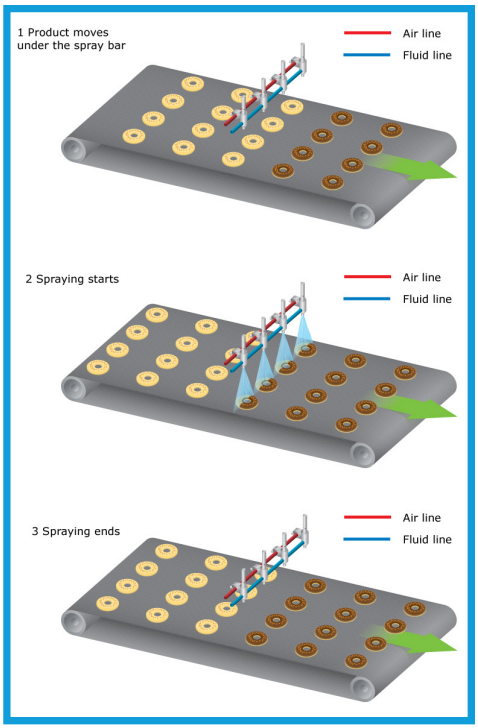
NOZZLE KNOWLEDGE SERIES
ARTICLE 6: FLUID DISTRIBUTION

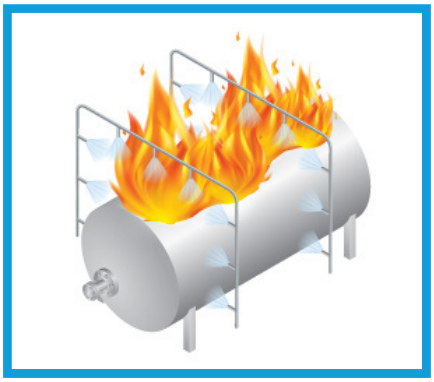
This is the sixth out of eight articles from our nozzle knowledge series. Once the destination of the spray has been established, some variations could still occur in fluid distribution.



Why is this important?

Applications such as coating, for example, need to achieve very even distributions of spray to ensure the coating is consistent.

This is not the case for other applications such as firefighting which requires an uneven distribution of spray; the variable densities of spray within some spray nozzles can help overcome the heat currents and carry more fluid into the fire.



Even and uneven can both be important for certain applications. But for some, it's not important at all.

What affects the fluid distribution within a spray pattern?

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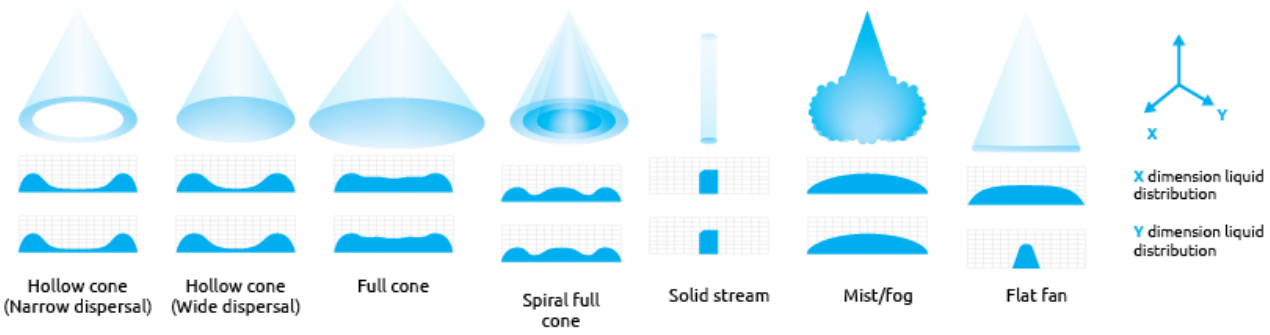
It's all about the NOZZLE DESIGN.

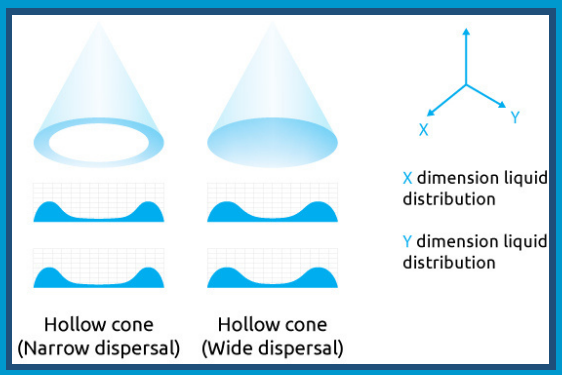
The narrower the spray angle is, the more even the fluid distribution will be.

Here is an example of the fluid density distributions of various spray patterns in two dimensions, (looking face on to the nozzle).



HOLLOW CONE

Hollow cone nozzles have either a wide or narrow dispersal design.

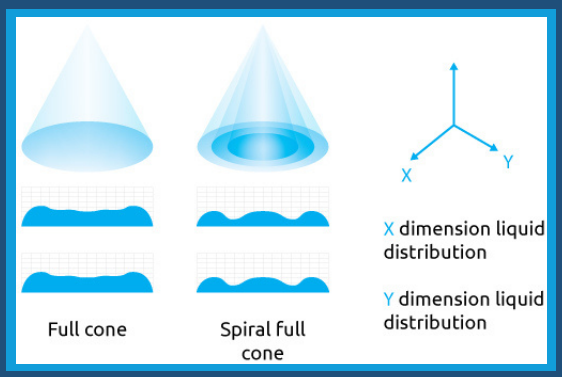


SPIRAL CONE

Spiral cone nozzles will have considerably more variation.

FULL CONE

Full cone nozzles tend to naturally have some additional concentration of fluid at the edges and this amount will vary depending on the design of the nozzle.



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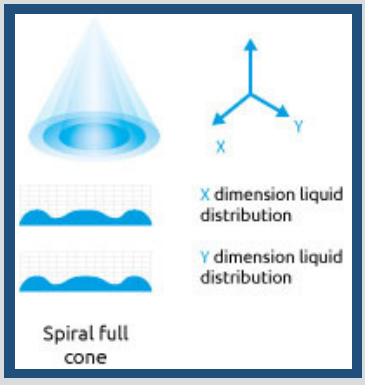
SPIRAL CONE

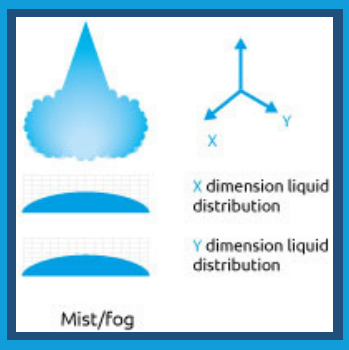
This variation is rippled throughout the circular spray pattern due to the concentric, overlapping hollow cone patterns that form the uneven spray pattern.

This nozzle type is not suitable for applications that require an even coverage, such as coating.
They are, however, ideal for the fire suppression application because the bands of high density carry the fluid into the fire.



MIST/FOG

Mist/fog nozzles aren't a true spray pattern as they will either be a hollow or full cone spray pattern that generates the mist/fog. The pattern will be very true up close to the nozzle, but as it turns into a mist/fog, it will start to level out and form an even distribution of fluid. The air currents easily waft it around and there are extremely small drop sizes within the fluid. And depending on where the air is going, there may be some concentration in one area or another.



FLAT FAN

Flat fan nozzles naturally taper at the edges to form an even distribution for most of the fan pattern. There will be less fluid at the edges. This can be compensated for; if an even distribution is desired for an application such as coating, flat fan patterns can be overlapped to achieve a consistent fluid distribution across the whole spray pattern.

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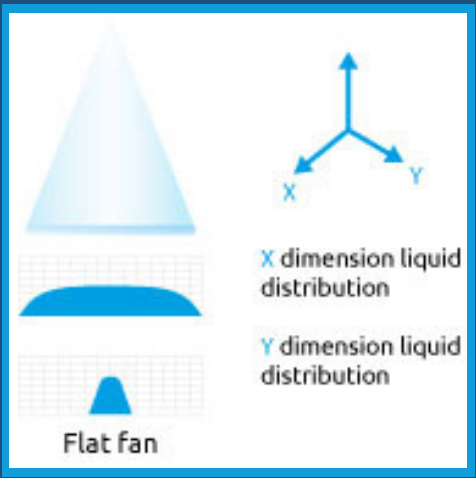
FLAT FAN

Some specialist flat fan nozzles are designed to generate a square flat fan pattern with very little tapering at the edges.



If you have any questions on fluid distribution within spray patterns, please don't hesitate to get in touch with one of our knowledgeable experts.

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