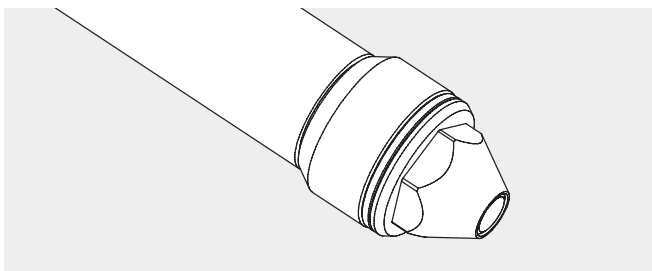


Special twin-fluid nozzles for DeNOx applications

Laval nozzle

In DeNOx applications with SNCR processes, small Laval nozzles are usually used. These nozzles are characterized by a high discharge velocity, enabling the optimum droplet spectrum to be introduced into the reactor

with a great penetration depth. Our research has shown that the discharge velocity has a greater effect on the denitri-fication process. Moreover, these nozzles without internals are extremely insensitive to clogging and can be precisely controlled.



Special properties



Small spray angle
(15°), suitable for small cross-sections and horizontal ducts



Turn-down ratio
of 20:1 (in some cases up to 40:1)



Typical pressure range
Liquid 1-6 bar, g
Atomizing air 1-6 bar, g



Adjustment of the droplet spectrum
by changing the air/ fluid ratio



Very fine droplet spectrum



Spray pattern of a Laval nozzle

For SCR processes and special SNCR processes there are special nozzles which have been developed to meet the specific requirements. The same principles regarding control and operation apply for all twin-fluid nozzles, irrespec-tively of the type.

Laval flat fan nozzle

The Lechler Laval flat fan nozzle atomizes according to the principle of inside mixing. The air/fluid mixture exits via three outlet holes creating a wide and flat spray with an even better surface coverage.

The droplet spectrum and the pulse of the droplets can be adapted by changing the air/ fluid ratio.

Special properties



Wide and flat jet,
spray angle 60°



Turn-down ratio
of over 10:1



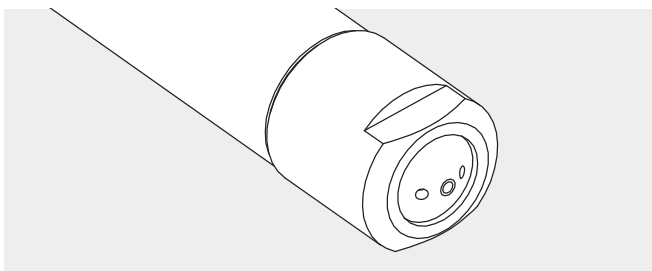
Typical pressure range
Liquid 1-5 bar, g
Atomizing air 1-5 bar, g



Spray alignment possible



Adjustment of the droplet spectrum
by changing the air/ fluid ratio

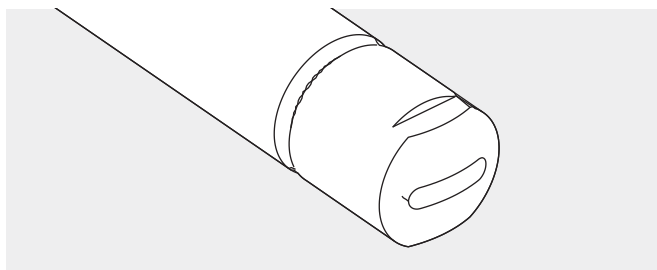


Spray pattern of the flat fan nozzle

MasterNOx® for DeNOx processes

The Lechler MasterNOx® nozzles are usually used in the non-catalytic denitrification of flue gases (SNCR process). They are usually designed as flat fan nozzles and achieve a high spraying range to make the liquid penetrate as far as

possible into the boiler. The nozzle specially developed for the retrofitting of existing power plants is characterized by a small outer diameter, so that it can fit between the pipes of the boiler wall. It can also have a protective flow of barrier air around it without the need for the pipes to be bent aside.



Special properties



Spray angle
15°, 30°, 60°



Turn-down ratio
of over 50:1



Typical pressure range
Liquid 1-10 bar, g
Atomizing air 1-6 bar, g



Adjustment of the droplet spectrum by changing the air/water ratio



Spray pattern of the MasterNOx® nozzle 30°

1AW nozzle

The Lechler 1AW nozzle works according to a newly developed and patented atomization principle. It divides the supplied atomizing air into a primary and secondary air flow. Thanks to the specific inflow geometry, the secondary air exits through an annular gap causing a very fine atomization in the edge region of the spray.

This twin-fluid nozzle enables finest droplet spectra and shortest evaporation distances while also allowing very good controllability of the flow rate. Cluster heads designed specifically for these nozzles multiply the flow rates and adapt the spray pattern to the requirements at the point of injection.

Special properties



Spray angle of the individual nozzle
15° as full cone



Turn-down ratio
of 10:1



Typical pressure range
Liquid 1-5 bar, g
Atomizing air 1-5 bar, g



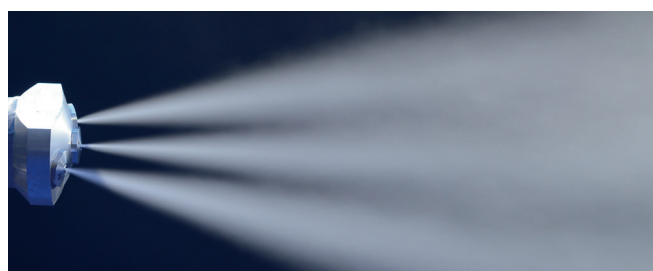
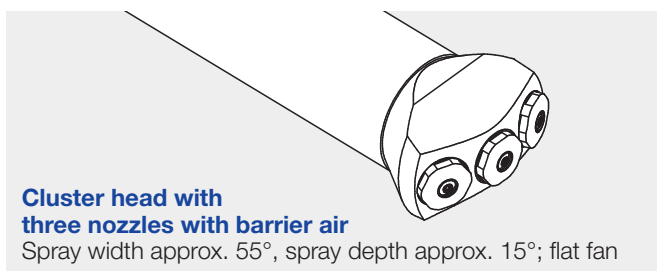
Particularly fine droplets thanks to tertiary atomization



Design
as single or bundle nozzle lances



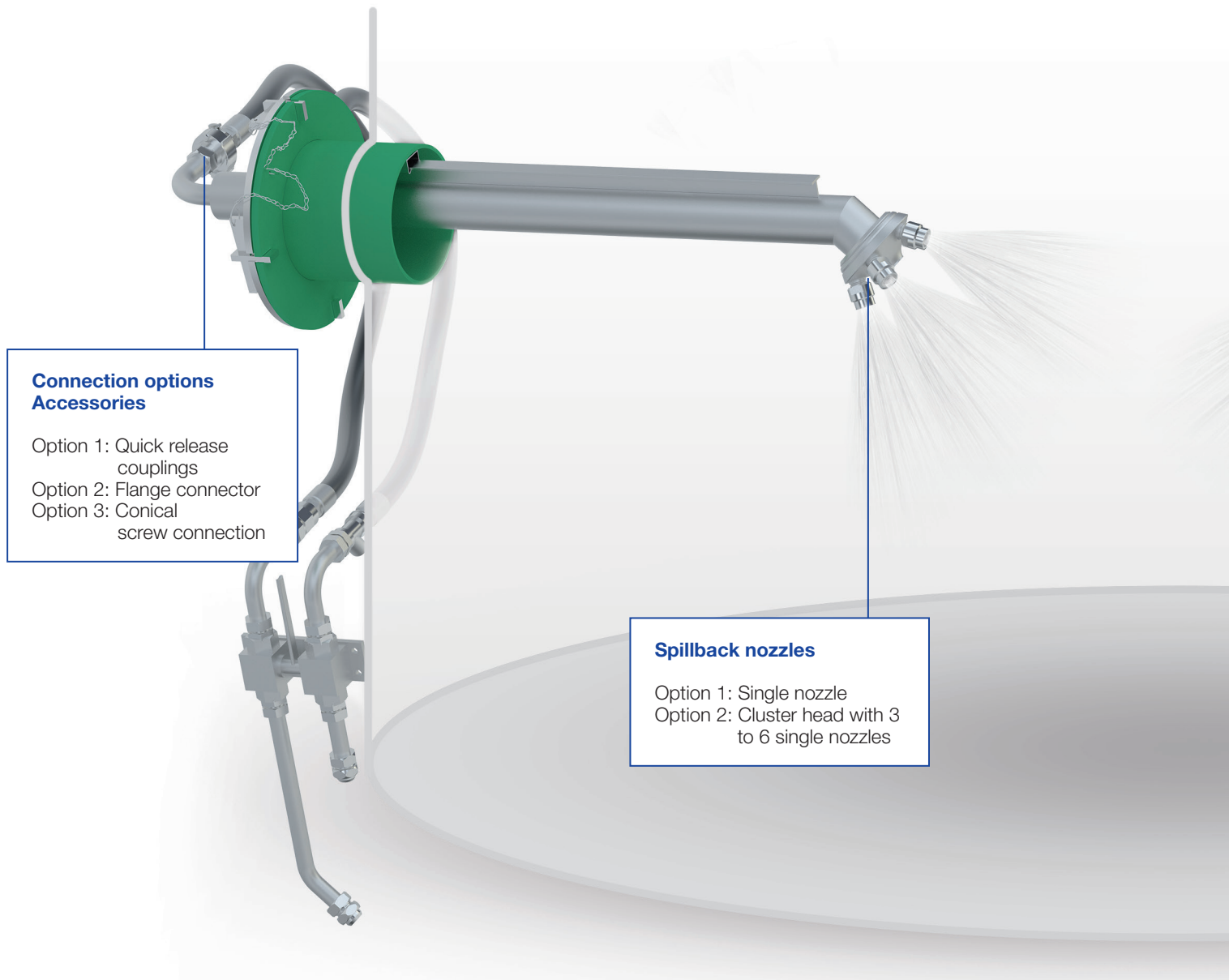
Adjustment of the droplet spectrum by changing the air/fluid ratio



Spray pattern of the 1AW nozzle

Lechler nozzle lances -

Highest spraying accuracy in the flue gas duct



Connection options Accessories

- Option 1: Quick release couplings
- Option 2: Flange connector
- Option 3: Conical screw connection

Spillback nozzles

- Option 1: Single nozzle
- Option 2: Cluster head with 3 to 6 single nozzles

Lechler nozzle lances ensure optimal spray placement and alignment in flue gas ducts. The choice of nozzles and the consideration of local conditions and process-related matters means they can be individually adapted to the respective requirements.

The nozzles themselves have a low-maintenance design and can be quickly cleaned or exchanged with minimal effort.

The robust, high-quality stainless steel construction ensures a high degree of functional reliability. Lances are available in a variety of material to suit specific process requirements.

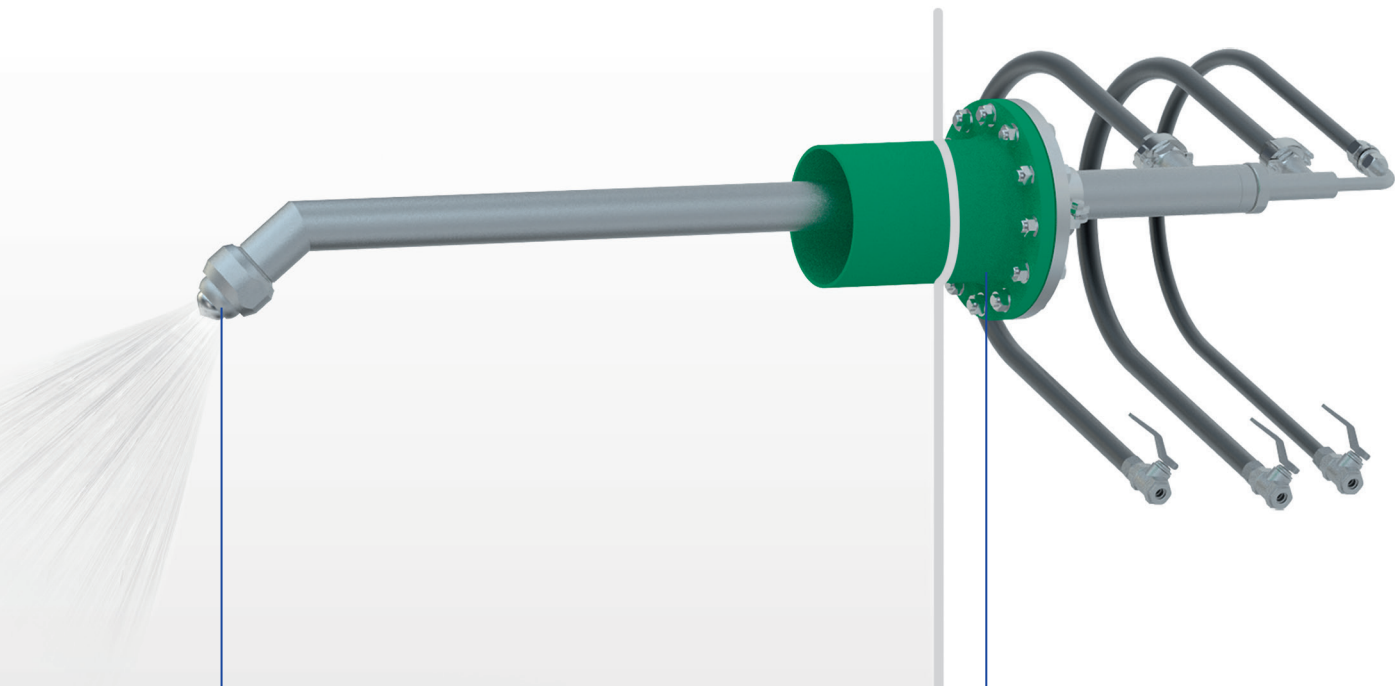
Lechler nozzle lances are available with many options, including but not limited to:

- Protection tube to increase the service life in case of higher temperatures, high dust loads and aggressive gases, with barrier air as an option.

- Wedge flange, standard flange and special flange in accordance with customer requirements
- Guide rail to facilitate lance installation
- Shifting device to change the insertion length – with or without gastight sealing
- Expansion joint or stuffing box for expansion compensation at high temperatures
- Assembly connecting piece with flange connector for welding onto flue gas duct

- Further special customizations including wear protection, insulation, water cooling or coating
- Pre-assembled accessory kits for process media connections (e.g. quick release couplings, shut-off ball valves, strainers)

Lechler nozzle lances are manufactured in line with ultramodern production processes and according to the state of the art.

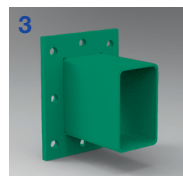
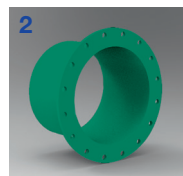
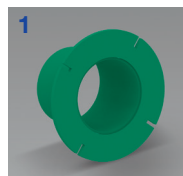


VarioJet® nozzle

- Option 1: without protection tube and without protection cap
- Option 2: with protection tube and with protection cap

Flange connections

- Option 1: Wedge
- Option 2: Standard flange e.g. DIN, ANSI etc.
- Option 3: Special flange according to customer specification



Material

Lances are manufactured from stainless steel (316/316L) as standard, but depending on requirements can also be made of chemical and high-temperature resistant materials.

Accessories are available in galvanized steel or stainless steel and the hoses are available in rubber or stainless steel.

Talk to us

Each gas cooling tower and flue gas duct is different. Which is why standard solutions do not always make sense. Speak with us and let us work together to find the best solution for your purposes.

