

CUSTOM DESIGNED LOW-PRESSURE MISTING SYSTEMS FOR MATERIALS HANDLING



I-CAT DESIGNS, MANUFACTURES AND INSTALLS LOW-PRESSURE DUST MISTING SYSTEMS FOR ANY EVENTUALITY

I-CAT offers the market unique and patented dust suppression systems for fugitive dust generated at materials handling plants including transfer points and crusher plants.

The system offers an innovative way to reduce fugitive dust particles by using highly dispersed water in the form of water mist. The system supplies water mist at the point of dust origin (where the material is being moved, in chutes or transfer points). Properly aimed water mist stream "collects" or "scrubs" the dust suspended in mid-air, agglomerates it and makes the bigger particles rest on the conveyor.

The key element of the systems is the patented nozzles, which generate a stream of mist consisting of extremely small water droplets having high kinetic energy. This is achieved by injecting water between layers of air moving at supersonic speed. A full range of single fluid nozzles are also applied that atomizes water to very small droplets at low pressure.

Applying a combination of minute droplet size (10 microns) having high kinetic energy allows for high efficiency in dust reduction. The system, being low pressure, can be easily installed, eliminating the need for high pressure rated piping that makes installation difficult and costly.

MISTING SYSTEMS APPLICATIONS

- ✕ Crushers
- ✕ Push feeders
- ✕ Screens
- ✕ Transfer points (header boxes and discharge)
- ✕ Stockpiles
- ✕ Tipping bins / areas
- ✕ Specialised dust misting systems, custom designed including full turnkey solutions
- ✕ Fog cannons (for dust suppression on open areas and water evaporation)

AQUA COLLISION® TECHNOLOGY

The design of I-CAT's *Aqua Collision*® nozzle, found its concept behind the idea of Da Vinci's Vitruvian Man. This, together with the theory of the golden ratio, concludes simple unity and structuralism designed within the nozzle's functionality where the mist is created. It creates a perfect balance together with the accurate collision of the droplets. The nozzle functionality is physically, numerically and geometrically placed within the sphere of accuracy. *Aqua Collision*® technology was designed and engineered by I-CAT and used exclusively in our misting systems.

BENEFITS

- ✕ Easy installation
- ✕ Low water usage
- ✕ Increased safety due to low pressure system
- ✕ Maximum effectiveness in agglomeration of dust particles due to high level water dispersion
- ✕ Fast and uniform spreading of the water mist inside the chutes and covers
- ✕ Choice between manual or automated control panels

LOCALISED DUST MISTING SYSTEMS

I-CAT offers tailor-made solutions for suppression of fugitive dust, generated at transfer points and crusher plants.

The system offers an innovative way to reduce dust particles by using highly dispersed water in the form of water mist.

The key element is our revolutionary **Aqua Collision**® Technology in our nozzle systems which generate high kinetic energy water mist droplets that encapsules dust particles, preventing them from becoming airborne.

The unique misting system, with its specialised collector and strategic mounted nozzles, maximizes dust neutralization efficiency of both hydrophobic and hygroscopic particles.

Driving Efficiency Through Intelligent Automation

In today's mining industry, technology is no longer a luxury - it's a necessity. Rising operational costs and the risk of production losses demand smarter, more efficient solutions. That's why I-CAT has developed an advanced automation platform designed to monitor and control our wide range of misting systems.

Our system combines cutting-edge automation with custom-engineered designs, delivering optimal performance tailored to each client's unique requirements. By harnessing information and mechanization, operations achieve maximum productivity, improved efficiency, and optimized resource utilization.

Every I-CAT Misting System can be equipped with full automation for hands-free precision or supplied with a manual control option for flexible operation - ensuring the right solution for every application.



I-CAT's PATENTED RETRACTABLE STOCKPILE DUST RING (R-SDR)

EFFECTIVE STOCKPILE DUST SUPPRESSION THAT IS EASY TO INSTALL AND MAINTAIN

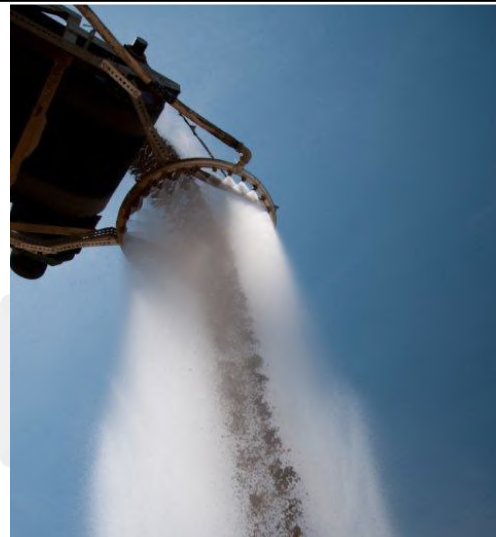
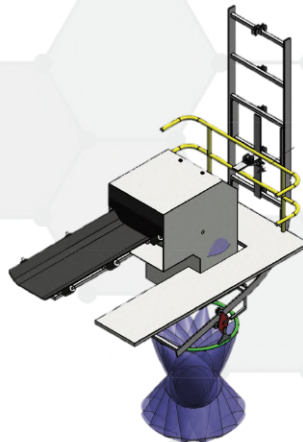
Engineered for industrial strength and longevity, the R-SDR surrounds the discharge flow on all sides, providing a simple, focused dust management solution that is perfect for continuous duty.

The system creates a virtual curtain around material flow for effective dust particle containment.

Variable design configuration allows nozzles to be added, removed or replaced with different sizes to suit the specific application.

GENERAL SPECIFICATIONS

- ✧ Stainless steel misting ring designed for mounting at the end of conveyor belts to aid in dust suppression at the discharge point.
- ✧ The system is PLC controlled and can either be operated manually or automatically.
- ✧ The system is retracted using a manual pulley system for easy access and maintenance.



BENEFITS

The R-SDR creates a virtual curtain of mist around the discharging material to contain particle flow, and provides:

- ✧ Simple, focused dust control.
- ✧ Continuous duty on radial stackers.
- ✧ Customizable options with Variable Particle Sizing (VPS) Technology.
- ✧ An intrinsically safe, mounted option.



I-CAT's WASTEWATER EVAPORATION & DUST CANNONS



DUAL PURPOSE MISTING CANNONS

I-CAT's dust cannons is designed for both dust suppression and wastewater evaporation. The mechanical design is identical on both; by swapping out the nozzle ring, the system is highly effective for both applications.

WASTEWATER EVAPORATION

I-CAT's I-VAP System offers an alternative process to several wastewater treatment applications such as reverse osmosis, chemical dosing or desalination. Evaporation cannons can rapidly increase the evaporation process, with up to 14 times more efficiency than evaporation ponds.

Evaporation types:

- Water fracturing evaporators. Water is fractured through a high-speed fan and propelled into the air. Best for smaller areas where wastewater contains high solids or particulates.
- Water atomizing evaporators. Air is compressed via a fan through a tapered barrel and propels controlled-size water droplets created via nozzles. Seen as best practice for larger areas where wastewater contains lower dissolved solids or smaller to no particles.

DUST SUPPRESSION

With its muscular 60 HP motor and user definable 359° oscillation, the system has a throw of more than 100 meters, giving the system a coverage area of an incredible 2.6 ha. To put that in perspective, one machine could cover five rugby fields with its dust trapping atomized mist! The design really is the sum of all its parts, in that every component is specifically engineered to maximize performance. A manifold of 30 nozzles that are specifically sized and positioned to deliver best results feeds the unit's fan. The system was developed specifically for large-scale opencast mining, coal operations, and bulk materials handling.



SPECIFICATIONS

- ✂ 32,000 square meters coverage.
- ✂ Custom automated oscillation up to 359° option.
- ✂ Adjustable angle of throw (7° - 45°).
- ✂ Integrated fan and nozzle design.
- ✂ Premium efficiency motor.
- ✂ Low energy-use to evaporation ratio.