

**CRITICAL SYSTEMS, INC.**  
Supporting Breakthrough Technologies



*Gas & Liquid Delivery • Abatement • UHP Fabrication • Facility Mgt Software*

# Company Overview



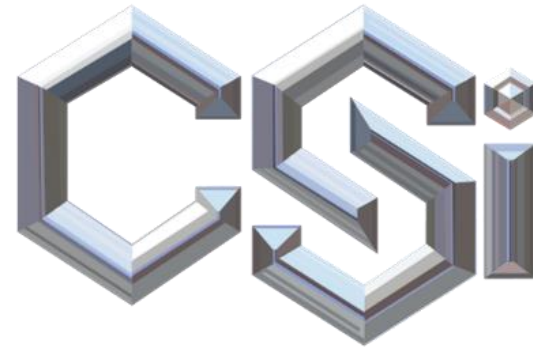
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# Critical Systems provides the following Equipment:

- UHP Fabrication:
  - Custom Fabrication - UHP Stainless & Hastelloy
  - Tight Tolerances & Full Analyticals
  - Quick Turn Fabrication of Custom Assemblies
  - Capacity for both Custom & High Volume Production
  - Design in SolidWorks
- Gas & Liquid Delivery Systems:
  - Gas Cabinets, Rack Units & Bulk Delivery Systems
  - Valve Manifold Boxes, Splitter Boxes, Gas Panels
  - Customized to Specific Applications
  - Liquid and Vaporized Delivery
  - TEOS/Dopants/Precursors
- Exhaust Gas Scrubbers:
  - Burn/Wet, Wet, Burn Box, Dry Bed Technologies
  - Guaranteed Abatement Efficiencies
  - Systems for Process Exhaust & Emergency Release
- Facility Equipment Management Software:
  - Ethernet, Serial, Analog & Discrete Inputs
  - Viewed in Real-time with Complete Functionality



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# Stainless Fabrication & Gas Panel Reconditioning



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# Fast Turn – High Quality UHP Fabrication

## CUSTOM UHP WELDING/FABRICATION

- Design Capabilities in Solid Works
- Certified Orbital & TIG Welders
- 8 Individual UHP Weld Bays
- Electropolished SS, Hastelloy, Monel
- VCR / UPG / W-Seal / C-Seal
- Dimensional Tolerances held to 0.005"
- Full Analytical Testing Offered
- Quick Turn Weldments and Panels
- Contaminated Gas Panel Repair
- Capacity for both Custom & High Volume UHP Fabrication
- ISO 9001 Quality System



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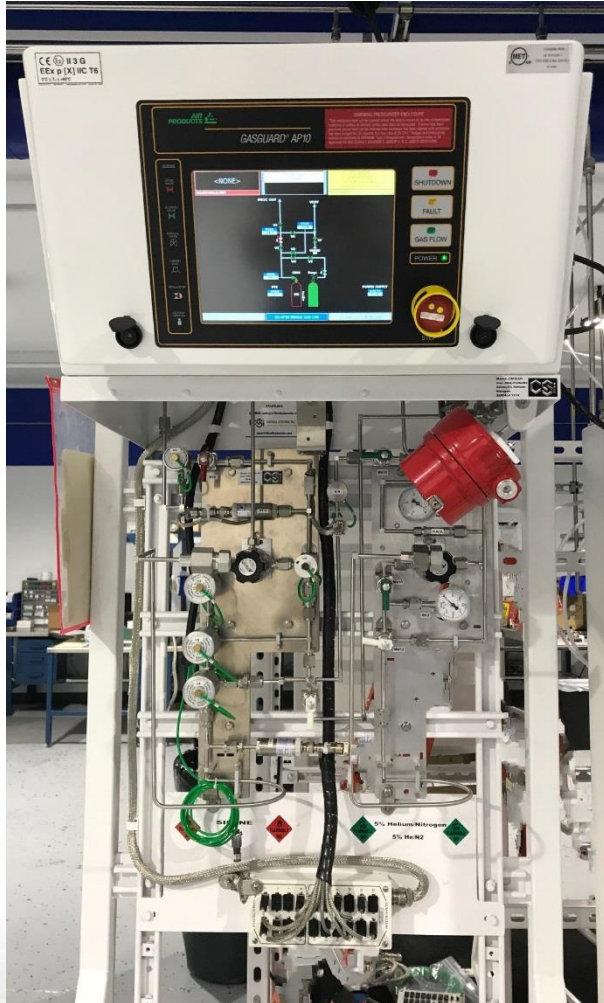


# Gas Delivery Systems:



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# New Gas Delivery Systems from CSI



- Full Software/Firmware Control
- Gas Panels Designed to Increase System Life
- New Process Panels, Purge Panels and Interconnect Sections
- **ARIAS** Optimized Process Gas Panels
- Standard, Mini or Bulk Gas Delivery
- Air Products AP10 or CSI's **ARIAS** Controllers
- Tier 1 Components for Long Life (APTech, Swagelok, Brooks, Horiba, etc.)
- Electropolished Stainless or Hastelloy
- Large Inventory of Spares Stocked for Fast Deliveries





# New Gas Delivery Systems from CSI



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# Mini-Gas Systems

- Ideal for Space Constrained Areas or On-Tool Applications
- Multiple Gas Delivery Options
  - Process/Purge
  - Auto-Crossover
  - Dual Process Out
  - Multiple Outlets
- Hastelloy or EP Stainless Panels
- Uses:
  - CSI's EZ-Purge, Low Internal Volume Panel Designs
  - CSI's New Q-Panel Design

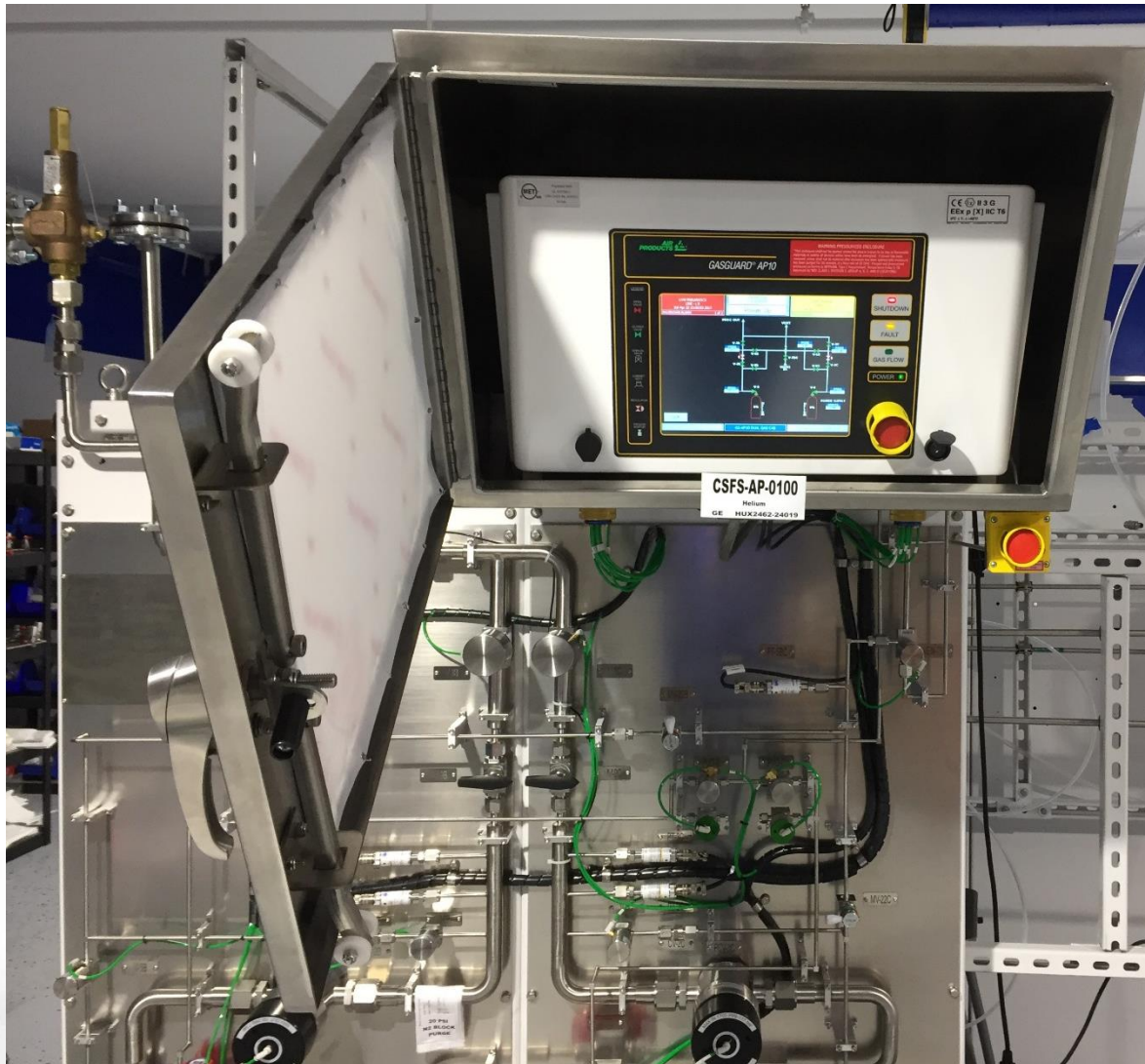


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# Bulk Gas Systems:

1. NEMA 4X Controller Enclosures
2. High Flow Rates
3. Closed Loop Pressure Control
4. Multiple Gas Delivery Options
5. Weatherproof Identification



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# Professionally Remanufactured Gas Delivery Systems

*Provides the Ultimate Value for the Dollar!*

1. World's Largest Supplier of Remanufactured Facilities Equipment
2. Over 1600 Systems in the Field
3. *Guaranteed Contamination Free!*
4. *Same Warranty as New Systems!*
5. Air Product Controllers from the Largest Fabs
6. Upgraded Controllers
7. Same Panel Designs as New
8. Board Level Capable Support
9. Fully Upgradeable to CSI's new Control Platforms
10. On-Site Start-up and Training
11. 75 – 85 Man Hours per Cabinet / VMB



*Equals Reliability you can Trust!*



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# A Proven Process for Fast Deliveries & Support



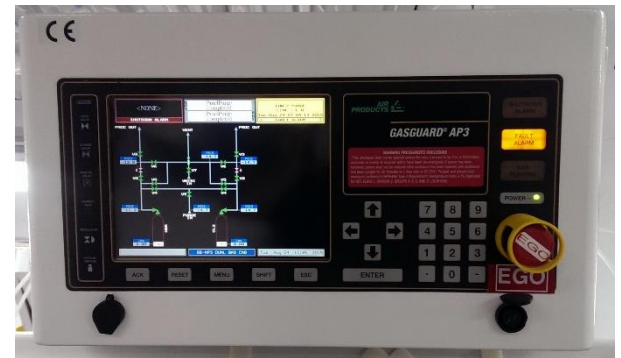
Gas Systems are Staged for Quality and Fast Response Times



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# Critical Systems' Service & Upgrades: Air Products Legacy Gas Cabinets & VMBs

- Controller Replacements:
  - GG450 – GG250 – AP2 – AP3 – AP10
- Repair & Service:
  - GG500 – AP3 – AP10
- Gas System Conversions
- Replacement Gas Panels
- Replacement Panel Sections & Pigtails
- Gas Cabinets Parts

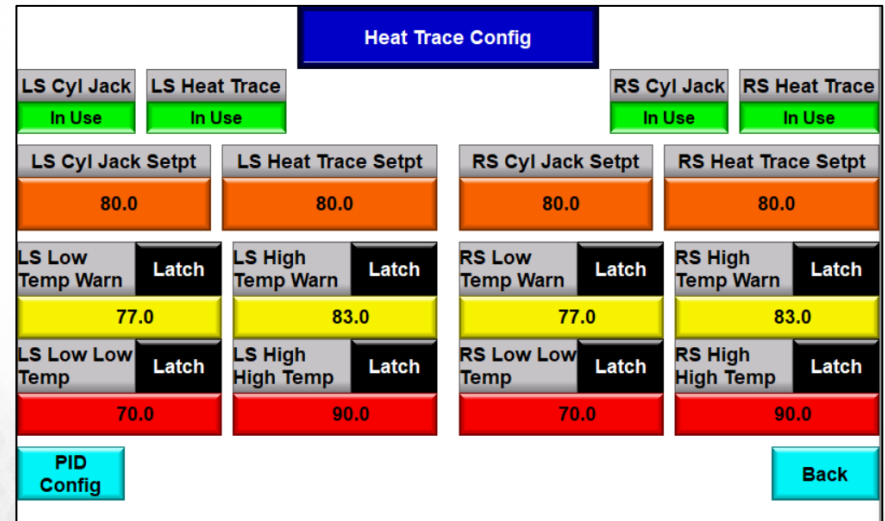
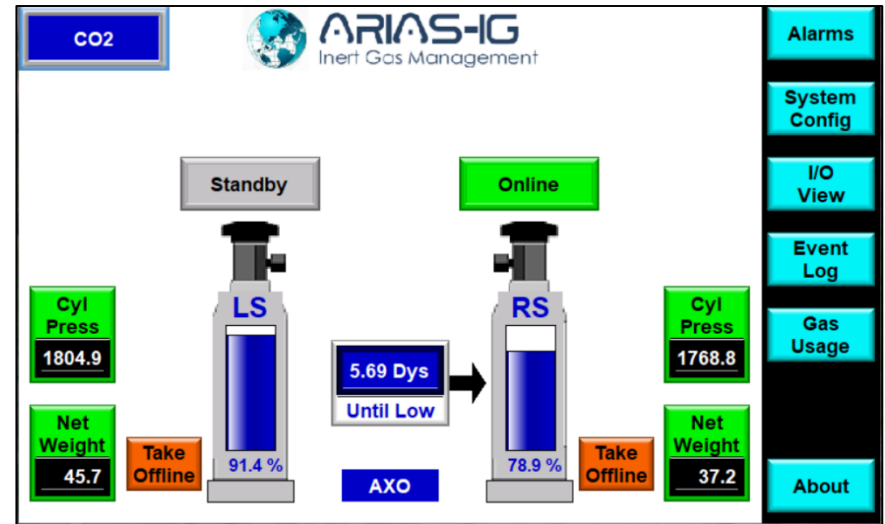




# ARIAS-IG Gas Controller

## Features:

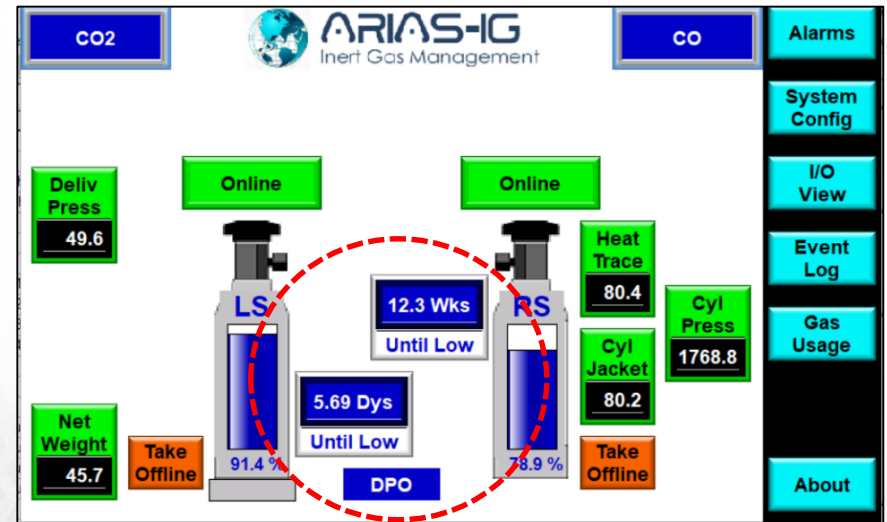
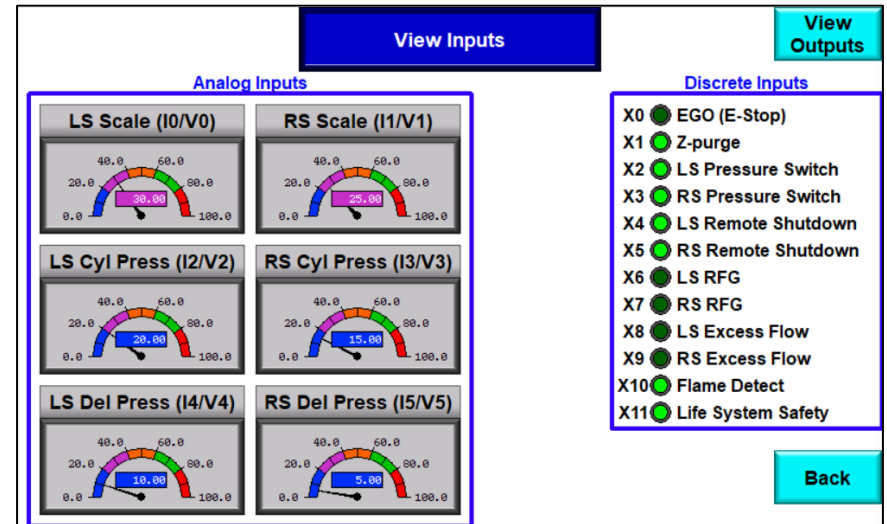
- Customer Setup of System Parameters – *Fully Configurable!*
- 7" HMI with Bright Animated Color Graphics
- Selectable Latching of Most Alarms
- Remote Shutdown & EMO
- Z-Purge for Hazardous Locations
- 4 User Configurable Discrete Inputs / 9 Discrete User Configurable Outputs
- Single Cylinder, DPO or AXO
- Switchover Triggered By: Inlet Pressure, Outlet Pressure and/or Cylinder Weight



# ARIAS-IG Gas Controller

## Features:

- Consumption Prediction/Alarming
- Controls Panel & Cylinder Heat Trace
- “Request For Gas” Enabled
- Modbus TCP Capable of Reporting: Alarm States, Manifold States, Valve States, System Values (Reading such a pressures and scales)
- Email / TXT of Alarms
- Designed to UL 121201 (Haz-Loc) and SEMI S2 - UL listed US and Canada: E504139
- 2 Levels of Password Protection





# Liquid and Vapor Delivery Systems



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# TriChem™ TEOS / Precursor Delivery



- Low Cost – High Reliability Liquid TEOS Delivery
  - Primary TEOS Dispense with Up to 2 Dopants
- Options for Both Liquid and Vapor Delivery
- Supplies Up to 3 Chemicals to 4 Tools/Chambers
  - Independent Operation & Maintenance per Outlet
  - Dedicated Chemical & Inert Gas Purge Valves per Outlet
  - Optional Degass Modules per Outlet
- Automated Refill of Source Tank for Continuous TEOS Supply
- Tool & Facility I/O for Each Outlet
- Compatible with Multiple Source Containers
- Lowers Facility Costs by Incorporating Precursors into Cabinet
- Replacement Auto-Purge Controllers for Existing ADCS DTLRs





# Point-of-Use Exhaust Gas Scrubbers



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# Wet Scrub

Water Soluble Gases



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CSI Extractions Technology Group

## CRITICAL SYSTEMS' GANYMEDE™ PROCESS EXHAUST SCRUBBER POINT-OF-USE PROCESS EXHAUST WET SCRUBBER

### Ganymede Technology:

Ganymede Wet Scrubbers feature advanced technology and abatement performance capable of handling your most stringent gas abatement needs. Offered in sizes to fit the needs of Research & Development through the largest Semiconductor Fabs, our Ganymede Wet Scrubbers feature chemical injection, integrated lift capability (so no lift station is needed), a host of safety interlocks, and industry leading destruction and removal efficiency that delivers non-detect of target gas at the discharge. All of this comes in a remarkably small package that conserves your factory space. Ganymede Wet Scrubbers also deliver the most sustainable abatement in the industry through our water-pinch technology that allows the scrubber to operate at 100% reflux for extended periods of time.

Ganymede's sophisticated water optimization technology utilizes chemical injection and water quality monitoring to minimize the consumption and discharge of water, while maintain peak efficiency during water exchanges. The result of this technology is a reduction in operating costs through the reduction of make-up water required, along with a subsequent reduction in waste water being discharged to neutralization.

### Key Features of the Ganymede Point-of-Use Process Exhaust Scrubber:

- Ultra-High Efficiencies! Non-Detect at Discharge!
- Dual Scrubbing Path Provides Long Residence Time for Gas Abatement
- Inlet/Outlet Spray Assemblies Include Fogging Nozzles and Revolving Primary Injector for Maximum Contact with the Target Gases
- Water-Pinch Technology Utilizes Sophisticated Water Monitoring and Chemical Injection to Control the Water Exchange in the Scrubber's Reservoir
- On-Board Chemical Tank with Low Level Alarms Provide Reliable Chemical Injection.
- Integrated Secondary Containment in the Bottom Control Box
- Color Touch Panel Display
- High Quality Components for Long Life and Low Maintenance
- Ethernet Communications to End User
- Tool Interlock Connections to Prevent Reactor Operation when Ganymede is Offline
- Integrated Temperature, Pressure & Exhaust Monitoring with Data Logging
- *Made in the USA!*



**Ganymede 350 is Shown**

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# Thermal / Wet Scrub

Flammable & Water Soluble Gases



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## CRITICAL SYSTEMS' IO™ PROCESS EXHAUST SCRUBBER POINT-OF-USE THERMAL WET ABATEMENT SYSTEM

### IO Technology:

The IO incorporates the synthesis of three scrubbing technologies for the destruction of pyrophoric, flammable and water soluble gases, and is particularly well suited to the toughest of abatement challenges.

At the core of the IO's sophisticated technology is a high power nickel alloy (Inconel) electric furnace designed to heat the incoming gas stream to over 1000° C in sustained operation, and allows for the complete destruction of flammable and pyrophoric gases. Following the Inconel Heater is a proprietary nickel alloy Venturi scrubber that quenches the hot gas stream from the furnace, removing over 99% of the particles from the exhaust stream. The IO particle scrubber's nickel construction allows it to maintain operation for years without suffering the corrosion effects common in other Burn/Wet scrubbers.

The IO's packed scrubbing column removes acid gases, ammonia and halogens, along with other water-soluble gases from the exhaust stream. Combined, these three technologies work together to provide complete abatement for the complex hazardous gas waste stream.

The fact that the IO abatement system uses all electric power means that fuel gases that contribute to the production of CO2 and NOx (both global warming gases) are not needed. In addition, the IO's electric furnace is PID controlled to ensure absolute temperature control as the process flow varies. The IO's integrated lift station makes added lift capability unnecessary and allows for water lift of up to 10 meters (32 feet). The IO system includes data logging and an impressive array of monitored interlock and performance metrics including: utility pressure, water level, temperature, water flow rate, differential pressure, thermocouple status, and closed loop monitoring and water pressure.

### Key Features of the IO Point-of-Use Thermal Wet Abatement System:

- Extremely High Abatement Efficiencies!!
- Flow Rates to 800 SLPM
- Inconel Heater to 1000° C, 10Kw Peak Power (Ave. 6kW – 8kW)
- Self-Cleaning Heater Technology
- Venturi Particle Scrubber Integrated after Furnace
- Integrated Packed Column to Remove Corrosive Gases
- Integrated Lift Station capable of Lifting Water to 10 meters
- Integrated Bypass Valve
- Acoustic Water Level Monitoring
- Color Touch Panel Display
- High Quality Components for Long Life and Low Maintenance
- Ethernet Communications to End User
- FM Approved Interlock Connections on Heaters
- Interlocks for Temperature, Pressure, FM Limit, Water Level, Water Flow Rate & Ground



**Minimal CO2 Carbon  
Footprint Compared to  
CH4 or H2 Fired  
Abatement Systems!**



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# Dry Bed Systems

Point of Use Process Gases

High Flow Hydrides for MOCVD Applications



CSI Extractions Technology Group

## CRITICAL SYSTEMS' CALLISTO™ PROCESS EXHAUST SCRUBBER POINT-OF-USE PROCESS EXHAUST SCRUBBER

### Callisto Technology:

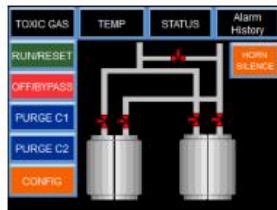
Critical Systems' Callisto Dry Scrubber is a highly advanced Abatement System that provides Guaranteed scrubbing of the Target Gases to levels well below the (TLV) Threshold Limit Values. With medias blended specifically to the gases and flow rates of your unique process applications, the Callisto utilizes both Chemisorption and Catalytic medias to assure the maximum abatement of the process gas stream. Custom blending also ensures that adsorbents are not poisoned or fouled since potential poisons and fouling agents are removed before they can harm the media.

The Callisto's sophisticated control system operates the canisters to peak efficiencies to assure the longest life of the canisters at the lowest destruction temperatures, while automated purge cycles insure that the canisters are safe to remove when it comes time for replacement. The Callisto's controller also maintains a history of all scrubber alerts, temperatures and exhaust concentrations to verify performance and compliance with regulations.

The Callisto's Dual Canister option employs two canisters which can run in an auto-crossover configuration for continuous duty or in an oscillation mode where the canisters share duty with time scheduled switching to maximize canister life.

### Key Features of the Callisto Point-of-Use Process Exhaust Scrubber:

- **Guaranteed 99.999% Efficiency** - Monitored at Outlet and Data Logged
- **Environmentally Friendly** - Methane Burners Create Large Amounts of CO<sub>2</sub> & Wet Scrubbers create Contaminated Water that needs to be Treated
- **Integrated Vacuum Pump** - Creates Zero Load on House Exhaust!
- Control Logic Assures that Zero Back Pressure on Process Tool Exhaust
- Integrated Cabinet & Exhaust Monitoring System to Ensure Safety & Compliance
- Ethernet Communications to End User
- Tool Interlock Connections to Prevent Reactor Operation when Callisto is Offline
- Integrated Temperature, Pressure & Exhaust Monitoring with Data Logging
- Widest Offering of Catalysts & Adsorbents of any Dry Bed Scrubber Supplier
- In-House Creation & Blending of Custom Adsorbents
- **Adsorbents are Made in the USA!**
- **Lowest Cost Canister Disposal of Any Dry Bed Canister Provider!**
- **Only Dry Bed Scrubber Made in the USA!**



Callisto Main Screen - Dual Canister

Service & Maintenance performed by Certified CSI Field Technicians

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CSI Extractions Technology Group

## CRITICAL SYSTEMS' ZEUS™ HIGH CAPACITY MOCVD ABATEMENT SYSTEM POINT-OF-USE PROCESS EXHAUST SCRUBBER

### ZEUS Technology:

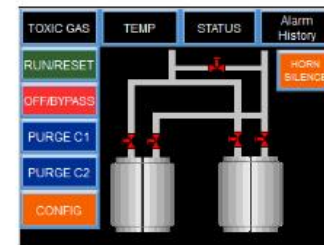
Designed for High Flow MOCVD Gas Applications (AsH<sub>3</sub> and PH<sub>3</sub> to flow rates of 10 slpm) the Critical Systems' ZEUS Dry Scrubber is a highly advanced Dry Abatement System that provides Guaranteed scrubbing of the Target Gases to levels well below the (TLV) Threshold Limit Values. With medias that are blended specifically to the gases and flow rates of your unique process applications, the ZEUS utilizes a unique blend of specific Chemisorption medias to assure the maximum abatement of the process gas stream. Custom blending also ensures that adsorbents are not poisoned or fouled since potential poisons and fouling agents are removed before they can harm the media.

The sophisticated ZEUS control system operates the canisters to peak efficiencies to assure the longest life of the canisters at the lowest destruction temperatures, while automated purge cycles insure that the canisters are safe to remove when it comes time for replacement. The ZEUS controller also maintains a history of all scrubber alerts, temperatures and exhaust concentrations to verify performance and compliance with regulations. The ZEUS canisters are UN/DOT stamped for ease of transport to the waste facility of choice.



### Key Features of the ZEUS Point-of-Use Process Exhaust Scrubber:

- **Guaranteed 99.999% Efficiency** - Monitored at Outlet and Data Logged
- **Integrated Vacuum Pump** - Creates Zero Load on House Exhaust!
- Control Logic Assures that Zero Back Pressure on Process Tool Exhaust
- Integrated Cabinet & Exhaust Monitoring System to Ensure Safety and Compliance
- Ethernet Communications to End User
- Tool Interlock Connections to Prevent Reactor Operation when the ZEUS is Offline
- Integrated Temperature, Pressure & Exhaust Monitoring with Data Logging
- Highest Flow Capacity of any Dry Bed Abatement System for High Flow MOCVD Application



ZEUS Main Screen

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**CRITICAL SYSTEMS, INC.**  
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# Thermal / Wet Scrub

## Flammable & Water Soluble Gases



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Point-of-Use Gas Scrubbers

### RECONDITIONED DELATECH CDO 859 EXHAUST GAS SCRUBBERS

The Delatech Model CDO 859 (Controlled Decomposition Oxidation) Exhaust Gas Scrubbers utilize a combination Thermal Oxidation Chamber and a Primary/Secondary Cooling Wet Scrubbing Chamber to effectively abate toxic, flammable and corrosive gases.

Critical Systems purchases, from CSI approved sources, high quality scrubbers that have been properly maintained and professionally decommissioned. Once received, each unit is completely reconditioned to perform as flawlessly. Every reconditioned scrubber is backed with our "As-New" warranty.

#### DELATECH CDO 859 RECONDITIONING PROCESS

- Thermal Chamber & Wet Scrub Assembly is Removed, Decontaminated and Cleaned Internally and Externally.
- All Spray Nozzles are Checked for Proper Flow Rate and then Re-positioned for Optimum Coverage.
- All Scrubber Balls are Cleaned and/or Replaced.
- All O-Rings & Seals are Cleaned and Replaced Where Necessary.
- The Recirculation Unit is Cleaned and Components Checked for Functionality.
- The CDO is Reassembled, Tested for Functionality and Sensor and Alarms are Checked for Correct Operation.
- The CDO is then Tested at Full Temperature for 24 Hours to Ensure Good Working Order.

The Delatech CDO 859 abatement unit has long been considered the standard for Advanced CVD Process Abatement, and has been effectively used with all PECVD, LPCVD & MOCVD Gases. The model 859 CDO is available with 1, 2, or 4 independent inlet nozzles, allowing connection of up to 4 process chambers, process tools, or vacuum pumps to the CDO.



#### **Delatech CDO Selection Criteria:**

- Mixture of Gases
- Individual & Total Gas Flow Rates
- Duty Cycle
- Single Pass or Water Recirculation
- Number of Ports Desired ( 1 - 4 )
- Available Options

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# Burn Box

## Flammable Gases



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Point-of-Use Gas Scrubbers

### RECONDITIONED & WARRANTED GUARDIAN 4 BURNBOX GAS SCRUBBERS

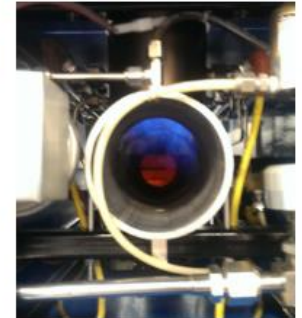
The Guardian is a point of use emission abatement device designed to thermally oxidize residual process gases (silane, arsine, phosphine, diborane and others) and process by-products in the effluent streams from manufacturing processes. The Guardian combustion chamber ensures ignition of flammable gases and prevents silane bubble formation for most concentrations and flow rates.

Critical Systems purchases, from CSI approved sources, high quality scrubbers that have been properly maintained and professionally decommissioned. Once received, each unit is completely reconditioned to perform flawlessly. Every reconditioned scrubber is backed with our "As-New" warranty.

#### GUARDIAN RECONDITIONING PROCESS:

- Reaction Chamber Assembly is Removed, Decontaminated and Cleaned Internally and Externally.
- Temperature Switches and thermocouples checked and tested.
- Gas pressure switches checked and tested.
- Manifold torque to specifications.
- Igniters are removed, inspected and replaced if necessary.
- The cabinet and frame are cleaned and painted if needed.
- The Guardian is Reassembled, Tested for Functionality and Sensor and Alarms are Checked for Correct Operation.
- The Guardian is then Tested at Full Temperature for 24 Hours to Ensure Good Working Order.

**Critical Systems offers both New and Reconditioned Exhaust Gas Scrubbers in a variety of technologies to handle the most stringent abatement applications. Please contact CSI for a no-cost evaluation of your abatement application.**



#### **Guardian Selection Criteria:**

- Combustible gas
- Individual & Total Gas Flow Rates
- Duty Cycle
- Footprint
- Port sizes (1/2" to 2")

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# Emergency Release Systems



CSI Extractions Technology Group

## CRITICAL SYSTEMS' EUROPA EXHAUST GAS SCRUBBER

### CATASTROPHIC RELEASE SCRUBBER

#### Europa Technology:

Critical Systems' Europa Dry Scrubber is a point-of-use facility exhaust treatment system with a broad range of process gas scrubbing capability. The Europa scrubber employs state-of-the-art Scrubbing Canisters to offer the lowest emissions of any scrubber available today. In all cases where the Europa is employed it offers guaranteed scrubbing of the target gases to levels below Threshold Limit Values.

The Europa operates in a totally passive mode at ambient temperature. Dry chemical resins efficiently react on contact with process gases and by products, converting them to non-volatile solids. Advanced scrubbing capabilities, combined with multiple levels of safety engineering, make the Europa one of the safest and most efficient scrubbers available.

#### The Europa System:

- Canister/Wall Mounted Monitoring Box or Cabinet Designs
- 90% and Outlet Concentration Exhaust Gas Monitoring
- Real Time Exhaust Concentration Data Logging
- Interlocks to ensure Europa is operating within Specifications
- Visual and Audible Alarms
- Integrated Temperature Monitoring
- Integrated Pressure Monitoring
- Interlocks to Prevent Reactor Operation when Europa is Offline



#### Performance Specifications:

Exhaust Flow per System	500 SCFM
Removal Efficiency	Sub TLV Emissions
Purge Gas - Nitrogen	25 SCFM*
Pneumatics - Nitrogen	500 sccms
Clean Dry Air (CDA)	10 SCFH (For Air Ox.)*

#### Facilities Specifications:

Process Connections	NW160 Flange
Compressed Gas - Nitrogen	60 - 80 psig (5.5 bar) 3/8" compression fitting
Clean Dry Air (CDA)	60 - 80 psig (5.5 bar) 1/4" compression fitting
Electrical Supply	110/220 VAC, 50/60 Hz
Overall Dimension (in):	56 H X 41.7 W X 41.7 D

\* Purge Nitrogen & CDA is used only when replacing the canister

#### Catastrophic Release Scrubbers:

A Catastrophic Release Scrubber is installed in the gas cabinet or fume hood exhaust line, and is designed to capture a full cylinder's release of the target gas that resides in the gas cabinet. This cost effective scrubber uses a dry bed ambient media and requires no fuel or water to operate. Its purpose is to provide a safe abatement solution should a hazardous gas cylinder develop a leaking cylinder valve or should a situation occur in the gas cabinet which causes a leak that cannot be shut off.

Service and Maintenance performed by Certified CSI Field Technicians

Draper, UT · Boise, ID · Burnsville, MN · Shrewsbury, PA  
(877) 572-5515 · CriticalSystemsInc.com



CSI Extractions Technology Group

## CRITICAL SYSTEMS' OLYMPUS EXHAUST GAS SCRUBBER

### CATASTROPHIC RELEASE SCRUBBER

#### OLYMPUS Technology:

Critical Systems' OLYMPUS Exhaust Gas Scrubber is designed for high volume or high flow rate Catastrophic Release application for hazardous gas cylinders. The OLYMPUS scrubber employs high efficiency abatement medias to completely adsorb accidental releases of hazardous gases from gas cylinders of fume hoods. In all cases where the OLYMPUS is employed it offers guaranteed scrubbing of the target gases to levels below Threshold Limit Values.

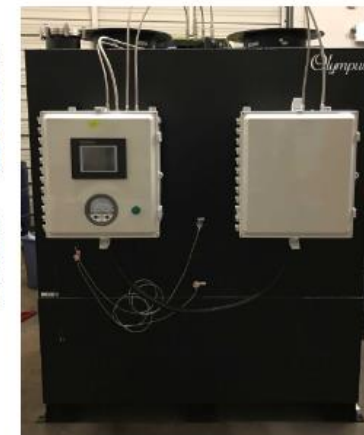
The OLYMPUS operates in a totally passive mode at ambient temperature. Dry chemical resins efficiently react on contact with process gases and by products, converting them to non-volatile solids. Advanced scrubbing capabilities, combined with multiple levels of safety engineering, make the OLYMPUS one of the safest and most efficient scrubbers available.

#### The OLYMPUS System:

- Canister Designs for Flow Rates up to 2500 CFM
- 90% and Outlet Concentration Exhaust Gas Monitoring
- Real Time Exhaust Concentration Data Logging
- Interlocks to ensure Olympus is operating within Specifications
- Visual and Audible Alarms
- Integrated Temperature Monitoring
- Integrated Pressure Monitoring
- Interlocks to Prevent Accidental Discharge if System is Off-line

#### Catastrophic Release Scrubbers:

A Catastrophic Release Scrubber is installed in the gas cabinet or fume hood exhaust line, and is sized to capture a full cylinder's release of the target gas that resides in the gas cabinet. This cost effective scrubber uses a dry bed ambient media and requires no fuel or water to operate. Its purpose is to provide a safe abatement solution should a hazardous gas cylinder develop a leaking cylinder valve or should a situation occur in the gas cabinet which causes a leak that cannot be shut off.



#### Performance Specifications:

Exhaust Flow per System	1000 - 2,500 SCFM
Removal Efficiency	Sub TLV Emissions
Purge Gas - Nitrogen	25 SCFM*
Pneumatics - Nitrogen	500 sccms
Clean Dry Air (CDA)	10 SCFH (For Air Ox.)*

#### Facilities Specifications:

Process Connections	10" - 18" Flange
Compressed Gas - Nitrogen	60 - 80 psig (5.5 bar) 3/8" compression fitting
Clean Dry Air (CDA)	60 - 80 psig (5.5 bar) 1/4" compression fitting
Electrical Supply	110/220 VAC, 50/60 Hz
Overall Dimension (in):	Various Models—See CSI

Requires Variable Speed Spark Free Booster Blower

\* Purge Nitrogen & CDA is used only when replacing

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# Callisto / ZEUS Process Exhaust Scrubber

Highest Efficiency of any Commercially Available Scrubber at 99.999%

- Guaranteed 5 – 9's Removal Efficiencies
- No Fuel or Water
- Operates at Ambient Temperature
- Minimal Maintenance Required!!
- Can be Turned Off without Issue
- Canisters are DOT/UN Stamped
- Options from 35 to 1000 SLPM Exhaust Flows

Lowest Environmental Impact of ANY Competitive Scrubber!



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**ARIAS-AFM**<sup>®</sup>  
ARIAS Facility Management  
by Critical Systems, Inc.

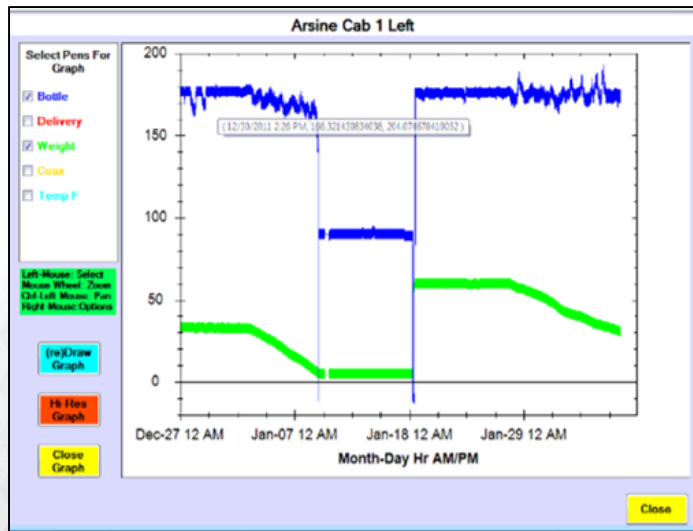
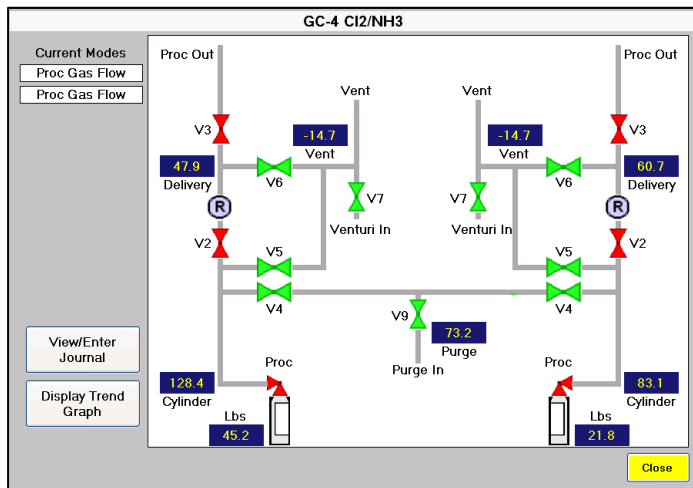


# Smart Equipment Management Software



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## ARIAS: Accessing Real-Time Information thru Advanced System Software



- Room/Area Views of Systems & System Status
- Real-Time Animated Views of Tool/Subsystems
- ModBus TCP, ModBus RTU, Ethernet/IP & Custom Protocols
- Integration of Analog/Discrete Signals from Sensors
- Alarms/Faults/Warnings Sent by Email/Text
- Archives Analog Data for Live Trending/Historical Review
- “Sent – Responded to – Back Online” Tracking
- Logs “State Changes” for Historical Review



# Consumption Management:

Are you Unknowingly Wasting Gas?




- Monitors Gas Usage Trends by Cabinet
  - Daily Record of Consumption
  - Data-Logged for Mgt Review
  - Shows Remaining Cylinder Life
- Accidental Consumption Protection
  - *Establish Usage*
  - *Set Alarms based on Expected Flow Rates*
  - *Notification / Tracking of Excursions*

## Daily Executive Summaries:

- Email/TXT Notifications of Alarms
  - Alarm Notification via Email/TXT to your Service/Management Team
  - Emails You When Service is Being Performed
  - Emails You When Service Completed
  - Excellent for Monitoring 3<sup>rd</sup> Party Service
- Efficiently Monitor Facility Maintenance Conditions
- Keep Track of Tool Specific Issues
- Track “Ghosts” or Infrequent/Repetitive Alarms
- Printed Nightly & Archived

**ARIAS-AFM Summary**  
**For 6/6/2018**  
Page 1 of 2



**ARIAS-AFM**<sup>®</sup>  
ARIAS Facility Management  
 by Critical Systems, Inc.

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**Gas Cabinet/Node Activity:**  
 No activity events were recorded.

**Critical Alarms:**

Alarm Set	Alarm Cleared	Node	Alarm
6/06/2018 10:56:36	6/06/2018 10:57:06	HBr	High Temperature
6/06/2018 11:32:07	6/06/2018 11:32:12	Midas Toxics	AsH3: Alarm 1
6/06/2018 11:32:07	6/06/2018 11:32:12	AsH3	Remote Shutdown
6/06/2018 11:32:21	6/06/2018 11:33:02	Midas Toxics	AsH3: Alarm 1
6/06/2018 12:44:27	6/06/2018 12:45:02	PH3	Panel A low cyl weight
6/06/2018 12:56:56	6/06/2018 12:57:44	B2H6	Remote Shutdown
6/06/2018 12:56:56	6/06/2018 12:57:44	Area Monitor 1	B2H6 Low Exhaust
6/06/2018 13:01:30	6/06/2018 13:01:59	HBr	High Temperature
6/06/2018 13:01:33	6/06/2018 13:02:23	Area Monitor 1	B2H6 Low Exhaust
6/06/2018 13:01:34	6/06/2018 13:02:23	B2H6	Remote Shutdown

**Gas Consumption:**

Node	Estimated Consumption	Pressure (PSIG)			Weight (lbs)		
		Start	End	Delta	Start	End	Delta
SF6	6/14/2018	745.6	745.6	0.0	0.0	0.0	0.0
PH3 B	offline	79.2	79.2	0.0	21.1	21.1	0.0
PH3 A	6/10/2018	130.0	130.0	0.0	28.3	28.3	0.0
He	6/21/2018	1631.0	1631.0	0.0	0.0	0.0	0.0
HBr	offline	83.2	83.2	0.0	39.8	39.8	0.0
GeH4	infinity	87.3	87.3	0.0	-10.9	-10.9	0.0
CL2	6/15/2018	123.6	123.6	0.0	39.1	39.1	0.0
CF4	offline	0.0	0.0	0.0	0.0	0.0	0.0
BC13 A	infinity	128.3	128.3	0.0			
B2H6	6/10/2018	1682.0	1682.0	0.0			
AsH3 B	offline						
AsH3 A	6/11/2018	0.0	0.0	0.0			
Ar	offline	0.0	184.0	-184.0	0.0	0.0	0.0

*Awareness of your facility operations is provided by Critical Systems, Inc. and KCC Software (3.5.2.1)*



# What would you like to Monitor?

- Add Gas Systems from Multiple Manufactures
- Add Manual Gas Systems via Sensors
- Add Discrete Devices via Area Monitors
  - 16 Relays per Monitor and
  - 16 Analog (4-20mA) Signals per Monitor
- Add Hazardous Gas Monitors
- Add Heat Trace / Cylinder Jackets
- Add Abatement Equipment
- Add Chemical Delivery Systems
- Add Pumps, Chillers, Blenders
- Add Filter Loading Tracking on Air Units



# Equipment Financing

## Financing Options for CSI Equipment:

- CSI now offers Low Interest Equipment Financing
- Keep more Cash in house for Working Capital
- \$10K to \$250K Financed with a 1 Page Credit Application
- Finance for 60 to 72 Months
- No Fees to Apply / No Tax Returns needed

## BONUS!!

- Tax Advantages: Section 179 of the IRS Tax Code
  - FULL PRICE DEDUCTION of Equipment Purchased in 1<sup>st</sup> Year of Purchase
  - Up to \$510,000.00 in Direct Deductions
  - Equates to a 21% Discount with New Business Tax Rate at 21%



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Amount to Finance: **\$185,000.00**  
Prepared for: [tbritton@criticalsystemsinc.com](mailto:tbritton@criticalsystemsinc.com)

### Application-Only Program

	LOAN or \$1 Out Lease	10% Option / FMV Lease
<b>24 Months:</b>	\$8,163.54	\$7,440.00
<b>36 Months:</b>	\$5,602.32	\$5,135.46
<b>48 Months:</b>	\$4,324.50	\$3,984.12
<b>60 Months:</b>	\$3,560.04	\$3,295.92

*\*For more lease and loan options, including operating leases and other custom structures, visit our "Types of Leases & Loans" page.*

**GET APPROVED**  
APPLY HERE

**CONTACT US**  
(800) 245-1213



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# CSI's Locations World-Wide



For questions or additional information, please contact:

[sales@criticalsystemsinc.com](mailto:sales@criticalsystemsinc.com)

Phone: 877-572-5515

*Thank you!*

See us at:

*[www.criticalsystemsinc.com](http://www.criticalsystemsinc.com)*



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