SPRAYING SYSTEMS® CANNONJET
RENDERS A ROBUST MIST, CAPABLE OF CAPTURING DUST PARTICLES AND/OR NEUTRALIZING FOUL ODORS

IDEAL FOR

Operations requiring dust preventions:
• Dumping
• Transfer points

In these operations, moisture can be applied to the material when it is stationary, moving or both.

Operations requiring airborne dust suppressions:
• Conveying
• Continuous mining
• Dryers
• Packaging / Filling

Operations requiring odor neutralizing:
• Waste treating
• Landfill unloading

• Transfer points
• Crushing and screening
• Shearing
• Producing chemicals
• Food processing

SPRAY CANNON OVERVIEW

• Stainless Steel (304) construction throughout
• Spray injection point is located downstream of a high-velocity blower to amplify the overall throw of the spray plume
• Internal guiding vanes minimize air stream turbulence
• Large passage hollow cone nozzles minimize clogging and optimize performance while reducing downtime
• Choice of spray angle and flowrates
• Flexible mode of operation (manual or remote)
• Optional three-speed inverter fan
FUNDAMENTALLY, SPRAY CANNONS HAVE THE SAME OPERATING PRINCIPLE

All cannons spray a water-based solution. However, that’s where the similarity ends. There are many critical variables to consider:

- Dust particle size
- Spray drop size
- Spray cannon placement
- Water quality and availability
- Surface wetting
- Flowrate
- Spray cannon power rating
- Control options

IF YOU NEED TO PREVENT DUST

What material are you adding moisture to?

Materials will respond to moisture variously. It is important to understand exactly how much moisture to add. Too little moisture means you’ll still have a dust problem. Too much moisture, and the integrity of the material may be compromised and quality issues will result. For example, when applying moisture to ore, adding one gallon per ton provides adequate wetting and does not cause process and productions problems. Too much moisture also means sludge, mud and frustrating, costly and potentially dangerous maintenance problems.

The material also will determine whether chemicals should be added to the water to improve suppression and/or lower overall application costs. Coal, for example, repels water and usually requires the use of chemical additives to increase absorption.

IF YOU NEED TO CAPTURE AIRBORNE DUST

What is the particle size of the dust?

Dust capture is not effective when dust particles collide with water drops of an equivalent size. In fact, drops that are too large won’t collide with the smaller dust particles, and drops that are too small evaporate too quickly and release the captured particles. Understanding the particles size of the dust is critical in an adequate system design. See Figure 1.

You can use these general guidelines regarding dust Particle size. However, further research may be necessary depending on the material and stage of the material in processing.

<table>
<thead>
<tr>
<th>PARTICLE DIAMETER IN MICRONS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Limestone: 10 to 1000 μm</td>
</tr>
<tr>
<td>Fly ash: 10 to 200 μm</td>
</tr>
<tr>
<td>Coal dust: 1 to 100 μm</td>
</tr>
<tr>
<td>Carbon black: 0.01 to 0.3 μm</td>
</tr>
<tr>
<td>Pulverized coal: 3 to 500 μm</td>
</tr>
</tbody>
</table>

FIGURE 1: If the drop diameter is larger than the dust particle diameter, the dust particle will follow the air stream around the drop. (Shown left.) If the diameters of the drop and the dust particle are comparable, the dust particle will follow the air stream and collide with the drop (shown right.)
IF YOU NEED TO NEUTRALIZE FOUL ODORS

Water sprayed in finely atomized droplets, absorbs the bad odor of a foul smelling gas stream into the liquid, reducing the potential odor of the remaining gas.

Typically, in odor control application an odor neutralizing agent is dosed into the fluid delivery system, so that the chemical composition of the foul-smelling gas is altered and the odor is diminished.

Common cases of odor control application:

- Waste water treatment plants
- Waste transfer stations and landfills
- Food processing plants
- Coffee roasters
- Poultry plants
- Chemical processing plants

UNDERSTAND THE ROLE OF DROP SIZE

Drop size refers to the size of the individual drops that comprise a nozzle’s spray pattern. Each spray pattern provides a range of drop sizes, which comprises the drop size distribution.

Many factors can affect drop size, including liquid properties, nozzle capacity, spray pressure and spray angle.

Typical Drop Size Distribution

DV0.5 is the Volume Median Diameter, which is also known as VMD or MVD. DV0.5 is a value where 50% of the total volume of liquid sprayed is made up of drops with diameters larger than the median value and 50% smaller than the median value.
The essence of a good spray application is in the nozzle type. Spraying System’s LN fine hydraulic atomizing nozzle, possesses many features that are key to efficient dust and odor control and easy maintenance:

- Ideal for use in dust and odor control applications
- Finely atomized, hollow cone spray without compressed air
- Choice of flowrate capacities (see table below)
- Orifice inserts, cores and strainers are easily removed for inspection or cleaning
- Operating pressures from 1.5 to 69 bar

### NOZZLE PERFORMANCE TABLE

<table>
<thead>
<tr>
<th>Inlet Conn. (in.)</th>
<th>Nozzle Type</th>
<th>Capacity Size</th>
<th>Orifice Dia. Nom. (mm)</th>
<th>Core No.</th>
<th>Flow Rate Capacity (Liters per hour)</th>
<th>Spray Angle (°)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LN</td>
<td>10</td>
<td>1.6</td>
<td>420</td>
<td>2 bar 32 39 46 60 88 102 135 153 204 230 252 306 351 388 432 508 610 730 840</td>
<td>82 84 86</td>
</tr>
<tr>
<td></td>
<td>LNN</td>
<td>12</td>
<td>1.9</td>
<td>420</td>
<td>3 bar 39 47 55 72 106 122 162 183 245</td>
<td>78 82 85</td>
</tr>
<tr>
<td></td>
<td>LND</td>
<td>14</td>
<td>1.9</td>
<td>421</td>
<td>4 bar 45 55 64 84 124 143 189 214 285</td>
<td>85 88 90</td>
</tr>
<tr>
<td></td>
<td>NN</td>
<td>16</td>
<td>2.2</td>
<td>421</td>
<td>5 bar 52 63 73 96 141 163 216 245 326</td>
<td>83 86 88</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>18</td>
<td>1.9</td>
<td>422</td>
<td>6 bar 58 71 82 109 159 183 243 275 367</td>
<td>81 84 86</td>
</tr>
<tr>
<td></td>
<td>LNND</td>
<td>20</td>
<td>2.1</td>
<td>422</td>
<td>7 bar 64 79 91 121 177 204 270 306 408</td>
<td>75 78 80</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>22</td>
<td>1.9</td>
<td>625</td>
<td>8 bar 71 87 100 133 194 224 297 336 449</td>
<td>70 72 75</td>
</tr>
<tr>
<td></td>
<td>NN</td>
<td>26</td>
<td>2.2</td>
<td>625</td>
<td>9 bar 84 103 119 157 230 265 351 398 530</td>
<td>73 74 77</td>
</tr>
</tbody>
</table>

Highlighted column shows the rated pressure.
Accurate Drop size Data measurement for each nozzle

Data is based on spraying water under laboratory conditions using the aerometrics Phase Doppler Particle Analyzer (PDPA). All values are computed utilizing the procedures for determining spray characteristics as outlined by ASTM (Standard E799)
# MODELS & SPECIFICATIONS

## CannonJet

<table>
<thead>
<tr>
<th>Model</th>
<th>Power Rating (kW)</th>
<th>Water Consumption (l/h)</th>
<th>Number of Nozzles</th>
<th>Recommended Range in Windless Conditions (m)</th>
<th>Weight (kg)</th>
<th>Dimensions LxWxH (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CJ-4000</td>
<td>6</td>
<td>2,895</td>
<td>15</td>
<td>30</td>
<td>350</td>
<td>1.5x1.3x1.6</td>
</tr>
<tr>
<td>CJ-8000</td>
<td>11</td>
<td>4,825</td>
<td>25</td>
<td>40</td>
<td>670</td>
<td>1.65x1.25x1.75</td>
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<tr>
<td>CJ-16000</td>
<td>23</td>
<td>6,562</td>
<td>34</td>
<td>60</td>
<td>1000</td>
<td>1.8x1.3x1.85</td>
</tr>
<tr>
<td>CJ-30000</td>
<td>36</td>
<td>9,264</td>
<td>48</td>
<td>80</td>
<td>1200</td>
<td>2x1.5x2</td>
</tr>
</tbody>
</table>

## OPTIONS

- Built-in or separately mounted fluid delivery system
- Built-in fluid delivery system, when there is no restriction on pump suction head
- Separate, when the spray cannon is placed at a higher level than the storage tank
- Optional chemical dosage device can be added for adding surfactant or odor neutralizing chemicals
- Optional three-speed inverter
- Optional bag filter with a 5 microns mesh size
- Optional wheel mount for easier mobility
ORDERING INFORMATION

- CJ
- 0400-26-1-1-0-0-1

- Power Rating

- Nozzle Capacity

- FDS
  - 0 - Built-in fluid delivery system
  - 1 - Separate fluid delivery system

- FanSpeed Inverter
  - 0 - Without three speed inverter
  - 1 - With three speed inverter

- Chemical Dosing
  - 0 - Without chemical dosing
  - 1 - With chemical dosing

- Bag Filtration
  - 0 - Without bag filter
  - 1 - With bag filter

- Mobility
  - 0 - Without wheel mount
  - 1 - With wheel mount

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