

Brooks Application Notes

LIFE SCIENCE

REF. # LS002

Precision Spray Coating

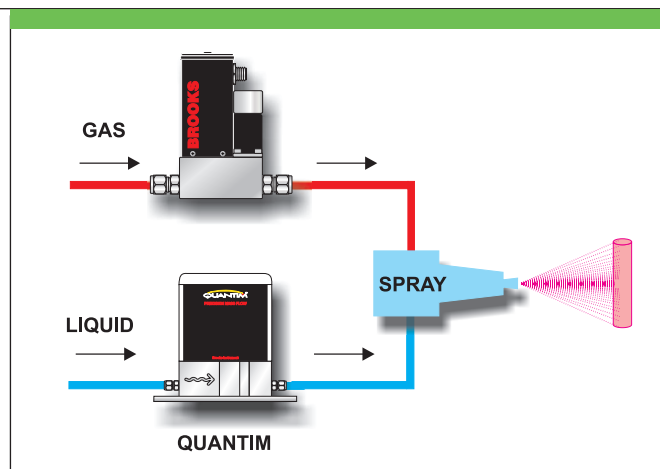
THE CHALLENGE

For precision spray coating applications, controlling and monitoring the liquid mass flow to the spray nozzle has a direct effect on the coating thickness and uniformity on the object being coated. Controlling the gas flow to the spray nozzle affects the droplet size which determines the efficiency of the process. Both of these contribute to a quality coating and an efficient system, benefits of which are particularly important in precision applications, such as medical device coating. Examples of these include coating arterial wires with lubricant or cardiac stents with polymer drugs. There are many other types of precision spray applications that also utilize the Brooks controlled fluid delivery solution approach.

In the medical example, coatings are applied to the surface of arterial guide wires to reduce friction of the wire in the artery. Initial product development used a syringe pump to deliver the fluid, which did not provide continuous delivery of liquid to the spray nozzle. This resulted in an inconsistent coating. Another problem was that the syringe needed to be constantly refilled, which held up production. To control gas flow to the nozzle, customers often use pressure regulators, which approximate the required gas feed through trial and error and provide no positive feedback for process quality documentation. By using a gas mass flow controller, the flow to the spray nozzle is consistent and a signal of actual gas flow is available for documentation.

THE BROOKS SOLUTION

A Brooks QUANTIM[®] Coriolis mass flow meter, Model QMBM, with an external valve provides the perfect solution. The coating fluid is pressurized in a high purity bladder tank. A PLC provides the PID control logic between the QUANTIM meter and the external valve. In addition, the PLC operates the valves which allows the system to be in standby mode between spray cycles. In addition to the benefits of better control and higher quality coating, QUANTIM provides positive feedback of the amount of material being applied to the surface for quality control documentation.



BROOKS PRODUCTS



Model QMBM



Model SLA5850S