



## Nozzles for the wood industry

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Professional spraying in industrial wood machining, especially the production of boards, is gaining increasingly in importance. This is not just because of the increasing cost of energy and raw materials; it is also because increasingly high demands for quality in the manufacture of wooden boards encourage the demand for suitable processes and possibilities, in order to apply liquids as homogeneously as possible onto prepared base materials. A frustrating factor is that these materials vary depending on the type of board, such as medium density fibreboard (MDF), hard wood fibre building board, chipboard or oriented strand board (OSB), which in turn have an effect on the spraying.

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medium density  
fibreboard

However, the production of all these types of boards is similar. The individual fibres or shavings are transported along a large conveyor line and sprayed and moistened with release agent, water or glue. Finally, the treated base material is pressed into boards.

### Gluing, humidifying, coating ...

When manufacturing chipboard or MDF board, the gluing process is carried out differently. While the application of glue to the shavings for chipboard takes place in mixing drums, the fibres for MDF board are processed in a blowline (for wet gluing) or in a hopper (for dry gluing). The aim here is to distribute the glue in the blow pipe as homogeneously as possible, because an uneven application of glue leads to staining on the fibreboard and therefore a decrease in quality.

As the shavings and fibres are transported along the conveyor lines to the presses, they are moistened with specially designed nozzles or various additives are applied. Here, the flat jet nozzles are used almost exclusively because of their spray features. These nozzles are used as pressure nozzles (single-substance nozzles) or two-substance nozzles. When two-substance nozzles are used, a second substance (air or steam) is used as an auxiliary atomisation medium.

### Pressure nozzles or two-substance nozzles?

Both nozzle systems offer different conditions, which must be considered during the production process: for example, the lower purchase price as well as the low operational costs of pressure nozzles prove to be a financial advantage, compared to those of two-substance nozzles. Other beneficial factors of the pressure nozzle system are the maximum attainable atomisation angle of 120° and the small atomisation momentum due to the low drop speed. With this atomisation system, the achievable drop size is directly proportionally to the current liquid pressure difference: the higher the pressure, the finer the spray. Experience shows that with pressure nozzles, drop sizes smaller than 100 micrometres (with flat jet nozzles) or 50 micrometres (with hollow cone nozzles) cannot be achieved. However, problems with atomisation, even at high pressures, emerge with more viscous media. With suspensions with a high solid content, pressure nozzles thus react sensitively in continuous operation. Furthermore, the control range is limited by the laws of physics. For example, to double the flow rate of a nozzle, the liquid pressure must be quadrupled.



Modell 650/0  
(basic version)



Modell 650/7-1  
(pneumatic control)



Modell 650 Form 8  
(with electromagnetical  
open/close control)

The Schlick flat jet nozzle model 650 is used in its various design forms as a pressure nozzle for industrial wood machining.

In contrast to pressure nozzles, two-substance nozzles work with a second medium, such as air or steam, for example. In the external-mix versions both mediums can be regulated independently from each other. The proportion of air or steam to liquid defines the drop size, and this makes sizes of even 10 – 15 micrometres feasible. The separate control of the two media allows for a liquid control range of 1:8. Even highly viscous media can be atomised homogeneously with this technology without being susceptible to blockages.

## A solution with a twist: ABC technology



Anbackproblematik bei der herkömmlichen 2-Stoff-Flachstrahldüse mit „Hörnerkappe“ ohne ABC-Technik

In Düsen-Schlick's product range, model series 930 for the two-substance flat jet nozzle is conventionally designed: air cap with "horns" for the production of the flat jet. The experts at Schlick have developed an innovative solution to the generally known problem of sticking and the related inhomogeneous spray pattern, caused by turbulence in the orifice, the "horns". The two-substance flat jet nozzle model 930 PRO ABC uses the new, patented anti-bearding technology (ABC technology).



2-Stoff-Flachstrahldüse Modell 930 Pro ABC mit ABC-Technik (Anti-Bearding-Technik), die Ablagerungen und Anbackungen an der Düsenmündung verhindert

ABC technology prevents debris build-up and sticking at the nozzle orifice by avoiding turbulence in the rounded air cap. In the production process, the ABC system increases process reliability, avoids downtimes for cleaning and coats surfaces evenly with a homogeneous spray pattern.

In the field of board production in industrial wood machining, fibre mats are moistened with steam immediately before being pressed. Equally important for a high-quality product is that the fibres are sprayed at a suitable steam pressure and with the correct amount of steam. For industrial use, the Laval nozzle model 630 from Schlick can be used in this industry, as well as other nozzles.

## Nozzles for oil lubrication



Smooth jet nozzle from Schlick, model 629

As in many other industrial fields, it is also important in the wood machining industry to maintain sufficient and continual lubrication of the roller presses, due to the high loads. A smooth jet nozzle from Schlick, such as model 629, is suitable for precise spraying. However, choosing the right nozzle always depends on a number of factors. Depending on the point of installation or on the atomisation medium, alternative nozzle systems such as hollow cone nozzles, as pressure variants, or two-substance nozzles can be used for this application. Consulting experts in the field of nozzle technology is always recommended.