Cold Jet®
*the force of nature*

Cold Jet is bringing the heat.

*THERMALLY ENHANCED DRY ICE CLEANING*

# TEC™ 1200

PRODUCT BOOK

# THERMODYNAMIC HEAT-ASSISTED DRY ICE BLASTING

Evolve the way you clean your equipment with the TEC™1200 Heat Assist System. Designed to transcend the performance boundaries of traditional dry ice blasting, the TEC1200 integrates high-energy thermal management with supersonic particle acceleration. By replacing ambient-temperature compressed air with a precisely heated air stream, this system functions as a powerful performance multiplier for the Aero$_2$® ULTRA Series and the legacy Aero$_2$® Series.

Utilizing a dual-hose optimization strategy, the TEC1200 prevents premature sublimation by isolating the solid $CO_2$ media from the heated air until the final stage of delivery within the nozzle. This dual-hose system ensures that the dry ice particles are energized by the heated air at the substrate to maximize contaminant removal power. Notable features of the TEC1200 include:

- Patented Cone Nozzle
- Dual-Hose Architecture
- Safe Electric Heating System
- Seamless Manual to Automated Integration

The TEC1200 drastically reduces equipment downtime. Due to its combination of enhanced kinetic energy and accelerated thermal breakdown, the TEC1200 is the superior solution for large-area industrial stripping and penetrating high bond strength coatings historically considered "uncleanable." Benefits of thermally enhanced dry ice blasting include:

- Operating at speeds up to 20-25x faster than baseline dry ice cleaning
- Up to 70% increase in entrained air velocity
- Nearly 3x increase in particle impact force
- Weakens chemical bonds in tough coatings and adhesives
- Eliminates tooling condensation and flash rust
- Effectively cleans blind holes and internal channels
- Safeguards base metallurgy without inducing surface profiling
- Produces no secondary waste
- Avoids photonic radiation hazards and LSO requirements

## TECHNICAL SPECS

**MACHINE DIMENSIONS**
Length x Width x Height:
47.5 in x 27.65 in x 49.8 in
(120.65 cm x 70.23 cm x
126.49 cm)
Weight: 440 lb (200 kg)

**POWER REQUIREMENTS**
400-480V 3 Phase 60
Amp Fuse
*Includes Mennekes -*
*ME 460C7W Plug*

**BLAST PRESSURE RANGE**
40-145 psi (2.75-10 bar)

**VARIABLE FEED RATE**
Uses the Aero$_2$ PCS ULTRA's
and PCS 60's variability

**AIR SUPPLY RANGE**
40-250 psi (2.75-17 bar)

**AIR CONSUMPTION**
150-180 cfm at 80 psi
(4.25-5.0 m$^3$/min at 5.5 bar)

**AIR FLOW PATH**
1.5 in (3.8 cm) Piping

**COMPATIBLE WITH**
Aero$_2$® PCS ULTRA
Aero$_2$® PLT ULTRA
Aero$_2$® PCS 60
Aero$_2$® PLT 60

# TEC1200 Basic Package

A.

B.

C.

D.

E.

F.

G.

H.

I.

J.

**A. TEC1200**
2A0737
Thermal Cleaning Unit

**B. Applicator/Nozzle**
2E1858

**C. Blast Hose**
2N0903

**D. 1 in Air Supply Hose**
2N0199 - 20 ft

**E. ULTRA Series Modbus Connection Cable**
2G1818

**F. ½ in Stainless Steel Ice Transfer Hose**
2N0911

**G. 3 Phase 480V Power Plug**
4G5264

**H. Hose, 3/8 JICF**
2N0999 - 8 ft

**I. Insulation Jacket**
4E0638

**J. ¼ in Tubing**
4N0173 - 8 ft

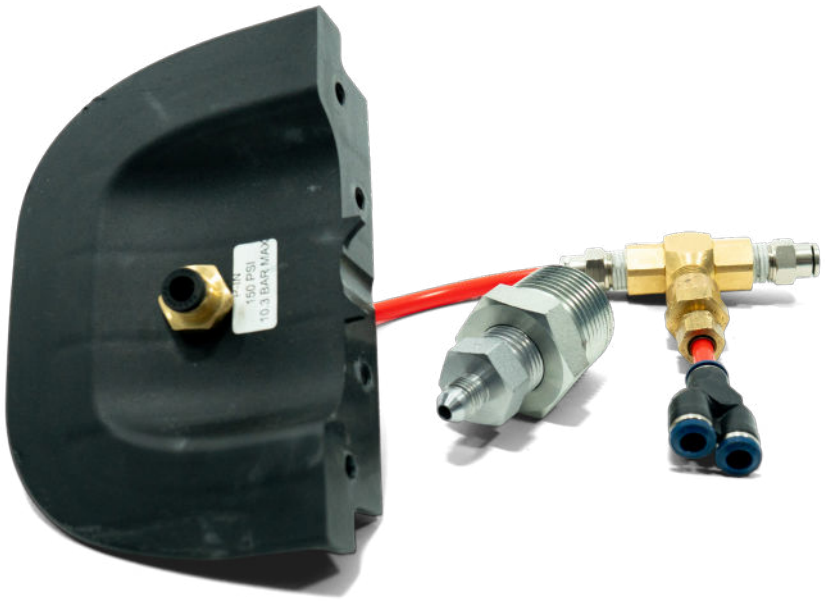
2E1870

2E1868

2Z0036

| Accessory | Part # | Description |
|---|---|---|
| Support Hanger | 2E1870 | Designed to help support the weight and length of the blast hose |
| Tilta Lightweight Support Vest | 2E1868 | Tactical style harness to support the weight of the blast hose and secure the applicator |
| PPE Kit | 2Z0036 | Gloves, safety glasses, ear protection, and a dry ice scoop for operator safety |
| Braided Stainless Steel Hose 1" x 10ft | 2N0901 | Insulated blast hose with a 1 in diameter, 10 ft long |
| Braided Stainless Steel Hose 1.25" x 10ft | 2N0902 | Insulated blast hose with a 1.25 in diameter, 10 ft long |
| Braided Stainless Steel Hose 1.25" x 20ft | 2N0904 | Insulated blast hose with a 1.25 in diameter, 20 ft long |

# Attachment and Integration Kits

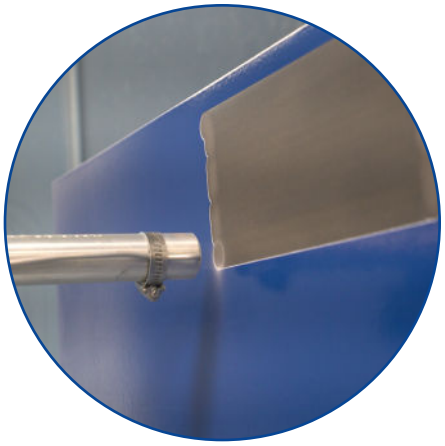


**Aero$_2$ PCS Heat Assisted Blast Attachment Kit**
2K0745

Kit allowing for pneumatic power to come from a secondary source (TEC1200).

**Aero$_2$ PCS Modbus RTU Integration Kit**
2K0252

Kit allowing for the TEC1200 to control the Aero$_2$ PCS over Modbus automation protocol.



# NEW CLEANING POSSIBILITIES

The TEC1200 is the first of its kind dry ice blasting solution that combines a highly energized heated air stream with the cryogenic cleaning power of dry ice. This advanced combination opens new cleaning opportunities that were previously not possible with baseline dry ice blasting. The TEC1200 technology can effectively remove paint, epoxies, stronger adhesives, and more. Additionally, heat assisted dry ice blasting can clean surfaces up to 25 times faster than standard dry ice blasting.

# PATENTED NOZZLE TECHNOLOGY

The patented, proprietary Cone Nozzle for the TEC1200 is designed to introduce the dry ice pellets or particles into the heated air flow at the precise moment of exiting the nozzle. This configuration allows the dry ice to reach the nozzle through its own hose, avoiding premature sublimation, before being accelerated by the heated air flow up to 70% faster than standard dry ice blasting. The result is a higher velocity impact effect, allowing the TEC1200 to remove tougher contaminants, paint, and epoxies.

# ADVANCED APPLICATOR

The TEC1200 features a new applicator designed to handle the heated air stream combined with dry ice particles or pellets. The controls for adjusting temperature, air pressure, and more are ambidextrous and can be swapped to either side. The patented nozzle also features a unique rotary union to give the operator a more ergonomic experience in handling the applicator. Additionally, a heat shroud covers the nozzle for operator safety.

# INSULATED HOSE

The hoses used for the TEC1200 are fully insulated by a triple layering of material for operator safety and keeping the blasting elements separate until combining within the nozzle. These hoses are built to withstand the extreme temperature air streams traveling to the applicator and sustaining them through multiple blasting sessions. The construction is durable and rated to handle the highest TEC1200 settings.

# Overview of Technology Applications

The integration of superheated compressed air with dry ice sublimation introduces a thermal-kinetic effect that alters how strongly bonded contaminants behave. Standard dry ice blasting relies on cold thermal shock and kinetic transfer. By superheating the air stream, the TEC1200 accelerates dry ice particles up to 70% faster, resulting in 3x increase of particle impact force. Simultaneously, the hot air softens or weakens the structural bonds of paints, epoxies, and adhesives, while the immediate impact of -109°F (-78.5°C) dry ice causes rapid contraction and bond failure.

This dual-temperature approach makes the system viable for tasks traditionally reserved for abrasive grit blasting, chemical stripping, or mechanical grinding, but without the associated profiling, substrate damage, or secondary waste generation.

### Core cross-industry capabilities include:

- **Surface Preparation:** Achieving required surface cleanliness profiles for repainting or recoating without leaving chemical residues or altering the substrate dimensions.
- **Non-Destructive Testing (NDT) Preparation:** Stripping coatings to bare metal or composite to allow for dye penetrant, eddy current, or ultrasonic inspections.
- **Selective Coating Removal:** Removing specific topcoats or thermal barriers while preserving underlying primers.
- **Heavy Adhesive and Epoxy Removal:** Breaking down industrial glues, structural sealants, and vulcanized rubber bonds.

# Insights to Applications within the Aerospace Industry (Military)

Military aviation components are subjected to extreme thermal and kinetic stresses, requiring specialized coatings that are notoriously difficult to remove during maintenance cycles. The TEC1200 allows maintenance depots to strip these materials without damaging the advanced composites or lightweight alloys underneath.

- **Radar Absorbent Material (RAM) Removal:** Stripping specialized stealth coatings from exterior panels and leading edges during standard maintenance or damage repair. This avoids the use of abrasives that could degrade carbon fiber skins or alter radar cross-sections.
- **Thermal Barrier Coating (TBC) Removal:** Cleaning exhaust nozzles, turbine blades, and afterburner components. The high-kinetic impact removes degraded thermal barriers prior to recoating.
- **Radome Depainting:** Stripping specialized paints from radomes without altering the dielectric properties of the substrate or utilizing chemicals that degrade the resin matrix.
- **Hydraulic and Landing Gear Overhaul:** Removing baked-on carbon, aviation hydraulic fluid (e.g., Skydrol) residues, and heavy greases from landing gear struts and actuators during structural teardowns.
- **Airframe Surface Prep for NDT:** Clearing specific sections of the airframe to bare metal to check for stress fractures, avoiding the introduction of water or grit that can trap moisture and cause galvanic corrosion in confined structural pockets.

## Insights to Applications within the Aerospace Industry (Commercial)

In commercial MRO (Maintenance, Repair, and Overhaul), aircraft turnaround time and worker safety (limiting chemical exposure) are primary drivers. The technology effectively replaces localized chemical stripping and manual scraping operations.

- **Fuel Tank Sealant Removal:** Stripping tough polysulfide sealants (such as PR-1422) and epoxies from the interior of integral wing fuel tanks. The heated air softens the sealant, allowing the dry ice to shatter and dislodge it without scoring the aluminum ribs.
- **Targeted Fuselage and Empennage Depainting:** Performing localized paint stripping for structural repairs, composite patch preparation, or livery changes without requiring massive containment areas or hazardous chemical disposal.
- **Engine Core Cleaning:** Removing anti-seize compounds, baked-on carbon, and compressor wash residues from turbine blades, stators, and engine cowlings during shop visits.
- **Cargo and Cabin Floor Preparation:** Stripping heavy adhesives, carpet glues, and cargo track sealants from floor panels (often composite or aluminum honeycomb) prior to interior retrofitting.
- **Composite NDT Prep:** Clearing paint and primer from fiberglass and carbon fiber fairings to inspect for delamination or bird-strike damage without profiling the composite weave.

## Insights to Applications within the Oil and Gas Industry

The oil and gas sector requires aggressive surface preparation on heavy infrastructure, often in hazardous environments where traditional grit blasting poses spark risks or unacceptable cleanup parameters.

- **Pipeline Coating Removal for NDT:** Stripping thick, heavy-duty anti-corrosion coatings (such as Fusion Bonded Epoxies or coal tar enamels) down to bare steel. This is a critical first step for ultrasonic wall-thickness testing to verify pipeline integrity.
- **Drill String and BOP Maintenance:** Cleaning drill pipe threads, tool joints, and Blowout Preventers (BOPs) of heavy pipe dope, hardened greases, and rust inhibitors before threading inspection and redeployment.
- **Heat Exchanger and Condenser Cleaning:** Removing hardened scale, baked-on bitumen, or heavy crude fouling from the exterior of tube bundles. Standard dry ice lacks the necessary aggression for this, while grit blasting erodes the tubes; the TEC1200 provides the necessary middle ground.
- **Offshore Platform Maintenance:** Stripping failing intumescent (fireproofing) coatings and heavy marine-grade epoxies from structural steel members for recoating, without dumping abrasive media into the ocean.
- **Valve and Flange Refurbishment:** Clearing hardened gaskets, sealants, and corrosion from complex valve geometries and flange faces to ensure proper mating and sealing during reassembly.

# Insights to Applications within the Industrial Contract Cleaning Industry

Contract cleaners require versatile equipment that can handle a wide variety of site conditions. The addition of thermal enhancement allows contractors to bid on jobs previously outside the scope of standard dry ice blasting.

- **Industrial Adhesive and Glue Lines:** Cleaning conveyor systems, packaging machinery, and laminating presses where adhesives and hot melts build up and harden. The heat weakens the adhesive tack, and the kinetic force of the dry ice lifts the material from the substrate.
- **Heavy Tool and Mold Cleaning:** Servicing plastic injection and rubber vulcanization molds. The heated air prevents the mold from dropping below the dew point (preventing condensation and flash rust) while effectively removing heavily baked-on off-gassing residues and epoxies.
- **Facility Decommissioning and Restoration:** Removing heavy industrial epoxies, lead-based paints, or floor markings from concrete and structural steel beams without creating contaminated water runoff or heavy dust clouds that require extensive abatement.
- **Metal Fabrication Surface Prep:** Removing heavy weld slag, spatter, and thermal spray coatings from fabricated parts prior to powder coating or final assembly.
- **Tank and Silo Relining Preparation:** Stripping old epoxy, phenolic, or glass-flake linings from the interior of storage tanks. The lack of secondary waste significantly reduces the time, risk, and cost associated with vacuuming and disposing of spent abrasive grit from confined spaces.

AERO$_2$ ULTRA

## Machine Specifications

| | PCS® | PLT® |
|---|---|---|
| BLAST MEDIA | PCS = PARTICLE CONTROL SYSTEM<br>IN: 3mm Dry Ice Pellets<br>OUT: 0.3 - 3.0mm Dry Ice MicroParticles/Pellets | PLT = FULL PELLET SYSTEM<br>IN: 3mm Dry Ice Pellets<br>OUT: 3mm Dry Ice Pellets |
| DIMENSIONS<br>*Length x Width x Height* | 38.5 x 19 x 45 in (98 x 48 x 114 cm) | 38.5 x 19 x 45 in (98 x 48 x 114 cm) |
| WEIGHT | 266 lb (120.6 kg) | 243 lb (110.2 kg) |
| DRY ICE CAPACITY | 60 lb (27 kg) | 60 lb (27 kg) |
| HMI DISPLAY | 7" LCD Color Screen | 7" LCD Color Screen |
| POWER REQUIREMENTS | 110/220 VAC (50/60Hz); AMPS: 4.5 | 110/220 VAC (50/60Hz); AMPS: 4.5 |
| FEED RATE | 0-4 lb/min (0-1.8 kg/min) | 0-6 lb/min (0-2.7 kg/min) |
| BLAST PRESSURE RANGE | 20-145 psi (1.4-10 bar) | 35-250 psi (2.4-17.2 bar) |
| COMPRESSED AIR SUPPLY | 40-145 psi (2.8-10 bar) | 40-250 psi (2.8-17.2 bar) |
| NOZZLE AIR CONSUMPTION | 12-100 CFM @ 80 PSI<br>(0.33-2.83 m³/min @ 5.5 bar) | 50-165 CFM @ 80 PSI<br>(1.4-4.7 m³/min @ 5.5 bar) |
| AIR FLOW PATH | 3/4 in (1.9 cm) straight-through | 1 in (2.5 cm) straight-through |
| PACKAGE CHOICE | Precision or Performance Kit | Performance Kit |

### PRECISION KIT

- Your choice of 2 nozzles are included in package pricing.
- Lightweight and compact applicator for easy use in hard-to-reach areas.
- Nozzles offer different blast swaths, air consumption requirements and nozzle tip angles.

### PERFORMANCE KIT

- Your choice of 1 nozzle is included in package pricing.
- Industrial grade performance applicator designed for comfort.
- Operators can easily adjust blasting parameters (PSI, dry ice feed rate, and particle size) from the applicator, giving the user greater control when blasting.

Global Headquarters
Loveland, Ohio, USA

European Headquarters
Zellik, Belgium

Asia-Pacific Headquarters
Shanghai, China


Cold Jet®
*the force of nature*