

Dry Ice Cleaning in the Tire Industry

ASP-T Automated Surface Preparation — Tire



Introducing the ASP-T

Cold Jet's Automated Surface Preparation Solution for the Tire Industry

Dear Customer,

Welcome to Cold Jet and our Automated Surface Preparation Solution for the Tire Industry (ASP-T). Environmentally responsible, safe, easy to use, with the best return-on-investment achievement were the key drivers for developing this new Cold Jet Automated Surface Preparation-Tire System. During tire production, major challenges need to be controlled by the tire manufacturing companies, including the technical development of materials, mixture of compound and – of great significance – the production process. In a global environment that is developing consistently and dynamically, justified processes are essential in terms of production and quality. A critical part of the production process is the maintenance and cleaning of molds. Clean molds and thus availability equals flexibility and has direct impact on the production capacity and production costs. Safety, noise and waste are also key reasons why manufacturers need to review and control the tire production process.

We at Cold Jet understand this mission and offer solutions for tire manufacturing companies to analyze and control these critical processes. The maintenance process and mold cleaning can be either handled in-house or by a supplier but the most efficient and effective cleaning solution should be selected. Cold Jet also addresses the new trends in tire mold cleaning, including automatic and non-abrasive cleaning.

Additionally, Cold Jet's global support and customer service presence in Europe, America and Asia provides significant benefits for the tire industry.

The tire producer needs to control the process and we commit ourselves that our customers are completely satisfied when investing in Cold Jet equipment and we are looking forward to your trust.

Yours sincerely,



Ahmet Erdogan
Global Key Account Manager Tire



Dietmar Juchmes
Vice President EMEA

ASP-T

Automated Surface Preparation —Tire



ASP-T: Tire Mold Cleaning

DIMENSIONS:

Transport position (LxWxH):
2700 mm x 950 mm x 2300 mm
Stroke: vertical 3000 mm,
horizontal 600 - 2.300 mm
Weight: 2000 kg

POWER REQUIREMENTS

400 V, 32 A, 3 Ph; 3 kW

DRY ICE HOPPER CAPACITY

27 kg, 3 mm pellets supply

HMI DISPLAY

15" Multitouch-Control-Panel

AIR SUPPLY:

Min. 3 m³/min., min. 6 bar,
ISO8573.1 class 1

IoT CONNECTION:

Remote monitoring and diagnostics
with Cold Jet CONNECT™

EQUIPMENT:

Must be used on flat surface and place
suitable for the designed work

WORKFLOW:

Operator transport system in front
of the press

Secure and prepare press and connect
utilities to the system

Prepositioning of the unit in manual
mode

Robot performs cleaning depending
on selected recipe, top and bottom
sidewall in one process

System stops after cleaning

Remove unit after visual inspection by
operator. Report can be saved.
Ready for next cleaning

PCS = PARTICLE CONTROL SYSTEM



Enhanced Features:

Cleaning in open or closed segment position

Cleaning of 14"–22" mold dimensions

Tilt back press and hydraulic vertical press

Automated self centering with intelligent sensor technology

Single operator

Easy to program

Global presence, reproducible results, cross multi production plants

ASP-T Features: Tire Mold Cleaning

- 1** PCS[®] 60 dry ice blasting machine

Unique nozzles designed for the tire industry

28 different diamond shaped dry ice particle sizes – adjustable according to cleaning parameters

- 2** One panel control system with open design

KUKA industrial robot

- 3** Windows 10 operating system

- 4** IoT Capability – Cold Jet CONNECT™

- 5** Safety features: SICK safety modules, blast protection wall, safety area monitoring, emergency stop system

- 6** General Beckhoff control systems, Stainless steel cover, SEW Eurodrive Motors, Festo pneumatic devices, Auto focus camera

ASP-T, Cold Jet's Automated Surface Preparation Solution for the Tire Industry



Cold Jet's ASP-T was developed for the automated cleaning of tire molds - inside and outside the press - using the Particle Control System™ (PCS) with 28 different diamond shaped particles with sizes from 3mm to 0.3mm. The system can be easily integrated into existing processes. This saves up to 70% of the cleaning time compared to conventional cleaning methods.

The process parameters can be adjusted to fit the selected cleaning program according to the requirements of the winter or summer tire molds, with or without spring vents. The dry ice particle size can be adjusted variably with the PCS from 3 mm to 0.3 mm to optimize cleaning. The dry ice can be adjusted to more effectively clean surfaces depending on the complexity of the side walls and tread in combination with the curing cycles.

The system can be used to perform automated cleaning of the most common tire molds inside the vulcanization press with an open segment position capability. This eliminates flash and rework at the final finish department. It also allows for the cleaning of sidewalls in only one cleaning cycle. These unique features lead to enormous cost savings, increased productivity and a competitive advantage.

The combination of Cold Jet products that are integrated as system solutions, such as the Cold Jet's ASP-T for tire mold cleaning and the PR350H for on-site dry ice production, enables users to implement a unified controllable process across multiple production facilities.

Control your tire mold cleaning process with Cold Jet, your system solution supplier.

ASP-T, Cold Jet's Automated Surface Preparation for the Tire Industry

Align



Clean



Maintain



Particle Control System (PCS) – versatile for all applications

The Cold Jet PCS® 60 utilizes finely controlled particles of dry ice as a blasting medium, via our proprietary and patented Particle Control System™ (PCS).

Accepts 3mm pellets as input and, via the PCS, precisely cuts the dry ice into diamond shaped particles in the exact dimensions chosen by the operator.

Choose dry ice particle size from 3mm to 0.3mm and every size in between.

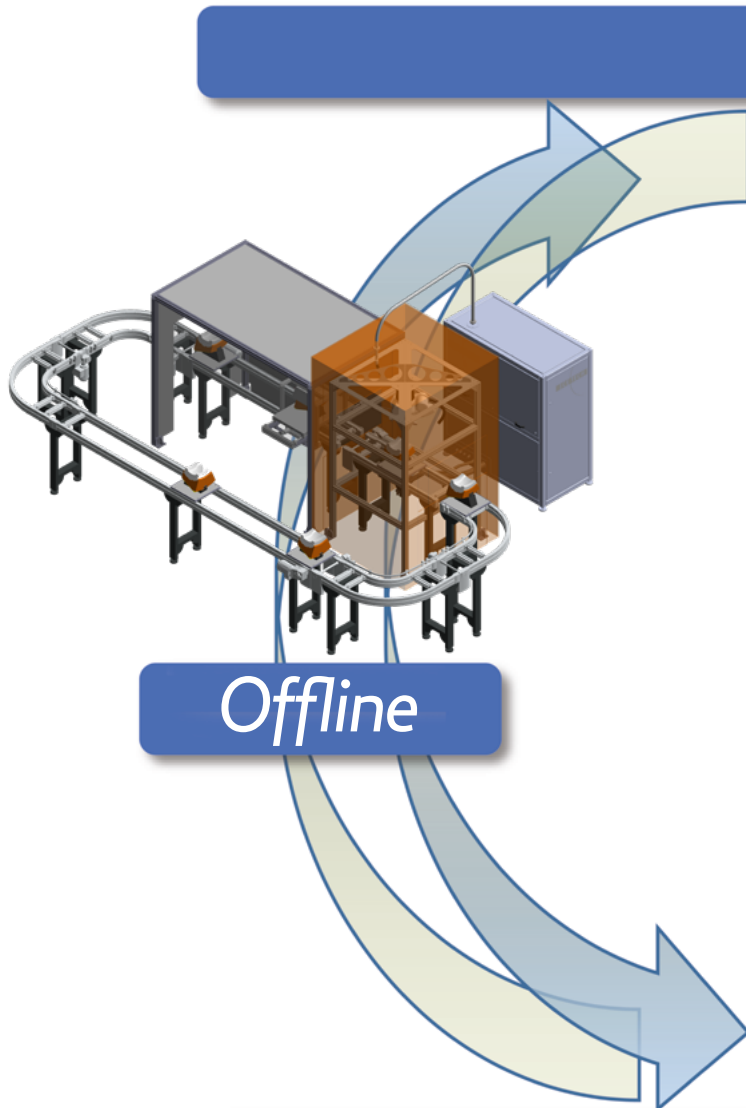
The user has complete control and can fine-tune the most effective setting for each unique application.





Tire mold cleaning is an essential part of the tire industry's highly complex production process.

Your System Solution Supplier Worldwide.



Onsite

Cold Jet CONNECT™

Get Smart. Work Smarter.

Achieve smart dry ice production and cleaning with Cold Jet CONNECT™ monitoring, diagnostic and corrective action systems and maintenance programs.



Cold Jet ASP-T

AERO²
PCS⁶⁰
3 mm to 0.3 mm



Offline

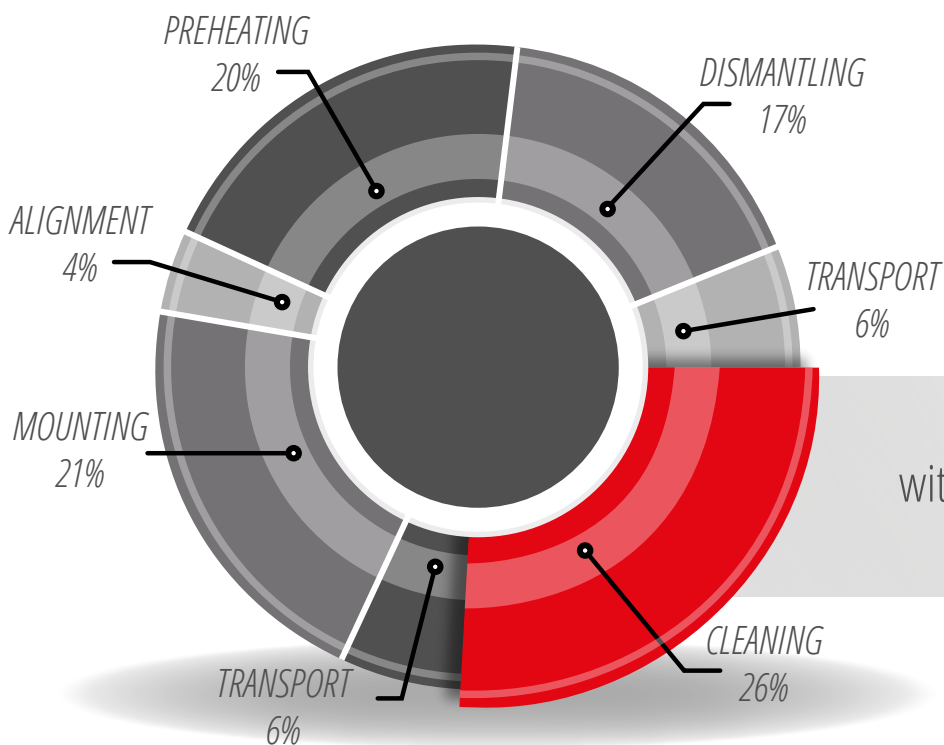
Dry Ice Production

Cold Jet is the Solution for Tire Mold Cleaning

The most important process in the production of tires is the cleaning of molds with the most suitable method. If you consider only the efficient cleaning of the valve technology - which is becoming more and more important recently - you will quickly discover that abrasive cleaning methods are not timely anymore. To avoid damage of the valves and the mold surface, Cold Jet developed the most thorough cleaning method with dry ice - providing a fast, non-abrasive, economical solution to clean tooling and equipment, resulting in:

Key Benefits

Less down-time | Better clean | Higher quality parts | Improved tool utilization | Longer asset life



Press Downtime
with Conventional Cleaning

Source: Conti-Machinery

Cold Jet's patented dry ice PCS method using variable particle sizes complies with the new requirements in tire mold cleaning and takes into consideration:

Technical Aspects

- Mold material - steel, aluminum or coated molds
- Complexity of mold and design
- Mold technology (segmented, two piece)
- Winter / Summer molds
- Vent technology
- Press type accessibility; working condition

Economical Aspects

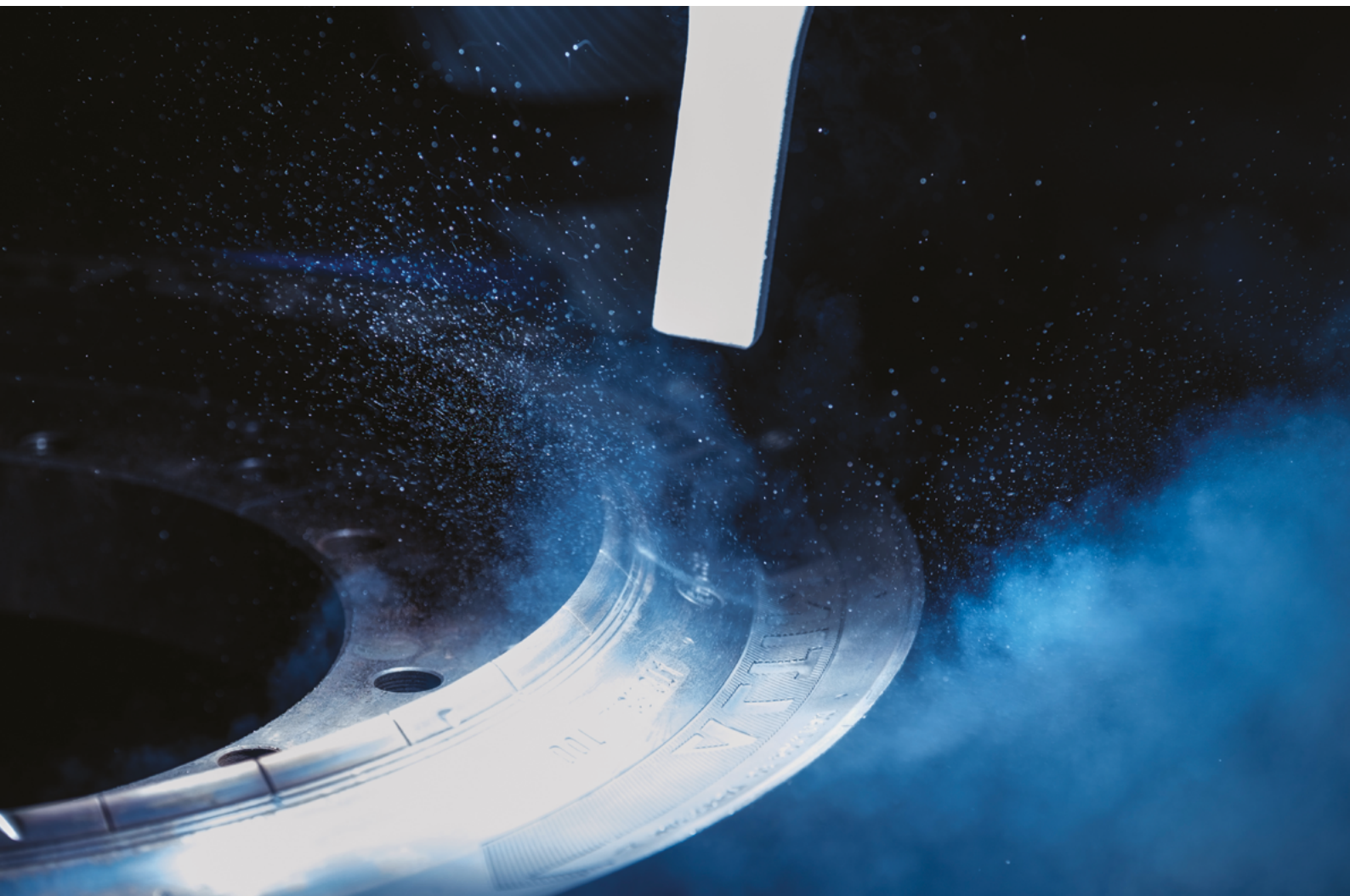
- Reduction of press downtime
- Increasing productivity
- Focus on core business

Internal Requirements

- Operator safety
- Noise
- Environmentally Responsible
- Non-abrasive cleaning

Complexity

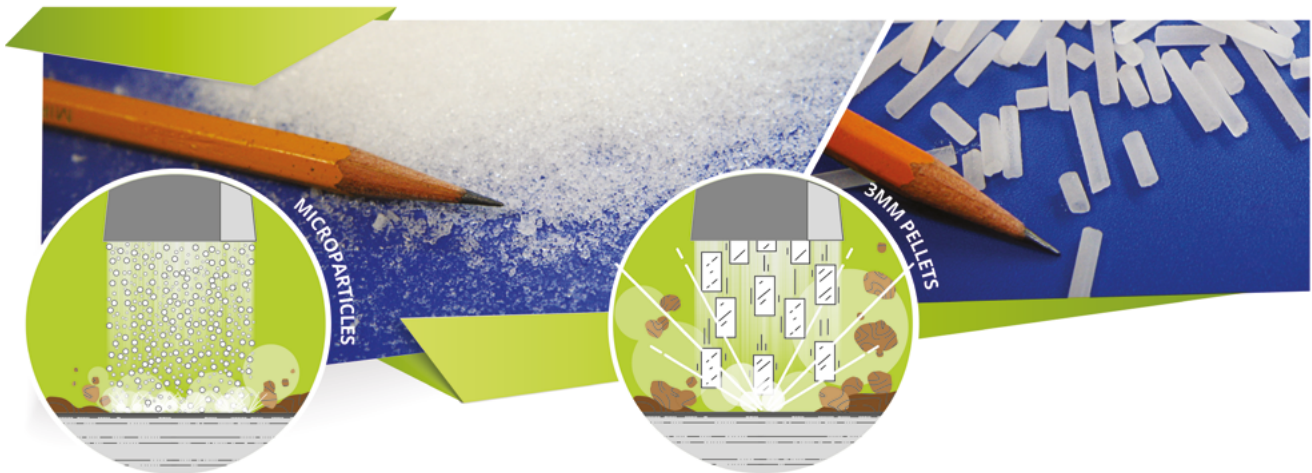
- Inline, offline cleaning
- Easy integration into existing work processes



Critical Points in the Cleaning Process

Cold Jet Integration – Less air, less ice, more coverage

PCS vs. Pellets:



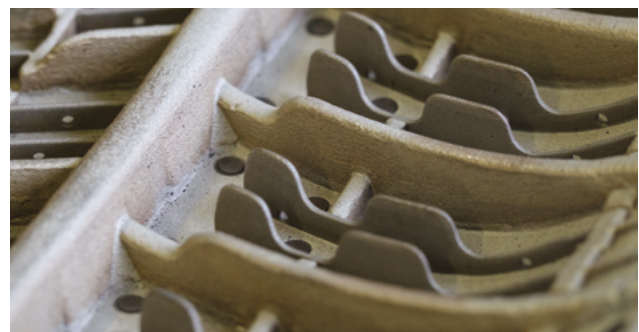
Segments and sidewalls contain spring vents or air release vents (micro) which allow air to release during the curing process.

Specific vent technology requires specific cleaning. Cleaning spring vents with any solid or abrasive media will damage the vents.

Cold Jet Particle Control System (PCS) is the answer for the fastest clean without any damage to the tire mold – no other system can achieve this. Our solutions work well for both the spring valves (Euro vents) and the traditional microvents.

The PCS 60 gives you complete control of particle size and unrivaled precision and application versatility.

Additionally, the tire brand logo which you can find on the back of every tire mold requires accurate cleaning and can only be cleaned efficiently with Cold Jet dry ice.



Keep the lines running

A Faster, Better Clean

A major problem faced by tire manufacturers is mold fouling. Build-up of cured material and mold release agents causes sticking molds, blemishes and unwanted flash on final parts, making them unusable and requiring line shutdown for cleaning.

Traditional cleaning methods such as manual scraping, glass bead blasting or sand blasting can be time consuming, ineffective, damaging to molds and result in high labor and material costs. Dry ice MicroParticle cleaning offers an online, quick and effective way to clean without damaging molds.

Cold Jet vs. Traditional Cleaning Methods

Proven Applications

Steel Mold
Aluminum Mold

Coated Mold
Segmented Molds

2 Piece Molds

Key Benefits

Eliminate production shutdown; clean online & offline; and flexible applications | No disassembly of molds; eliminate reassembly damage and scrap | Reduce product scrap; no more delayed cleaning resulting in product defects | Reduce cleaning time; labor cost reduction up to 75% | Environmentally responsible, no secondary waste | *Individual results may vary.*

CLEANING METHOD	NO SECONDARY WASTE	NON-CONDUCTIVE	NON-TOXIC*	NON-ABRASIVE
DRY ICE				
SAND			*	
SODA			*	
WATER			*	
HAND TOOLS				
CHEMICALS				
ULTRASONIC				
LASER				

* Upon contact, traditional blasting materials become contaminated when used to clean hazardous substances and objects. These blasting materials are then classified as toxic waste and require appropriate safe disposal.

We are Cold Jet

The global experts in environmentally sustainable cleaning, surface preparation and cold chain management solutions.

Dry Ice Cleaning

Cold Jet has developed the most efficient dry ice blast cleaning technology available. Our environmentally responsible systems are used for cleaning, surface preparation and parts finishing. Designed with unrivaled innovation, unmatched performance and based on years of customer input, our systems let you clean better and with less effort, thus increasing productivity and profit.

Dry Ice Production

Our dry ice manufacturing technology offers the greatest level of reliability and the highest quality of extruded dry ice. Dry ice production systems are fully automated, provide the best output to footprint ratio, offer dry ice on demand and pass UL, USDA, FDA and CE standards.

Integrated Dry Ice Cleaning

Our dry ice cleaning systems are ideal for production integration. Cold Jet's integrated systems combine a pelletizer unit with one or more blasting system for continuous or fully automated use. They are custom-engineered to meet our customer's specific requirements.

Distinct Solutions in Diverse Industries

- Aerospace
- Automotive
- Composites
- Contract Cleaning
- Disaster Remediation
- Electric Motor
- Food & Beverage
- Foundry & Metal Forming
- General Maintenance
- Historic Restoration
- Oil & Gas
- Medical Device Manufacturing
- Packaging
- Plastics
- Power Generation
- Printing
- Restoration
- Textile
- Transportation
- Tire & Rubber

Local Company with a Global Presence

We are local. Everywhere. With 13 service centers located in 10 countries - and with the largest install base of human technical resources - when you need us, we will be there. The Cold Jet customer support team is available 24/7 to provide the personal service your business demands.

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