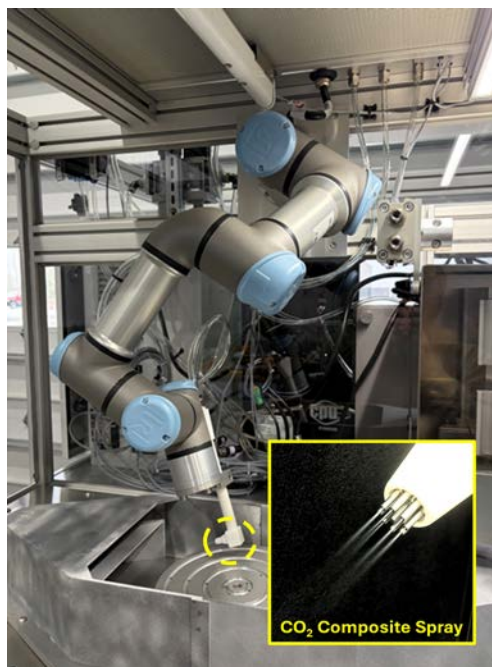


# CleanCell™

## Robotic PowerSno™ CO<sub>2</sub> Spray Cleaning Systems

CleanCell™ Robotic PowerSno™ CO<sub>2</sub> Spray Cleaning Systems are customizable, effective, precision cleaning solutions for low- to high-capacity critical-cleaning applications. Proven in high volume and critical production applications such as Hard Disk Drive (HDD) manufacturing, CleanCell design flexibility, cost-per-clean, and cleaning consistency are unmatched.

PowerSno cleaning systems employ exclusive CO<sub>2</sub> Composite Spray™ technology, providing fully adjustable precision spray cleaning compositions utilizing CDA or GN2 propellant gas and micronized CO<sub>2</sub> particles. Because the cleaning spray is single-use, no cross-contamination is possible and the cleaning results are the same, time after time. Unlike conventional spray and immersion cleaning methods, PowerSno spray cleaning does not generate waste by-products.



Robotic PowerSno CO<sub>2</sub> Spray Cleaning

Each CleanCell is designed for reliability and repeatability. It will thoroughly and consistently clean thousands of parts per day with minimal operator labor. Operators simply load parts through a safety port onto a holding fixture, pallet, conveyor, or carousel for both continuous in-line and batch cleaning processes. Manual or automatic parts detection triggers pre-programmed spray cleaning recipes, ensuring consistent particulate and thin film removal.

Pre-programmed robotic spray cleaning recipes provide consistent spray cleaning. Angles of impact, nozzle-to-substrate distance, CO<sub>2</sub> particle velocity, spray particle density, spray patterns, and other PowerSno spray cleaning variables, are precisely controlled to match the needs of your parts. A fully integrated PLC-HMI-Robot control system features an intuitive interface which allows for the adjustment of key processing parameters and spray cleaning actuation.

### Example Applications

- Particle removal from complex assemblies
- Selective contaminant removal from laser processed surfaces
- Surface cleaning for clean-assembly applications
- Surface preparation for adhesive bonding or coating

## SPECIFICATIONS

### CleanCell™ - Robotic PowerSno™ CO<sub>2</sub> Spray Cleaning Systems

Complete CleanCell includes a custom engineered minienvironment, PowerSno™ spray cleaning system, UR Series Cobot, Siemens PLC-HMI interface, custom engineered parts fixture, and integration of safety interlocks, sensors, and PurCO<sub>2</sub> CO<sub>2</sub> delivery system.

- Class 100 Cleanroom Compatible Design
- Ionized HEPA Push-Pull Cleaning Zone

#### PowerSno Spray Cleaning System:

PowerSno CO<sub>2</sub> Composite Spray™ system employing propellant pressure control (0-125 psi), propellant temperature control (70°-250°F), exclusive LightSPEC™ Laser-based Spray Quality Monitoring (SQM) module for precise CO<sub>2</sub> particle concentration control, and Micronizer™ CO<sub>2</sub> Composite Spray applicator (2-5 pounds CO<sub>2</sub> particles/hour/nozzle), Linear and cluster spray applicators include Solo (1 nozzle), Triad (3 nozzles), Penta (5 nozzles), and Hammerhead (10 nozzles). Gas or liquid CO<sub>2</sub> is supplied by a local or remote PurCO<sub>2</sub> CO<sub>2</sub> supply and delivery system.



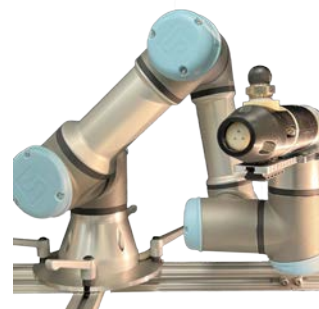
CleanCell System



PowerSno Spray Cleaning System with LightSPEC SQM Module

#### UR Series Robot System:

- UR Series Cobot - 500 to 1750 mm reach with payloads from 3 to 35 kg
- Teaching pendant with multiple program capacity
- Pick-Clean-Place or EOAT Spray Clean Configuration
- Single-sided or multi-sided spray cleaning



UR Series Robot System with EOAT Cluster Spray

#### Siemens Control System:

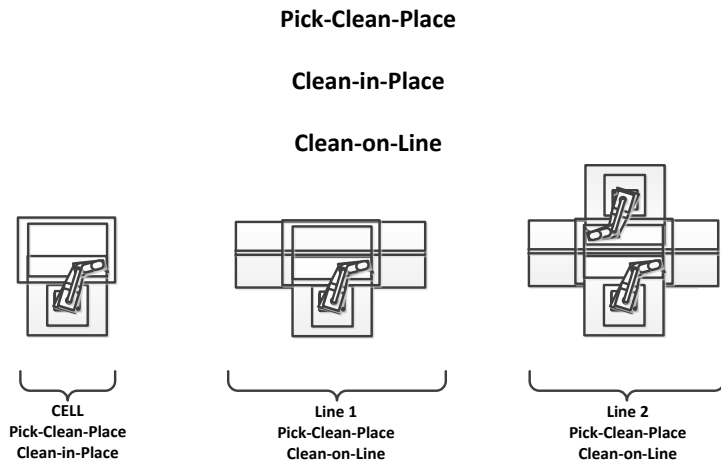
- Siemens PLC and Full Color Touch Screen HMI
- Cobot cleaning recipe selection and initiation
- Integrated data logging and remote access
- EPO circuit and robot safety interface

#### Exemplary CleanCell System

<b>Voltage Requirements</b>	<b>240 VAC, 20 A, 1 PH, 50/60 Hz</b>
<b>Cleaning Agent Supply</b>	<b>Liquid CO<sub>2</sub>, 850 psi, 70°F (5.8 MPa, 21 deg. C)</b>
<b>Propellant Supply</b>	<b>GN<sub>2</sub> or CDA, 70-125 psi, 70°F (482 kPa – 862 kPa, 21 Deg. C)</b>
<b>Maximum Operating Temperature</b>	<b>85°F (29 deg. C)</b>
<b>Footprint and Weight</b>	<b>48" D x 48" W x 84" H, 500 lbs (227 kg)</b>

Specifications subject to change without notice; consult factory for space and utility requirements based on series and options.

## CONFIGURATIONS



**Production Line Cleaner**



**Carousel Cleaner**

## CUSTOMIZABLE FEATURES AND OPTIONS

- PowerSno™ Spray Cleaning Systems
- LightSPEC™ Spray Quality Monitoring Module
- Micronizer™ CO<sub>2</sub> Spray Applicators
- Universal Robots (Cobot) with Siemens PLC Integration
- Customizable Semi-Automatic Cell Configuration
- Spin Processor, Glove Ports, Lights, Pass-Through
- Ionized HEPA Push-Pull Cleaning Zone
- Custom-Engineered Parts Cleaning Fixtures
- PurCO<sub>2</sub> CO<sub>2</sub> Supply and Delivery Systems
- PurCO<sub>2</sub> Propellant Air Treatment Systems



**PurCO<sub>2</sub> Satellite System**



Clean Manufacturing, *Reimagined.*

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