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Dragierdüsen für die Lebensmittel- und Pharmaindustrie

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Perfect coating

Coating nozzles for the food and pharmaceutical industries

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Coating nozzle with heating jacket

Coating with sugar solution or chocolate is not only relevant in the food industry. In the pharmaceutical industry too, coating with sugar is used to mask taste and to preserve. Whilst traditionally the sugar solution is applied to the coated item by hand, the application in industrial processes is now carried out using nozzles, in particular those with a fan-shaped spraying pattern.

Coating nozzles with heating jacket Düsen-Schlick has revised its flat jet nozzles with the aim of developing a coating nozzle that does justice to modern manufacturing processes. To begin with, the number of individual components has been reduced compared to the original model, which greatly simplifies assembly and dismantling. Only one tool is necessary; all other components can be assembled by hand. In consideration of the strict hygiene regulations of the food and pharmaceutical industries, avoiding dead spaces and having nozzles that are easy to clean are expected as standard, just like using pharma-ceutical-suitable materials (1.4404 – AISI 316 L stainless steel, EPDM O rings, FDA-compliant). The nozzles can be dismantled completely into all their constituent parts and cleaned using the normal cleaning agents. With an overall height of 80 to 100 mm the nozzles are also suitable for use in small coating pans or for laboratory coating. A pneumatically controlled closing needle enables the nozzles to be opened and closed during spray pauses, or intermittent futions modes. The needle reliably closes the nozzle, even when liquid present at the nozzle is under pressure. This means, for example, that even whilst a process is underway the nozzle tip can be replaced with a new one that has a larger output or in the case of a defect. As standard, however, the function of the needle is only guaranteed up to a liquid pressure of 10 bar. There is, however, also a solution for high-pressure applications: a model with double operating cylinders in which the needle is always opened and closed via a separate air supply. The performance range of the nozzles varies, depending on density, viscosity and solid content of the liquid, from 0.5 to 7.5 l/min at 3 bar. The nozzle tips are available in a wide range of outputs and spray angles.

Heatable and convertible

Since sugar solutions with a high solid content have a known tendency to deposit sediment, coating nozzles are equipped with a liquid return system. The sugar solution can therefore be pumped round in a circuit, which avoids build-up in the spray arm and the nozzles. In some cases, especially during coating with chocolate, it is also necessary to heat the liquid in order to reduce the viscosity to a sprayable level. The nozzles can be heated with the help of a heating jacket and then the liquid can be tempered until it reaches the nozzle exit. This also prevents the hardening of chocolate during interruptions in production. The heating jacket is placed on the nozzle from the outside and can be easily removed for cleaning. The heating jacket may also be rotated which enables the individual alignment of connections. Hot water is a suitable example of a heating medium.

In the pharmaceutical industry, both film coating and sugar coating processes or a combination of the two are widely used. These types of coating are mostly carried out in the same machine, although not using the same nozzles. In the field of film coating, two-substance nozzles which use Schlick antibearding technology have become successfully established all over the world. Conversion kits are available for these nozzles, to enable simple conversion from film to sugar coating. The need to change fewer components means that the film coating nozzles can be used for sugar coating. These conversion kits are available for laboratory nozzles as well as for production nozzles. Large-scale modifications to the existing spray arm are not necessary. A similar exchange system was also implemented for the Professional Coating Arm (PCA). Here, all the film coating nozzles are replaced by sugar coating nozzles.



The need to change fewer components means that the two-substance nozzles used for film coating (left) can be converted to pressure nozzles (right) for sugar coating.