

# ...by APPLICATION

Choosing the correct nozzle for your application from BETE's 20,000+ products can be daunting. To help, here is a list of some of the more common uses for spray nozzles. Each application is followed by several BETE nozzle series which have been used in this application. The series used most often is listed first.

The operating pressures, flow rate, and spray angle ranges are typical for each application. The full operating range for each series is generally broader.

If you don't see your application, or need advice making a nozzle selection, please **call us** at 413-772-0846.

## Absorption

*Scrub hydrofluoric acid, ammonia, and other highly soluble gases*

<b>TF</b> 3.5-7 bar 2-10 l/min 90°-120° p. 20	<b>TFXP</b> 3.5-7 bar 2-10 l/min 90°-120° p. 21	<b>TH</b> 0.5-1 bar 371-2230 l/min 54°-95° SNBSC avail. pp. 50, 51	<b>MaxiPass</b> 0.5-1 bar 371-2230 l/min 90°-120° lumpy liquids pp. 26, 27	<b>NC</b> 0.5-1 bar 371-2230 l/min 90°-120° pp. 34, 35	<b>SC</b> 0.5-1 bar 371-2230 l/min 90°-120° metal nozzle pp. 32, 33
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## Additives

*Apply small volumes of a solution onto moving product or into a mixture*

<b>XA</b> 1.5-4 bar 0.4-7 l/h 20°-60° 2.4-14 Nm³/h pp. 76-93	<b>NF</b> 4-7 bar 0.1-0.4 l/min 65°-120° p. 61	<b>BJ</b> 4-7 bar 0.03-0.4 l/min 50°-80° pp. 54, 55	<b>SAM</b> 0.7-1 bar 20°-70° 0.8-7.2 Nm³/h pp. 90, 91
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## Aeration

*Aerate waste water treatment, fish ponds, and impoundment ponds*

<b>TF</b> 1.5-3.5 bar 10-40 l/min 90°-120° p. 20	<b>TFXP</b> 1.5-3.5 bar 10-40 l/min 90°-120° lumpy liquids p. 21	<b>MaxiPass</b> 0.7-3 bar 5-40 l/h 90°-120° lumpy liquids pp. 26, 27
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## Air and Steam

*Clean or dry product moving past nozzle; inject gases and odorants into process lines; sparging; bubbling*

<b>NF (D,S)</b> 3-5 bar 4.0-102 l/min 0.6-90 Nm³/h pp. 62, 63	<b>FF</b> 3-5 bar 4.0-102 l/min 0.3-90 Nm³/h pp. 64, 65	<b>SPN</b> 3-5 bar 4.0-102 l/min 0.6-90 Nm³/h p. 69
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## Air Conditioning

*Cooling air at gas turbine inlets*

<b>PJ</b> 4-70 bar 0.05-5.34 l/h 90° p. 71	<b>XA</b> 1.5-4 bar 0.4-7 l/h 20°-60° 2.4-14 Nm³/h pp. 76-93	<b>MicroWhirl</b> 70-200 bar 0.04-0.60 l/min 20°-70° p. 70
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## Air Nozzle

*Blowoff nozzle uses compressed air only*

<b>FINZ</b> 0.7-6 bar 7-65 Nm³/h p. 117
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## Blowoff Nozzles

*Remove water or dust from strips and conveyors*

<b>NF</b> 3-5 bar 4.0-102 l/min 0.6-90 Nm³/h p. 61	<b>FF</b> 3-5 bar 4.0-102 l/min 0.3-90 Nm³/h pp. 64, 65	<b>SPN</b> 2-30 bar 3.2-100 l/min 0.6-90 Nm³/h p. 69	<b>FINZ</b> 0.7-6 bar 7-65 Nm³/h p. 117
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### Color Code:

- Full Cone
- Hollow Cone
- Fan
- Misting
- Air Atomizing
- Tank Washing
- Special Purpose

**Car Wash Nozzles**

High pressure wash nozzles used in automated car wash units.

<b>NF</b> 3-5 bar 4.0-102 l/min 120° p. 61	<b>FF</b> 3-5 bar 4.0-102 l/min 105°-145° pp. 64, 65	<b>SPN</b> 2-30 bar 3.2-100 l/min 35°-50° p. 69
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**Clean in Place Nozzles**

Rotating and stationary bottle, drum, and tank washing nozzles

<b>HydroWhirl S</b> 0.5-4 bar 4.39-338 l/min 360° p. 99	<b>HydroWhirl Poseidon</b> 0.7-4 bar 58.3-333 l/min 360° p. 100	<b>HydroWhirl Orbitor</b> 3-10 bar 80-600 l/min 180°, 360° p. 101	<b>CLUMP</b> 3-4 bar 54.3-254 l/min 360° lumpy liquids p. 103	<b>LEM</b> 3-4 bar 33.2-451 l/min 360° even rinsing p. 104	<b>TW</b> 2-4 bar 19.3-232 l/min 180°- 270° very compact p. 102
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**Clog-resistant Nozzles**

Wide free passage to spray lumpy, viscous liquids with less clogging

<b>MaxiPass</b> 0.2-5 bar 2.8-3400 l/min 30°-120° lumpy liquids pp. 26, 27	<b>TFXP</b> 0.5-20 bar 9.7-10700 l/min 90°-120° lumpy liquids p. 21	<b>TH</b> 0.2-3 bar 15.3-2230 l/min 54°-95° SNBSC avail. pp. 50, 51	<b>WTZ</b> 0.5-10 bar 0.8-70.4 l/min 90°-110° p. 41	<b>SPN</b> 0.7-15 bar 1.9-177 l/min 15°-50° p. 69	<b>FF</b> 0.2-10 bar 0.05-757 l/min 145° pp. 64, 651
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**Coating**

Apply thin coatings (wet or dry) on product moving past nozzles

<b>XA</b> 1.5-4 bar 11-265 l/h 20° 0.6-16 Nm³/h pp. 76-93	<b>NF (D,S)</b> 2-5.5 bar 0.8-64 l/min 50°-120° pp. 62, 63	<b>BJ</b> 2-5.5 bar 0.3-40 l/min 25°-80° pp. 54, 55	<b>PJ</b> 4-7 bar 0.05-1.7 l/min 90° p. 71	<b>L</b> 3-7 bar 1-4 l/min 90° p. 73	<b>SAM</b> 0.7-1 bar 20°-70° 0.8-7.2 Nm³/h pp. 94, 95
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**Concrete Curing**

Humidify concrete to control curing process

<b>XA</b> 2-4 bar 3.2-93 l/hr 20°- 70° 0.9-24 Nm³/h pp. 76-93	<b>PJ</b> 5-70 bar 0.058-5.34 l/min 90° p. 71	<b>MicroWhirl</b> 70-200 bar 0.04-0.60 l/min 20°-70° p. 70
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**Cooling: Deluge**

Process cooling for food, chemical, and industrial processes

<b>TF</b> 0.7-1.5 bar 45-945 l/min 90°-120° p. 20	<b>MaxiPass</b> 0.2-1.5 bar 23-940 l/min 90°-120° lumpy liquids pp. 26, 27	<b>WL</b> 0.3-1.5 bar 2-53 l/min 80°-120° p. 25	<b>NC</b> 0.2-1.5 bar 23-940 l/min 90°-120° pp. 34, 35	<b>TC</b> 0.1-0.7 bar 820-13250 l/min 60°-120° p. 39
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**Cooling: Evaporative**

Cool hot (+ 300°F) flue gases prior to entering a baghouse or temperature-sensitive equipment

<b>SpiralAir</b> 3-7 bar 1.2-68 l/min 20°-60° 40-220 Nm³/h pp. 96, 97	<b>TF - full</b> 4-10 bar 6-68 l/min 90°-120° p. 20	<b>TF - hollow</b> 4-10 bar 6-68 l/min 90°-120° p. 45	<b>TFXP</b> 4-10 bar 6-68 l/min 90°-120° lumpy liquids p. 21	<b>L</b> 4-14 bar 1.2-21 l/min 90° p. 73	<b>P</b> 4-14 bar 1.2-21 l/min 90° p. 72	<b>XA</b> 1.5-4 bar 11-100 l/h 20°-60° 1.2-19 Nm³/h pp. 76-93	<b>MicroWhirl</b> 70-200 bar 0.04-0.60 l/min 20°-70° p. 70
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**Cooling: Parts**

Cool hot parts on conveyors from pre-treatment ovens

<b>MaxiPass</b> 0.7-4 bar 4.77-888 l/min 90°-120° lumpy liquids pp. 26, 27	<b>WL</b> 0.7-4 bar 0.5-94 l/min 90°-120° p. 24	<b>SC</b> 0.7-4 bar 11.3-640 l/min 90°-120° metal nozzle pp. 32, 33	<b>TFXP</b> 0.7-4 bar 2.7-588 l/min 90°-120° p. 21	<b>TF</b> 0.7-4 bar 2.7-588 l/min 90°-120° p. 20	<b>MPL</b> 0.7-6 bar 0.44-7.97 l/min 90°-120° p. 25
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**Cooling: Pond**

Cool pond water; heat recovery

<b>TFXP</b> 0.5-1 bar 75-454 l/min 90°-120° lumpy liquids p. 21	<b>TF - full</b> 0.5-1 bar 75-454 l/min 90°-120° p. 20	<b>TF - hollow</b> 0.5-1 bar 75-454 l/min 90°-120° p. 45	<b>TH</b> 0.2-1 bar 61-341 l/min 80°-100° pp. 50, 51	<b>MaxiPass</b> 0.7-1.5 bar 23-341 l/min 90° pp. 26, 27
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**Debarking**  
Remove bark from logs prior to pulping

<b>NF</b> 3-70 bar 4-5250 l/min 30°-90° p. 61	<b>SPN</b> 3-4 bar 7.9-91.2 l/min 35°-50° p. 69
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**Disposal: Evaporative**  
Evaporate tailing ponds or volatile waste

<b>TFXP</b> 3-8 bar 10-265 l/min 90°-120° lumpy liquids p. 21	<b>TF - full</b> 3-8 bar 10-265 l/min 90°-120° p. 20	<b>TF - hollow</b> 4-10 bar 6-68 l/min 90°-120° p. 45	<b>MaxiPass</b> 3-8 bar 21-246 l/min 90°-120° lumpy liquids pp. 26, 27
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**Distribution**  
Distribute fluids uniformly onto packing, trickle bed media, and horticultural beds; VOC stripping

<b>NC</b> 0.2-1.5 bar 11-13250 l/min 90°-120° plastic nozzle pp. 34, 34	<b>SC</b> 0.2-1.5 bar 7.6-1597 l/min 90°-120° metal nozzle pp. 32, 33	<b>MaxiPass</b> 0.2-1.5 bar 4-1930 l/min 90°-120° lumpy liquids pp. 26, 27	<b>TC</b> 0.1-0.7 bar 820-13250 l/min 60°-120° p. 39	<b>IS</b> 0.05-0.7 bar 2-435 l/min used in pairs lumpy liquids p. 114	<b>WL</b> 0.3-1.5 bar 4-57 l/min 90°-120° p. 24
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**Drying**  
Remove excess water after washing or rinsing

<b>NF</b> 3-5 bar 0.6-90 Nm³/h p. 61	<b>FF</b> 3-5 bar 0.3-90 Nm³/h pp. 64, 65	<b>SPN</b> 3-5 bar 0.6-90 Nm³/h p. 69	<b>FINZ</b> 0.7-6 bar 7-65 Nm³/h p. 117
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**Dust Control: Air-handling Ducts**  
Suppress stone, coal and other dust in vent ducts; control paint spray carry-over

<b>TF</b> 2-5.5 bar 4.5-43 l/min 90°-120° p. 20	<b>TFXP</b> 2-5.5 bar 19.5-43 l/min 90°-120° lumpy liquids p. 21	<b>MaxiPass</b> 3-5.5 bar 9-47 l/min 90°-120° lumpy liquids pp. 26, 27	<b>SpiralAir</b> 3-7 bar 1.2-68 l/min 20°-60° 40-220 Nm³/h pp. 96, 97	<b>L</b> 3-5.5 bar 1-13 l/min 90° very fine dust p. 73	<b>P</b> 3-5.5 bar 0.25-14.5 l/min 90° very fine dust p. 72	<b>MicroWhirl</b> 70-200 bar 0.09-0.28 l/min 90° p. 70
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**Dust Control: Area**  
Suppress dust at conveyor transfer points, dump pits, and loading hoppers

<b>TF</b> 2-5.5 bar 4.6-43 l/min 90°-120° p. 20	<b>TF150</b> 2-5.5 bar 20-57 l/min 150° wide coverage p. 20	<b>MaxiPass</b> 3-5.5 bar 9-47 l/min 90°-120° lumpy liquids pp. 26, 27	<b>TFXP</b> 2-5.5 bar 20-57 l/min 90°-120° lumpy liquids p. 21	<b>TF170</b> 2-5.5 bar 20-57 l/min 170° wide coverage p. 20	<b>L</b> 3-5.5 bar 1-14.5 l/min 90° transfer point p. 73
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**Etching: Electronics**  
Wash and rinse circuit boards and wafers

<b>WL</b> 0.7-3 bar 0.5-15.1 l/min 60°-120° p. 24	<b>NF (D,S)</b> 0.7-3 bar 0.5-26.5 l/min 50°-120° pp. 62, 63	<b>SPN</b> 0.7-3 bar 1.8-15 l/min 35°-50° p. 69	<b>FF</b> 0.2-1.5 bar 0.05-14 l/min 145° pp. 64, 65
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**EZ Change/ 1/4 Turn Nozzles**  
Quick change-out nozzle base assembly with 1/4-turn ramped engagement

<b>EZ</b> FF, NF, SPN 0.2-35 bar 0.05-162 l/min 0°-145° pp. 66, 67	<b>EZ</b> WL, TF 0.2-35 bar 0.13-206 l/min 30°-120° p. 30	<b>EZ</b> WL, TF, WT 0.2-35 bar 0.13-206 l/min 30°-120° p. 46
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**Color Code:**

- Full Cone
- Hollow Cone
- Fan
- Misting
- Air Atomizing
- Tank Washing
- Special Purpose

**Fire Protection:**

**Deluge**

Protect offshore platforms, storage tanks, hazardous loading areas, and equipment bays

**N**  
4-10 bar  
200-1300 l/min  
90°-120°  
FM approved  
p. 106

**TFXP**  
4-10 bar  
200-1140 l/min  
90°-120°  
lumpy liquids  
p. 21

**MaxiPass**  
4-8 bar  
178-674 l/min  
90°-120°  
lumpy liquids  
p. 26, 27

**TF150**  
4-10 bar  
200-1140 l/min  
150°  
wide coverage  
p. 20

**Fire Protection:**

**Special**

Protect coal conveyors; fueling and vulcanizing cabinets; warehouses and munitions storage

**N**  
4-10 bar  
200-1300 l/min  
90°-120°  
FM approved  
p. 106

**TF29-180**  
4-10 bar  
35-246 l/min  
180°  
wide coverage  
p. 107

**SpiralAir**  
3-7 bar  
1-72 l/min  
20°-40°  
37-185 Nm<sup>3</sup>/h  
pp. 96, 97

**CW**  
3-14 bar  
1-8.3 l/min  
80°-120°  
p. 28

**Fire Protection:**

**Water Wall**

Protect personnel, evacuation muster areas, equipment, and structures from heat radiation

**TF**  
4-10 bar  
200-1140 l/min  
90°-120°  
p. 20

**TF150**  
4-10 bar  
200-1140 l/min  
150°  
wide coverage  
p. 20

**TF170**  
4-12 bar  
200-1140 l/min  
170°  
horiz. spray  
p. 20

**NF (D,S)**  
4-8 bar  
76-738 l/min  
90°-120°  
pp. 62, 63

**FF**  
4-8 bar  
64-570 l/min  
145°  
wall wetting  
pp. 64, 65

**TFXP**  
4-10 bar  
200-1140 l/min  
90°-120°  
lumpy liquids  
p. 21

**Foam Control**

Control build-up of foam in aeration and settling basins; mixing vessels and below weirs; and spillways

**MaxiPass**  
0.2-1 bar  
6-435 l/min  
90°-120°  
lumpy liquids  
pp. 26, 27

**WL**  
0.4-1.5 bar  
11-53 l/min  
90°-120°  
p. 24

**SC**  
0.2-1 bar  
6.3-320 l/min  
90°-120°  
pp. 32, 33

**TFXP**  
4-10 bar  
200-1140 l/min  
90°-120°  
lumpy liquids  
p. 21

**Fog Nozzles**

Fine atomization misting; movie special effects

**PJ**  
5-15 bar  
0.06-2.5 l/min  
90°  
p. 71

**TF - full**  
3-70 bar  
5.5-76 l/min  
90°-120°  
p. 20

**TF - hollow**  
4-10 bar  
6-68 l/min  
90°-120°  
p. 45

**XA**  
0.7-4 bar  
1.1-110 l/h  
20°-40°  
pp. 76-93

**UltiMist**  
40-150 bar  
5.3-84 l/hr  
50°- 110°  
p. 74

**MicroWhirl**  
70-200 bar  
0.04-0.60 l/min  
20°-70°  
p. 70

**Food Processing**

Applying flavorants or colorants

**XA**  
0.7-7 bar  
16-227 l/h  
20°-120°  
pp. 76-93

**FF**  
0.7-5 bar  
0.1-18.3 l/min  
145°  
pp. 64, 65

**Gas Scrubbing**

Spray reagent into gas

**STXP**  
0.4-1 bar  
227-2460 l/min  
90°-120°  
recycle slurry  
p. 23

**ST**  
0.4-1 bar  
227-2460 l/min  
90°-120°  
resist erosion  
p. 22

**MaxiPass**  
0.2-1.5 bar  
200-1930 l/min  
90°-120°  
recycle slurry  
pp. 26, 27

**TH**  
0.2-1.5 bar  
170-2300 l/min  
90°-120°  
SNBSC avail.  
pp. 50, 51

**NC**  
0.2-1.5 bar  
42-1597 l/min  
90°-120°  
plastic nozzle  
pp. 34, 35

**SC**  
0.2-1.5 bar  
91-1300 l/min  
90°-120°  
metal nozzle  
pp. 32, 33

**Humidification**

Humidify air in ducts, drying kilns, curing rooms, greenhouses, and other open areas; area misting

**XA**  
2-4 bar  
1.5-113 l/h  
20°-40°  
1-27 Nm<sup>3</sup>/h  
pp. 76-93

**PJ**  
4-14 bar  
0.5-2.4 l/min  
90°  
p. 71

**TF**  
5.5-14 bar  
7-23 l/min  
120°  
hollow cone  
p. 20

**L**  
5.5-14 bar  
1.5-13 l/min  
90°  
p. 73

**SpiralAir**  
4-7 bar  
1.1-57 l/min  
20°-60°  
59-225 Nm<sup>3</sup>/h  
pp. 96, 97

**MicroWhirl**  
70-200 bar  
0.04-0.60 l/min  
20°-70°  
p. 70

**Large Free Passage Nozzle**

Clog resistant; allow lumpy viscous liquids to pass easily

**MaxiPass**  
0.2-5 bar  
2.8-3400 l/min  
30°-120°  
pp. 26, 27

**TFXP**  
0.5-20 bar  
9.7-10700 l/min  
90°- 120°  
p. 21

**TH**  
0.2-3 bar  
15.3-2230 l/min  
90°-120°  
SNBSC avail.  
pp. 50, 51

**Lubrication**

Lubricate dies and moulds; roll bite in strip mills

<b>XA</b> 1.5-4 bar 0.4-7 l/h 20°-60° 3-40 Nm <sup>3</sup> /h pp. 76-93	<b>NF (D,S)</b> 4-7 bar 0.1-0.4 l/min 65°- 120° pp. 62,63	<b>BJ</b> 4-7 bar 0.03-0.4 l/min 50°- 80° pp. 54, 55
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**Color Code:**

- Full Cone
- Hollow Cone
- Fan
- Misting
- Air Atomizing
- Tank Washing
- Special Purpose

**Mist Eliminator Wash**

Clean mist eliminators in packed or open tower scrubbers

<b>NC</b> 1-3 bar 15.8-114 l/min 90° pp. 34, 35	<b>MaxiPass</b> 1.5-4 bar 6.4-60 l/min 90° pp. 26, 27	<b>WL</b> 1.5-5.5 bar 0.7-106 l/min 90°-120° p. 24
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**Misting**

Moisten paper; mist produce; compost piles of crushed products

<b>UltiMist</b> 15-150 bar 1.8-17 l/hr 60°- 110° p. 74	<b>PJ</b> 7-150 bar 0.1-50 l/min 90° p. 71	<b>XA</b> 3-7 bar 0-330 l/h 60°-120° pp. 76-93	<b>TF -full</b> 3-30 bar 5.5-75 l/min 90°- 120° p. 20	<b>TF -hollow</b> 4-10 bar 6-68 l/min 90°-120° p. 45	<b>MicroWhirl</b> 70-200 bar 0.04-0.60 l/min 20°-70° p. 70
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**Mixing Eductors**

Keep solids suspended by eduction

<b>TurboMix</b> 0.7-7 bar 40-1000 l/min p. 113
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**Moistening**

Wetting, humidifying products on conveyor

<b>XA</b> 3-7 bar 3.4-320 l/h 60°-120° pp. 76-93	<b>PJ</b> 7-140 bar 0.1-0.2 l/min 90° p. 71	<b>LP</b> 4-35 bar 1.9-167 l/min 0°-60° p. 115	<b>MicroWhirl</b> 70-200 bar 0.04-0.60 l/min 20°-70° p. 70
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**Odor Control**

Spray odor neutralizing agents

<b>XA</b> 3-7 bar 0-16 l/h 60°-120° pp. 76-93	<b>PJ</b> 7-150 bar 0.14-5 l/min 90° p. 71	<b>MicroWhirl</b> 70-200 bar 0.09-0.28 l/min 90° p. 70	<b>SpiralAir</b> 3-7 bar 1.2-68 l/min 20°-60° 40-220 Nm <sup>3</sup> /h pp. 92, 93
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**Packing**

Distribute scrubbing liquor in scrubbers or water in humidifiers

<b>NC</b> 0.2-1.5 bar 11-13250 l/min 120° plastic nozzle pp. 34, 35	<b>SC</b> 0.2-1.5 bar 7.6-1597 l/min 90°-120° metal nozzle pp. 32, 33	<b>MaxiPass</b> 0.2-1.5 bar 4-1930 l/min 90°- 120° lumpy liquids pp. 26, 27	<b>TC</b> 0.1-0.7 bar 820-13250 l/min 60°-120° metal nozzle p. 39	<b>IS</b> 0.05-0.7 bar 2-435 l/min used in pairs lumpy liquids p. 114	<b>WL</b> 0.3-1.5 bar 4-57 l/min 90°-120° p. 24
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**Pollution Control**

Distribute slurry in open towers

<b>STXP</b> 0.4-1 bar 227-2460 l/min 90°-120° RBSC avail p. 23	<b>ST</b> 0.4-1 bar 227-2460 l/min 90°-120° RBSC avail p. 22	<b>MaxiPass</b> 0.2-1.5 bar 200-1930 l/min 90°-120° recycle slurry pp. 26, 27	<b>TH</b> 0.2-1.5 bar 170-2300 l/min 90°-120° SNBSC avail. pp. 50, 51	<b>NC</b> 0.2-1.5 bar 42-1597 l/min 90°-120° plastic nozzle pp. 34, 35	<b>SC</b> 0.2-1.5 bar 91-1300 l/min 90°-120° metal nozzle pp. 32, 33
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**Pulp Bleaching**

*Wall wash  
bleaching tanks*

<b>FF</b>
1.5-4 bar 0-196 l/min 105°-145°
pp. 64, 65

<b>NF</b>
3-7 bar 4-36 l/min 20°-60°
p. 61

**Quench**

*Evaporatively quench  
hot gases*

<b>SpiralAir</b>
2-7 bar 2-80 l/min 25-135 Nm <sup>2</sup> /h 20°-90°
pp. 96, 97

<b>L</b>
5.5-14 bar 1.5-6.8 l/min 90°
p. 73

<b>TF -full</b>
3-8 bar 5.5-84.1 l/min 90°-120°
p. 20

<b>TF -hollow</b>
4-10 bar 6-68 l/min 90°-120°
p. 45

<b>XA</b>
3-4 bar 2.6-167 l/h 20°-40° 1.8-27 Nm <sup>2</sup> /h
pp. 76-93

<b>PJ</b>
4-70 bar 0.03-5.3 l/min 90°
p. 71

<b>MicroWhirl</b>
70-200 bar 0.04-0.60 l/min 20°-70°
p. 70

**Roll Cooling**

*Cool rolls in steel  
strip mills*

<b>NF (D,S)</b>
0.7-3 bar 0.5-26.5 l/min 60°-120°
pp. 62, 63

**Scrubbing:  
Conditioning**

*Inject ammonia or water  
upstream of electrostatic  
precipitators; inject odor  
control additives*

<b>XA</b>
2-4 bar 1.5-113 l/h 20°-40° 1-27 Nm <sup>2</sup> /h
pp. 76-93

<b>PJ</b>
4-14 bar 0.05-2.4 l/min 90°
p. 71

<b>L</b>
5.5-14 bar 1.5-6.8 l/min 90°
p. 73

<b>SpiralAir</b>
4-7 bar 1.1-57 l/min 59-150 Nm <sup>2</sup> /h 20°-60°
pp. 96, 97

<b>MicroWhirl</b>
70-200 bar 0.04-0.60 l/min 20°-70°
p. 70

**Scrubbing:  
Direct Contact**

*Spray water or reagent  
slurry into open tower;  
flue gas desulphurization*

<b>STXP</b>
0.4-1 bar 227-2460 l/min 90°-120° recycle slurry
p. 23

<b>ST</b>
0.4-1 bar 227-2460 l/min 90°-120° resist erosion
p. 22

<b>MaxiPass</b>
0.2-1.5 bar 200-1930 l/min 90°-120° recycle slurry
pp. 26, 27

<b>TH</b>
0.2-1.5 bar 170-2300 l/min 90°-120° SNBSC avail.
pp. 50, 51

<b>NC</b>
0.2-1.5 bar 42-1597 l/min 90°-120° plastic nozzle
pp. 34, 35

<b>SC</b>
0.2-1.5 bar 91-1300 l/min 90°-120° metal nozzle
pp. 32, 33

<b>TF</b>
3-8 bar 5.5-84.1 l/min 90°-120°
p. 20

**Scrubbing:  
Dry**

*Inject lime slurry; inject  
food and chemical prod-  
uct into spray dryer*

<b>SpiralAir</b>
3.5-7 bar 5.3-57 l/min 20°-60° 45-225 Nm <sup>2</sup> /h
pp. 96, 97

<b>XA</b>
3-4 bar 2.6-167 l/h 20°-40° 1.8-27 Nm <sup>2</sup> /h
pp. 76-93

<b>WT</b>
4-10 bar 0.45-57 l/min 80°-130°
pp. 40, 41

<b>WTX</b>
4-10 bar 0.45-57 l/min 80°-130°
pp. 42, 43

**Self Cleaning  
Nozzles/ Showers**

*Clean webs in paper  
mills, wash or rinse steel  
strip or conveyor belts*

<b>LP</b>
4-35 bar 1.9-167 l/min 30°- 60°
p. 102

**Spray Drying**

*Processing of milk, other  
foods and chemical products*

<b>Twist &amp; Dry</b>
15-350 bar 35.3-5970 l/h 50°- 80°
pp. 108-111

<b>TDL</b>
15-350 bar 11.3-469 l/h 70°-75°
p. 112

<b>TD-K</b>
15-350 bar 11.3-469 l/h 70°-75°
pp. 110, 111

<b>SpiralAir</b>
2-7 bar 2-80 l/min 45-139 Nm <sup>2</sup> /h 20°-90°
pp. 96, 97

**Street Flushing &  
Cleaning**

*High impact wash down,  
clear loose debris from  
streets; walkways*

<b>FF</b>
1.7-7 bar 8.3-74 l/min 145° wide coverage
pp. 64, 65

<b>SPN</b>
1.7-7 bar 8.3-74 l/min 15°-50° high impact
p. 69

<b>NF</b>
1.7-7 bar 85-763 l/min 50°-90°
p. 61

**Washing:**

**Conveyor**

*Wash coal, sand, gravel, and crushed rock; pre-wet to reduce dust at hoppers and transfer points*

**NF (D,S)**

0.4-4 bar  
5.3-1700 l/min  
65°-120°

pp. 62, 63

**SPN**

0.7-5.5 bar  
7.6-106 l/min  
15°-50°  
high impact  
p. 69

**FF**

0.2-4 bar  
1.5-110 l/min  
145°  
wide coverage  
pp. 64, 65

**MaxiPass**

0.2-3 bar  
2.6-144 l/min  
60°-120°  
lumpy liquids  
pp. 26, 27

**TFXP**

0.5-3 bar  
10-159 l/min  
90°-120°  
lumpy liquids  
p. 21

**L**

3-4 bar  
1-11 l/min  
90°  
transfer point  
p. 73

**Washing:**

**Intermittent**

*Periodic wash down of mist eliminator, filter pads, sieve screens, and distribution plates*

**NC**

1-3 bar  
15.8-114 l/min  
60°-120°  
plastic nozzle  
pp. 34, 35

**MaxiPass**

1.5-4 bar  
6.4-60 l/min  
60°-120°  
lumpy liquids  
pp. 26, 27

**WL**

1.5-5.5 bar  
0.7-106 l/min  
80°-120°  
p. 24

**SC**

1-3 bar  
17-121 l/min  
60°-120°  
metal nozzle  
pp. 32, 33

**Washing:**

**Parts**

*High impact parts washing and surface preparation*

**NF (D,S)**

1.5-5.5 bar  
0.7-106 l/min  
65°-120°

pp. 62, 63

**SPN**

0.7-5.5 bar  
7.6-106 l/min  
15°-50°  
high impact  
p. 69

**WL**

0.7-4 bar  
1.4-98 l/min  
90°-120°  
p. 24

**NC**

0.7-3 bar  
14-144 l/min  
60°-120°  
plastic nozzle  
pp. 34, 35

**SC**

0.7-3 bar  
11-167 l/min  
60°-120°  
metal nozzle  
pp. 32, 33

**SF**

1-5.5 bar  
2.3-56 l/min  
35°-95°  
p. 68

**Washing:**

**Tank**

*Rinsing and solvent cleaning of tanks, drums, and process equipment*

**HydroWhirl S**

0.5-4 bar  
4.39-338 l/min  
360°

p. 99

**HydroWhirl Poseidon**

0.7-4 bar  
58.3-333 l/min  
360°

p. 100

**HydroWhirl Orbitor**

3-10 bar  
80-600 l/min  
180°, 360°

p. 101

**CLUMP**

0.7-3 bar  
29-224 l/min  
360°  
lumpy liquids  
p. 103

**LEM**

0.7-5.5 bar  
30-530 l/min  
360°  
even rinsing  
p. 104

**TW**

0.7-5.5 bar  
11-273 l/min  
210°  
very compact  
p. 102

**Venturi Scrubbing**

*Keep solids suspended by injection*

**NCK**

0.5-7 bar  
23.1-4660 l/min  
30°

p. 37

**NCJ**

0.5-7 bar  
23.1-4660 l/min  
30°

p. 49