

A New Powder Flow Control System for Electrostatic Powder Coating

- A closed-loop-control system equipped with a capacitance sensor -

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Abstract

A new powder feed system for powder coating is developed with the aim of the application of powder coating to high-grade finishing like clear topcoats for automotive bodies. In the new system, a capacitance-type sensor is installed, and the system for the closed-loop control based on the detected data is constructed. The operation principle of the system is described in this paper. Next, experiments for performance evaluation of the system were carried out. Then, the discussion on the experimental results is also carried out. Concretely, it is confirmed that the accuracy of powder feed is within a preset value $\pm 3\%$. The quantification of conveying air flow rate is also achieved along with stable power feed. In addition, the response speed within 0.5 seconds is also realized on the responsiveness of powder feed by the speedup of the valve operation.