











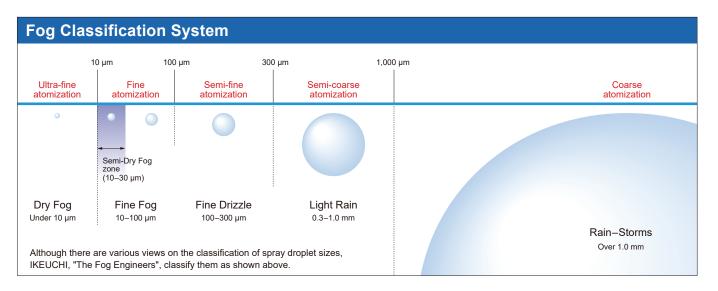
IKEUCHI, "The Fog Engineers"

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 more diverse and sophisticated needs of its customers, and to contribute to the development of a greater industrial world.

Spray Nozzle Precision Guarantee

All IKEUCHI's precision-made hydraulic spray nozzles (except for air nozzles) are guaranteed for spray angle and spray capacity.

Each pneumatic spray nozzle series also has a spray capacity inspection standard, and only the nozzles that pass the inspection will be shipped.



Variety of Spray Nozzles

Hydraulic Spray Nozzles

Produce atomization using liquid pressure

Flat Spray Nozzles

Provide a flat fan spray pattern with mountain-shaped or even distribution. Ideal for (high-pressure) cleaning and spraying.

Cone Spray Nozzles

Provide a hollow cone or full cone spray pattern (or square spray pattern). Suitable for gas cleaning, steel plate cooling, humidifying, etc.

Solid Stream Jet Nozzles

Solid stream spray with highest spray impact. Ideal for powerful cleaning.

Special Purpose Nozzles

Include slit laminar nozzles, air nozzles, ejector nozzles, and more.

Pneumatic Spray Nozzles

Produce atomization using air and liquid pressures

Fine Fog Spray Nozzles

Widely used pneumatic nozzles for gas cooling, moisture control, precision cleaning, etc. Mean droplet diameter: $10-100~\mu m$ (fine atomization)

Semi-Fine, Semi-Coarse Fog Spray Nozzles

Ideal for precision cooling in the steel industry, and for precision cleaning in the electronics industry. Mean droplet diameter: 100 µm or more (semi-fine to semi-coarse atomization)

Clog-resistant Spray Nozzles

Designed specially for spraying viscous liquid.

Blower-Air Driven, Ultra-Low Pressure Spray Nozzles

Utilize blower air instead of compressed air for atomizing to save operating costs.

Steam-Driven Spray Nozzles

Innovative pneumatic nozzles using steam instead of compressed air for atomizing.

HYDRAULIC SPRAY NOZZLES—FLAT SPRAY

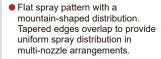
[Symbol key] : Features : Main applications

Standard Flat Spray Nozzles



One-piece structure

VP/VVP series





 So thin that nozzle alignment in tight spaces is easy.

Cleaning and cooling.





3-piece structure V/VV

series

Cleaning, spraying, cooling, etc.

For polishing, available in UPE material (**UVVP** series).





Quick detachable INVV series INVV-SS INV

series

Quick-detachable design helps to reduce maintenance time.

Applications that require accurate nozzle positioning. Cleaning, etching, etc.

Even Flat Spray Nozzles





One-piece structure

series

3-piece structure

series

Flat spray pattern with uniform distribution across the pattern area. Even spray impact across the entire spray area.

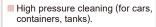




High-pressure cleaning

VNP series

• Flat spray with uniform distribution.





Descaling nozzles **DSP** series

 Powerful cleaning and descaling nozzle with a thin flat spray like a razor blade.



Quick detachable **INVE** series

 Quick-detachable design helps to reduce maintenance time. Features a ceramic orifice.

Cleaning, cooling and spraying.

Wide-angle Flat Spray Nozzles



[Spray pattern & distribution]



Wide-angle spray YYP series

- Wide-angle flat spray nozzle to use at low pressure. Minimal clogging among our flat spray nozzles with the same flow rate.
- Cleaning, foam breaking, water screen applications.



Wide-angle. pressure **LYYP** series

- Wide-angle flat spray nozzle to use at ultra-low pressure of 0.015 MPa. Low spray impact creating a bubble-free spray surface.
- Spraying developing solution in semi-conductor manufacturing processes

Off-center Even Flat Spray Nozzles











[Spray pattern & distribution]

The diagonal spray prevents accumulation of spray fluid in a multiple nozzle arrangement. No need for oblique installation as it is already angled

Steel plate cooling, water rinsing after acid washing

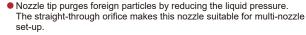
Special Flat Spray Nozzles







Self-cleaning **MOMOJet** series



Cleaning with circulated water, cooling, foam breaking, and cleaning wire and felt parts of paper making machines.

For solid stream spray, MOMOJet "C" series is available.

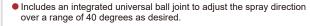






jointed UT+VP series

Universal-



Cleaning, spraying, etc. For solid stream spray, UT+CP series is available.







Quick installation QB series

- Easy to install. Just drill a hole into the pipe and insert the nozzle. Spray direction is adjustable within 50 degrees as desired Quick-detachable design helps to reduce maintenance time significantly.
- Pre-treatment for painting, water cleaning, etc.







Air & steam spraying series

- Produces a flat spray pattern of air or steam. Air flow volume is adjustable by changing the nozzle tip.
- Cleaning, dust suppression, drying, air curtain, humidification, moisture control, etc

HYDRAULIC SPRAY NOZZLES—CONE SPRAY

[Symbol key] : Features : Main applications

Hollow Cone Spray Nozzles







Fine fog, ultra-low flow rate KB series

- Finest atomization among our hydraulic nozzles Ceramic parts provide high wear resistance.
- Humidifying, cooling, etc.



ultra-low flow rate **KBN** series

- Finest atomization among our hydraulic nozzles. Plastic nozzle with alumina-ceramic orifice.
- Cooling, humidifying, dust suppression, etc.



Semi-fine fog, flow rate series

- Ceramic orifice and closer provide excellent wear resistance.
- Humidifying, cooling, spraying, etc.



Semi-fine fog, low flow rate **KKBP** series

- Large free passage diameter minimizes clogging. Easy maintenance with detachable whirler.
- Humidifying, cooling, snow making, etc.



[Spray distribution]

Low flow rate **KD** series

- Combines compact design and semi-fine atomization capability. Ceramic parts provide high wear resistance
- Cooling, spraying, etc.



Alumina AP-AL92

 Highly wear-resistant alumina ceramic nozzle with a stainless steel

Cooling, cleaning, etc.



Medium capacity **AAP**

- Stable spray pattern at both low and high pressure. No-whirler design minimizes clogging.
- Cleaning, cooling, etc.



Large capacity TAA

- Stable spray pattern even at low pressure. Made highly wear-resistant silicon carbide.
- Spraying in absorber of gas desulfurization equipment, slurry spraying, etc.

Full Cone Spray Nozzles





Standard type **JJXP**

- Spray capacity ranges from small to medium. X-shaped whirler provides a large free passage, minimizing clogging. Made of stainless steel or
- Cleaning, cooling, spraying, etc.



Quick detachable INJJX(-Y)

- Quick-detachable design helps to reduce maintenance time. Made of chemical and heat resistant plastic.
- Etching, cleaning, etc.



Low flow rate series

- Lowest flow rate among our full cone spray nozzles. Ceramic parts provide high wear resistance.
- Spraying, cleaning, cooling, etc.



Low flow rate **JJRP** series

- Plastic nozzle with a disc whirler. providing a uniform distribution even at low flow rate. Available in PTFE or PVDF.
- Pure water cleaning, spraying, etc.



Ceramic orifice & JUP

series

- Ceramic disc whirler and ceramic orifice provide excellent wear resistance.
- Cleaning, cooling, spraying, etc.



Narrow-angle spray NJJP series

- No whirler, minimal clogging. Unique design to produce a narrowangle full cone spray pattern.
- Cleaning, cooling, etc.



[Spray distribution]



Alumina ceramic **JUXP-AL92** series

Large

capacity

TJJX

series

- High wear-resistant alumina ceramic nozzle with a stainless steel socket.
- Spraying in absorber of gas desulfurization equipment, slurry spraying, etc.

Cooling, reacting, spraying, etc.

Large spray capacity.

Flanged connection



Clog-resistant **AJP** series

- No-whirler design with a large free passage diameter minimizes clogging. Available in stainless steel, PPS, or alumina ceramic.
- Cleaning, cooling, and other applications where clogging is a concern.



Wide-angle spray **BBXP**

- The 120° spray angle provides a larger spray coverage.
- Cleaning, cooling, fire extinguishing.

Square Spray Nozzles



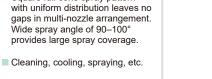
[Spray pattern & distribution]



Square spray SSXP



gaps in multi-nozzle arrangement. Wide spray angle of 90–100° provides large spray coverage.



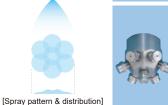
Special Full Cone Spray Nozzles





Seven-head, fine fog **7KB** series

- Seven KB hollow cone spray nozzles with a compact adaptor header produce large volume of fine atomization.
- Flue gas cooling/cleaning. moisture control humidification, etc.



Seven-head, all metal **7JJXP** series

- Seven JJXP full cone spray nozzles with a compact adaptor. Mean spray droplet diameter is about half the size of other single-head full cone spray nozzles with the same spray capacity
- Flue gas cooling/cleaning, dust suppression, etc.

[Symbol key] : Features : Main applications

Solid Stream Spray Nozzles



[Spray pattern & distribution]



Standard type CP/CCP series

- Highest spray impact solid stream jet having a large flow as compared to other nozzles having the same orifice diameters
- High pressure cleaning.



Convex round inlet CRP/CCRP

- Designed for minimal clogging. The convex round inlet prevents floating particles from flowing into the nozzle, thereby reducing clogging.
- Cleaning in paper & pulp making process



Trimming nozzles CM-FB/ 2CM-FB CM/CTM series CMP-T

series

- Extra fine solid stream with high impact cutting force. Wear-resistant nozzle orifice made of ceramic, alumina ceramic, or tungsten carbide
- Paper trimming, cleaning of precision machine parts, food cutting, etc.

Multi-orifice Solid Stream Spray Nozzles









Multi-orifice solid stream 2CP/2CCP series

- 7CP/7CCP
- Multiple solid streams with high impact force. 2-orifice and 7-orifice nozzles are available. Compact design.
- Bottle washing, cleaning dandy rolls and returnable containers, etc.

Special Solid Stream Spray Nozzles





the pilot air ON/OFF. Anti-drip design.

For flat spray, SO-V series is available.

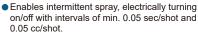
Trimming, cutting, marking, etc.

ON/OFF spray control SO-CM



Pulse spraying with solenoid control SD-CC





■ Micro-volume coating, etc.

For flat spray, SD-VV/SD-V series are available.



Self-proplled pipe cleaning **RSP** series RSP-R series

- Cleans the inside of pipes and tubes, moving by spraying high-impact solid stream jets in different directions as driving force.
- Cleaning inside of pipes/drains/tubes, removing scale and rust

SPECIAL PURPOSE NOZZLES/RELATED PRODUCTS

Air Nozzles

TAIFU.Iet series



 Takes in surrounding air. boosting the volume of powerful air flow.

Special Purpose Nozzles

Slit laminar nozzles



 Slit nozzles with thin laminar flow of water or air. Water is sprayed in the above to better show the spray pattern.

SPILLBACK nozzles



 Sprav capacity is variable without changing spray pressure. Available in a . variety of types.

Tank cleaning nozzles



 Compact rotating nozzle. Rotates by cleaning liquid force only. Ideal for tank and container cleaning.

Eiector nozzles



EJX series spouts out 3-4 times the supplied amount. Ideal for solution agitation.

Nozzle-related Products / Accessories

Spray header **BRASIKan** series



Rotated by the handwheel, the brushes inside the header pipe clear the clog.



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

Mist fan COOLJetter



 Combined unit of a fan and nozzles that delivers Semi-Dry Fog over a broad area using fan wind.

Universal joints



Universal joint adaptors to adjust spray direction.

PNEUMATIC SPRAY NOZZLES

[Symbol key] : Features : Main applications

Fine Fog Spray Nozzles





Low flow rate **BIM** series **CBIM** series **SCBIM** series

Medium capacity

AKIJet® series

- Fine atomization with mean droplet diameters of 20-100 µm.
- Unique, minimal-clogging design. Available in flat fan spray, full cone spray, or hollow cone spray pattern.
- Spraying, cooling, moisture control, washing, etc.



Dry Fog humidifier AKIMist® "E"

Compact, high efficiency humidifier that produces a large volume of

Dry Fog (non-wetting fog).

Energy-saving design.



Large capacity **GSIM II** series

- Large spray capacity, low air-water ratio. Simple structure, easy maintenance.
- Flue gas cooling in waste incineration facilities.

Moisture control, combustion, cooling.

 Atomized droplets are impinged against each other at optimum condition, resulting in a uniform distribution of fine droplet sizes.

Semi-Fine, Semi-Coarse Fog Spray Nozzles





High impact, flat spray VVEA series

- Thin and sharp spray pattern with high impact. Stable spray angle over large turn-down ratio.
- Precision cleaning, etc.



INVVEA Header with quick-detachable nozzles





Slit nozzles PSN series Pneumatic slit nozzles providing uniform spray in the total width. Achieve higher spray impact by installing closer to the object.

Glass substrate cleaning, etc.







Thick flat spray **DDA** series



- Secondary cooling nozzles developed to satisfy crucial requirements for spray nozzles in continuous casting processes in
 - Minimal variation in spray angle, spray distribution and droplet size over a large turn-down ratio. A large free passage diameter. DOVEA series for even flat spray pattern, DDA series for thick even flat spray pattern, and JJA series for full cone spray pattern.
- Gas cooling, steel plate cooling, waste water combustion, etc.

Clog-resistant Spray Nozzles



Full cone spray SETOJet series Flat spray **SETOV** series

- Pneumatic spray nozzles 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.
- 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 um or more. Saves energy using blowers with low operating costs. Large free passage diameter.
- Steel plate cooling, cleaning, etc.





Semi-fine fog LSIM series

- Semi-fine atomization by applying blower air pressure. Low operating costs by using blower air for atomizing.
- Gas cooling, etc.

Steam-Driven Spray Nozzles





Steam-driven JOKIJet series

- Atomization by steam instead of compressed air. Drastic saving on operating costs.
- Gas cooling, moisture control, etc.

SPRAY NOZZLE SYSTEMS

Cooling Systems

Cooling system COOLJetter Dome



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

Industrial cooling system



Industrial cooling solution for solid and gas.

LYOHM System for outdoor cooling



 Energy-saving, outdoor cooling system using Semi-Dry Fog reduces temperatures with evaporative cooling without wetting passersby.

Humidification Systems

Hydraulic humidification system AirULM



Humidifies large spaces with low operating costs.
 Air compressor is not required.

Office humidification system AU-KIT



 Humidification system for offices and other large indoor spaces, easy to use with tap water and a power source.

Industrial humidification system AirAKI



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

Fog Landscape System (Creating Artificial Sea of Clouds)

 Fog system that uses special nozzles developed for creating artificial sea of clouds for landscape purposes.











Hydraulic Spray Nozzles



Pneumatic Spray Nozzles



Dry Fog Humidifiers AKIMist "E"



Air Nozzles



Tank Cleaning Nozzles









Headquarters

Daiichi kyogyo Bldg., 1-15-15, Awaza, Nishi-ku, Osaka 550-0011, Japan

Tel: 81-6-6538-4015 Fax: 81-6-6538-4022

Email: overseas@kirinoikeuchi.co.jp
URL: https://www.kirinoikeuchi.co.jp/eng/

Overseas network

IKEUCHI USA, INC.

4722 Ritter Avenue, Blue Ash, OH 45242, USA Tel: 1-513-942-3060 Fax: 1-513-942-3064

sales@ikeuchi.us https://www.ikeuchi.us/

PT. IKEUCHI INDONESIA

Ruko Rodeo Drive, Jl. Hollywood Boulevard Blok B6 No. 18 & 19, Jababeka, Bekasi, Jawa Barat 17530 Indonesia Tel: 62-21-8938-4201 (or 4202) sales@ikeuchi.id https://www.ikeuchi.id/

IKEUCHI (SHANGHAI) CO., LTD.

Room C, 21F, Electrical & Mechanical Bldg., 600 Hengfeng Road, Shanghai 200070, P.R.China Tel: 86-21-6140-9731 mist@kirinoikeuchi.com http://www.kirinoikeuchi.com/

 Tianjin Branch
 Tel: 86-22-2320-1676

 Shenzhen Branch
 Tel: 86-755-8525-2221

 Wuhan Branch
 Tel: 86-27-8558-8299

IKEUCHI EUROPE B.V.

Merwedeweg 6, 3621 LR, Breukelen, The Netherlands Tel: 31-20-820-2175 info@ikeuchi.eu https://www.ikeuchi.eu/

SIAM IKEUCHI CO., LTD.

909 Ample Tower Bldg. 8FL., Unit 8/2, 8/3, Debaratana Road, Bangna Nuea, Bangna, Bangkok 10260 Thailand Tel: 66-2-348-3801 Fax: 66-2-348-3802 thai@ikeuchi.co.th https://www.ikeuchi.co.th/

IKEUCHI TAIWAN CO., LTD.

11F-1, No.27, Sec.1, Chung Shan N. Road, Taipei 10441, Taiwan, R.O.C.
Tel: 886-2-2511-6289 Fax: 886-2-2541-6392 sales@ikeuchi.com.tw
http://www.ikeuchi.com.tw/