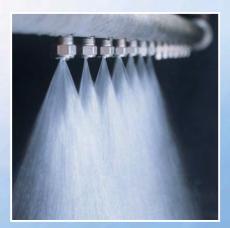


# LINEUP OF IKEUCHI'S SPRAY NOZZLES









# **IKEUCHI, "The Fog Engineers"**

Based on accumulated advanced technology and know-how as the Fog Engineers, IKEUCHI continues to pursue methods to generate and utilize fog to meet the ever diversifying and sophisticated needs of its customers, and to contribute to the development of a greater industrial world.

### **Guarantee of Precision Nozzle Performance**

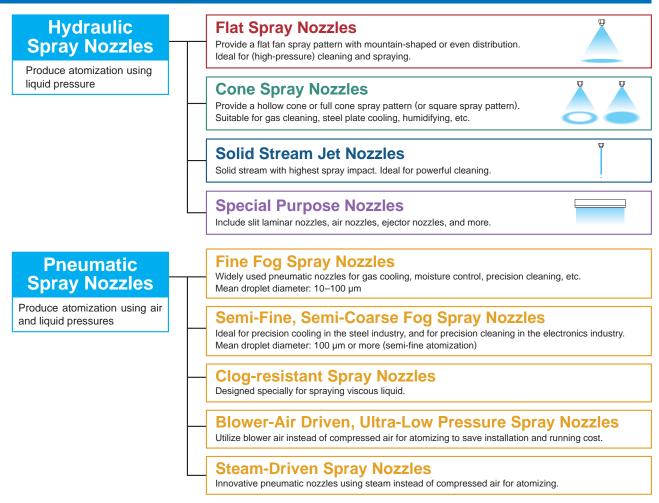
All IKEUCHI's precision-made hydraulic spray nozzles (except for air nozzles) are guaranteed for spray angles and spray capacities. Each pneumatic spray nozzle series also has spray capacity inspection standard, and

only the nozzles that pass the inspection will be shipped.

### **Classification of Spray Droplet Size**



### Variety of Spray Nozzles



### HYDRAULIC SPRAY NOZZLES — FLAT SPRAY

#### [Symbol key] •: Features : Main applications

#### **Standard Flat Spray Nozzles**



		3-piece structure VE	<ul> <li>Flat spray with uniform distribution and even spray impact across the entire spray area.</li> <li>Cleaning, cooling and spraying.</li> </ul>		High-pressure cleaning VNP series	<ul> <li>Flat spray with uniform distribution.</li> <li>High pressure cleaning (for cars, containers, tanks).</li> </ul>
		series			Descaling nozzles DSP series	<ul> <li>Powerful cleaning and descaling nozzle with a thin flat spray like a razor blade.</li> </ul>
[Spray pattern]	in	One-piece structure VEP series			Descaling nozzles TDSS series	<ul> <li>Water saving &amp; high impact de- scaling nozzle for steel industries. Longer lasting design, uniform spray impact. (See TDSS individual catalog.)</li> </ul>
Wide-angle Flat Spray Nozzles					nter Even	Flat Spray Nozzles

#### Produces wide-angle flat spray at low liquid pressure with minimal Wide-angle spray clogging. YYP Cleaning, foam breaking, water screen applications. series Low sprav impact without bubbles.

[Spray pattern] 

#### Wide-angle, Uniform distribution produced at ultra-low pressure ultra-low pressure. Spraying developer in LYYP

series

[Spray distribution]

## **Special Flat Spray Nozzles**

Off-center spray OVVEP series • With obliquely-angled flow, OVVEP series prevents accumulation of spray fluid in [Spray pattern] multiple-nozzle arrangements. No need for oblique installation, as the angle is built-in. Steel plate cooling, water rinsing [Spray distribution] after acid washing.

[Spray r		Self-cleaning MOMOJet⊚ series	<ul> <li>Nozzle tip purges foreign particles by reducing the pressure. Straight-through orifice is suitable for multiple-nozzle arrangement.</li> <li>Cleaning with circulated water, cooling, defoaming, and cleaning wire and felt parts of paper making machines.</li> <li>For solid stream spray, MOMOJet® C series is available.</li> </ul>
[Spray the second secon		Universal-joint type UT+VP series	<ul> <li>Universal joint allows easy adjustment of the spray direction after connected to a pipe. Spray direction is adjustable over a range of 40 degrees as desired.</li> <li>Cleaning, spraying, etc.</li> <li>For solid stream spray, UT+CP series is available.</li> </ul>
[Spray ] ← Water is spray pattern	ayed to show	Air & steam spraying VZ series	<ul> <li>Produces flat spray pattern of air or steam.</li> <li>Cleaning, dust suppression, drying, air curtain, humidification, moisture control, etc.</li> </ul>
[Spray		Quick installation QB series	<ul> <li>Easy installation just by drilling a hole on a pipe and inserting a nozzle. Spray direction is adjustable within 50 degrees as desired. Quick-detachable design to reduce maintenance time.</li> <li>Pre-treatment for painting, water cleaning, etc.</li> </ul>

semi-conductor manufacturing

processes.

## HYDRAULIC SPRAY NOZZLES — CONE SPRAY

### [Symbol key] •: Features : Main applications

#### **Hollow Cone Spray Nozzles**

			Ô	Fine fog, ultra-small capacity KB series	<ul> <li>Finest atomization among hydraulic nozzles, with high wear resistant ceramic tip.</li> <li>Humidifying, cooling, spraying, etc.</li> </ul>			Fine fog, ultra-small capacity KBN series	<ul> <li>Finest atomization amon our hydraulic nozzles.</li> <li>Wear-resistant ceramic ti with plastic body.</li> <li>Cooling, humidifying, dust suppression.</li> </ul>
	[Spray pa			Semi-fine fog, small capacity K series	<ul> <li>Ceramic orifice an provide excellent wear-resistance.</li> <li>Humidifying, cool spraying, etc.</li> </ul>			Semi-fine fog, small capacity KKBP series	<ul> <li>Unique whirler design with large free passage diamet minimizes clogging. Easy maintenance with a detachable whirler.</li> <li>Humidifying, cooling, snow making, etc.</li> </ul>
×			100	Small capacity KD series	<ul> <li>Semi-fine atomization, compact design with ceramic orifice and whirler for high wear-resistance.</li> <li>Cooling, spraying, etc.</li> </ul>			Alumina ceramic AP-AL92 series	<ul> <li>High wear-resistant alumina ceramic nozzle with a stainless steel socket.</li> <li>Cooling, cleaning, etc.</li> </ul>
	[Spray pa			Medium capacity AAP series	<ul> <li>Stable spray patter wide range of ope pressures. No wild design minimizes</li> <li>Cooling, spraying cleaning, etc.</li> </ul>	erating hirler clogging.		Large capacity TAA series	<ul> <li>Stable spray pattern und low pressure. Made of high wear-resistant silico carbide. Lightweight.</li> <li>Spraying in absorber of ga desulfurization equipment slurry spraying, etc.</li> </ul>
ll Cone Spro	ay Noz	zles							
		Small capacity J series	y fu N ai	<ul> <li>Smallest spray capacity among full cone spray nozzles. Wear-resistant with ceramic orifice and ceramic closer.</li> <li>Spraying, cleaning, cooling, etc.</li> </ul>			Quick detachabl INJJX(-` series		
		Standar type JJXP series	d m la cl	pray capacity ra ledium. X-shape logging. Availabl tainless steel, or leaning, cooling		Small capacity JJRP series	providi small s	nozzle with disc whirler, ng uniform distribution at pray capacity. ater cleaning, spraying, etc	
		Ceramic orifice & whirler JUP series		eramic disc whit rifice provide ext esistance. leaning, cooling			Narrow-ang spray NJJP series	Unique	rler, minimal clogging. e design to produce -angle full cone spray. ng, cooling, etc.
[Spray pattern]	-	Alumina ceramic JUXP-AL series	.92 s	igh wear-resista ozzle with a stai praying in absor esulfurization ec praying, etc.		Clog- resistant AJP series	passag cloggin Availat alumin	<ul> <li>No-whirler design with large free passage diameter minimizes clogging.</li> <li>Available in stainless steel, PPS, or alumina ceramic.</li> <li>Cleaning, cooling, applications where clogging is a concern.</li> </ul>	
[Spray distribution]	<b>X</b>	Large capacity TJJX series	y F	arge spray capa langed connecti ooling, reacting,		Wide-ang spray BBXP series	spray o	angle of 120° provides large coverage. tinguishing, cooling,	

### Square Spray Nozzles

### Special Full Cone Spray Nozzles

		Square spray SSXP series		200	Seven-head, fine fog 7 KB series	<ul> <li>Seven KB hollow cone spray nozzles with a compact adaptor produce large volume of fine atomization.</li> <li>Flue gas cooling/cleaning, moisture control, humidification.</li> </ul>
[Spray pattern]	<ul> <li>Square spray patter distribution, which in multiple-nozzle a</li> <li>Cleaning, cooling,</li> </ul>	leaves no gaps arrangements.	[Spray pattern]		Seven-head, all metal 7JJXP series	<ul> <li>Seven JJXP full cone spray nozzles with a compact adaptor. Spray droplet diameter is about half the size of other full cone spray nozzles having the same spray capacity.</li> <li>Flue gas cooling/cleaning, dust suppression, etc.</li> </ul>

## HYDRAULIC SPRAY NOZZLES — SOLID STREAM

#### [Symbol key] ●: Features ■: Main applications

#### Solid Stream Spray Nozzles



2CP/2CCP

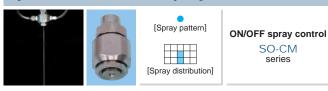
series

7CP/7CCP

series

- 2-orifice and 7-orifice types are available. Compact design.
- Bottle washing, cleaning dandy rolls and returnable containers, etc.

#### Special Solid Stream Spray Nozzles



• Quick spray ON/OFF function, regulated by pilot air ON/OFF, which prevents dripping after spraying stops.

[Spray pattern]

[Spray distribution]

Trimming, cutting, marking, etc.

[Spray pattern]

[Spray distribution]

For flat spray, **SO-V** series is available.



- Cleans inside pipes and tubes, moving itself by spraying high-impact solid stream jets in different directions as driving force.
- Cleaning inside pipes/drains/tubes, removing scale and dirt inside tubes of heat exchangers and cooling machines.

### SPECIAL PURPOSE NOZZLES

#### **Air Nozzles**

#### Air booster nozzles TAIFUJet. series



Takes in surrounding air, boosting the volume of powerful air flow. Available in stainless steel or plastic.
 Blowing off drying, blowing off dust, cleaning, cooling, etc.

#### **Special Purpose Nozzles / Accessories**



### PNEUMATIC SPRAY NOZZLES

#### [Symbol key] •: Features : Main applications

#### **Fine Fog Spray Nozzles**

	Small capacity BIM series CBIM series SCBIM series	<ul> <li>Fine atomization with mean droplet diameters 20–100 µm. Unique, minimal-clogging design. Available in flat spray, full cone spray, or hollow cone spray pattern. Spray ON/OFF can be regulated with controlling adaptors.</li> <li>CBIM series: Compact version of BIM series. Space-saving design.</li> <li>SCBIM series: Further miniaturized version of CBIM series. Capable of spraying smallest flow rate among all of our pneumatic spray nozzles.</li> <li>Spraying, cooling, moisture control, washing, etc.</li> </ul>			
<u> </u>	Medium/Large		<ul> <li>Large spray capacity, low air-water ratio. Simple structure, easy maintenance.</li> <li>Gas cooling tower in waste incineration plant.</li> </ul>		
	Impinging-atc AKIJet®		<ul> <li>Atomized droplets are impinged against each other at optimum condition, which results in uniform distribution of droplet size.</li> <li>Moisture control, combustion, cooling, etc.</li> </ul>		

#### Semi-Fine, Semi-Coarse Fog Spray Nozzles

	High impact, flat spray VVEA series	<ul> <li>Thin and sharp spray pattern with high impact. Stable spray angle over large turndown ratio.</li> <li>Precision cleaning.</li> </ul>
a martine and the second	Slit nozzles PSN series	<ul> <li>Pneumatic slit nozzles providing uniform spray in the total width. Achieve higher spray impact by installing closer to the object.</li> <li>Glass substrate cleaning, etc.</li> </ul>
	Flat spray DOVEA series	<ul> <li>Secondary cooling nozzles developed to satisfy crucial requirements for spray nozzles in continuous casting processes in steel making.</li> </ul>
4	Thick flat spray DDA series	Minimal variation in spray angle, spray distribution and droplet size over a large turndown ratio. A large free passage diameter. <b>DOVEA</b> series for even flat spray pattern, <b>DDA</b> series for thick even flat spray, <b>JJA</b> series for full cone spray.
<b>)</b>	Full cone spray JJA series	Gas cooling, steel plate cooling, waste water combustion.

#### **Clog-resistant Spray Nozzles**



to of SETOJet ser

#### Full cone spray SETOJet series Flat spray SETOV series

 Pneumatic spray nozzle specially designed for spraying viscous liquid.
 Clog-resistant design. External mixing type that air and liquid are mixed outside nozzle for atomization.

Spraying viscous liquid (oil, lubricant, etc.) or slurry. Solenoid-activated type (SETO-SD series) is also available.



#### Wide-angle flat spray YYA series

- Combines "clog-resistant" and "wide spray angle" features. Capable of spraying viscous liquid up to approx. 300 cP.
   Compact design.
- Spraying viscous liquid (oil, honey, etc.)

### Blower-Air Driven, Ultra-Low Pressure Spray Nozzles



#### Fine fog, flat spray BAVV series

- Flat spray pattern, fine atomization with mean droplet diameter of 40 µm or more.
   Energy-saving for blower-use.
   Low running cost.
- Large free passage diameter.
- Steel plate cooling, cleaning, etc.



#### Semi-fine fog LSIM series

 Semi-fine atomization by applying blower air pressure. Saves on installation and running cost due to utilizing blower air for atomizing.
 Gas cooling, etc.

**Steam-Driven Spray Nozzles** 





Steam-driven

 Atomization by steam instead of compressor air. Drastic saving on running cost.

Gas cooling, moisture control.

### SPRAY NOZZLE RELATED PRODUCTS

#### **Spray Nozzle Headers**



#### **Related Products Applying Spray Nozzles**



 Combined unit of a fan and nozzles that can blow Semi-Dry Fog® further and broader using fan wind. Ideal for cooling and dust suppression.

LYOHM System for outdoor cooling

#### Cooling system COOLJetter® Dome



 Cooling system with COOLJetter®, providing effective and low-cost cooling for large spaces.

#### Humidification unit $ULM \otimes$

Industrial cooling solution for solid and gas.

Industrial cooling system



 Energy-saving, outdoor cooling system with Semi-Dry Fog®, which provides effective evaporative cooling effect without wetting people.

Hydraulic humidification system AirULM



 Humidifies large spaces at low running cost. Air compressor is not required.



 ■ Easy-to-use, large-space humidification unit. One ULM<sub>®</sub> covers approx. 150 m<sup>2</sup>.

Dry Fog humidifier AKIMist® "E"



 Auto reverse self-cleaning by powerful jet spraying. Water saving and minimal maintenance.

#### Industrial humidification system AirAKI.



 The world's first humidification system that guarantees the target humidity using the highest quality Dry Fog.

Energy-saving design.

• Compact, high efficiency humidifier that produces

a large volume of Dry Fog (non-wetting fog).



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