quality

Powder coating of busbars offers several benefits for busbar production, making it a popular choice for protecting and enhancing electrical components. Some of the key advantages include:

- **Resistant to Corrosion:** Powder coating provides a protective layer that resists corrosion and oxidation, extending the lifespan of busbars, especially in harsh environments.
- **Impact Resistance:** The coating is tough and can withstand mechanical impacts, reducing the likelihood of damage during handling and operation.
- **Insulation Properties:** Powder coatings can provide excellent electrical insulation, helping to prevent electrical shorts and maintain safety standards.
- **High Dielectric Strength:** Many powder coatings have high dielectric strength, which is crucial for ensuring the electrical performance of busbars.
- **Uniform Appearance:** Powder coating provides a smooth, uniform finish with a variety of color and texture options, improving the visual appeal of busbars.
- **Customization:** The ability to choose from different colors and finishes allows for customization to match specific design or branding requirements.
- **Chemical Resistance:** Powder coatings can resist many chemicals and solvents, protecting busbars in environments where they might be exposed to harsh substances.
- **Environmentally Friendly Low VOCs:** Powder coating typically contains minimal volatile organic compounds (VOCs), making it more environmentally friendly compared to liquid paints.
- **Minimal Waste:** Excess powder can be reclaimed and reused, reducing waste and improving efficiency.
- **Long-Term Savings**: Although the initial setup for powder coating might be higher, its durability and low maintenance needs can result in long-term cost savings.
- **Efficient Application:** The powder coating process can be more efficient and quicker compared to traditional painting methods, reducing production time.
- **Heat Resistance:** Many powder coatings can withstand high temperatures, which is beneficial for busbars operating in high-current or high-temperature environments.
- **UV Resistance:** Powder coatings can be formulated to resist UV degradation, maintaining performance and appearance over time.

In light of these benefits, Storm Power has always been a leader in applying powder coating to busbars for our customers. We offer choices between spray coating and fluidized bed powder coating. This App Note focuses on fluidized bed powder coating, which is the preferred method for high-voltage busbars that need a thickness greater than 0.12 inches or have complicated shapes with bends and turns that need to have even, thick coating.

Recently, Storm Power has expanded our fluidized powder coating tank capacity to provide additional benefits to our customers, including streamlining production, reducing costs, and improving quality.

The following sections provide details on the reasons for this expansion and the benefits.

Applications Note: Expansion of Powder Coating Tank & Process Capacity Streamlines Production, Saves Cost, and Improves Quality

Overview of Fluidized Bed Powder Coating

Busbars are preheated and then dipped into a fluidized bed of powder. The powder particles melt and form a continuous coating on the surface. Control of the preheating temperature and immersion time is key to achieving the desired coating thickness and uniformity. Also, control of powder particle size is key for ensuring a smooth finish.

Rationale for Expanding Capacity

Several factors were considered in our decision to expand tank and process capacity. These include:

- **Market Requirements for Larger Busbars:** The continuing evolution of new application requirements in markets such as power utilities, communications, electric vehicles, transportation and others, is driving new demands for larger, longer and more complex busbars.
- **Quality Issues with Using Pre-Plated Copper Stock:** To address these needs, some customers have tried using pre-plated copper stock. However, there are issues with lack of choice regarding specific coating thicknesses and also the need to spot coat areas where holes or slots are cut in pre-plated stock.
- **Improve Logistics for Customers:** In addition, customers have run into long lead-times and other logistics issues when ordering pre-plated copper stock.
- **Shortcomings of Secondary Processes for "Double Dipping":** While the alternative of dipping portions of a large busbar in multiple passes is feasible, it is both costly in terms of labor for multiple processes and can have quality issues for matching the thickness and coverage where segments meet.

Benefits of Storm Power's Expanded Tank Capacity

The new large tank capacity that Storm has implemented for powder coating overcomes all of these issues by enabling a rapid, single-pass, fluidized coating process that eliminates the need for secondary process such as multiple coating passes and/or spot coating around holes or slots.

In addition, our customers can take advantage of Storm's position as a huge buyer of copper stock, which benefits them with both better pricing than pre-coated copper and faster logistics from order to delivery. Using our large capacity coating process also enables customers to specify any required coating thickness rather than having to chose from a limited set of pre-plated options

The Bottom Line

With Storm's investment in large capacity fluidized powder coating, our customers now are able to have it all, with higher quality, reduced overall costs, and faster time-to-market.