News Release

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Nissin Electric Co., Ltd.

Contributing to the industrial world with a quick, low-cost coating technology
~ New arc coating machine developed ~

Our company, Nippon ITF Inc., a subsidiary of Nissin Electric Co., Ltd., has developed a new type of coating machine used for coating surfaces of automotive parts, tools and metal molds. This new machine can form a thin film in a shorter time at a lower cost than our previous model, enabling the production volume to double (in our company's comparison, in monthly drill coating equivalent). The machine is currently being tested in our company and will be on the market in October 2014.

1.What is the arc coating machine?

Among several PVD (physical vapor deposition) methods, in which a metal is melted in a vacuum to form a thin film, our new machine adopts an arc discharge method, in which arc discharge is mainly used for vaporizing and depositing the metal. This type of film formation is characterized by fast deposition and high adhesion between the film and substrate (the target material to be coated), and suitable for surface treatment of cutting tools (e.g. drills, end mills, and inserts), gear cutting tools (e.g. hobs and pinion cutters), and metal molds. If treated with this coating, these products will have higher surface smoothness, high-temperature durability and wear resistance, which contribute to a significant improvement in the products' life and performance.

2.Features of the new coating machine

(1) Reduction of the cost of the cathode material by 75%

The cathodic arc evaporation source is enlarged 2.5 times in diameter. The position of the arc spot, where the arc discharge occurs, is controlled by a magnetic field to create uniform erosion. These improvements contribute to extending the material life 4.5 times. As a result, the cost of the cathode material has been reduced by 75%. (All figures mentioned above are ratios to those of our previous model.)

(2) Reduction of cycle time by 50%

The inside of the vacuum chamber and the exhaust pipe routing to the vacuum pump have been optimized to double the effective pumping speed. In addition, the capacity of the substrate heater has been increased 1.8 times. These modifications enable this machine to exhaust gas impurities in a shorter time, reducing the total cycle time by 50%. (This is an example of TiN coating and all figures mentioned above are ratios to those of our previous model.)

(3) Improvement of the work environment by collecting dust in a booth when unloading the substrate

With our previous machine, the dust generated when the vacuum chamber was opened degraded the entire work environment in the machine room. However, by installing a booth to enclose the door for unloading the substrate and collecting the dust in the booth, the factory environment can be improved. Nippon ITF Inc. is the first company to install such a booth in a coating machine.

Our company aims not only to expand its market share in Japan, but also to sell the machine in China, Southeast Asia and India, where automotive industries are growing. Sales of this machine are expected to be ￥400 million in fiscal 2015.