

# Digester Gas Safety Equipment

Waste Gas Burners/Flares • Anaerobic Digester Cover Equipment • Digester Gas Stream Equipment

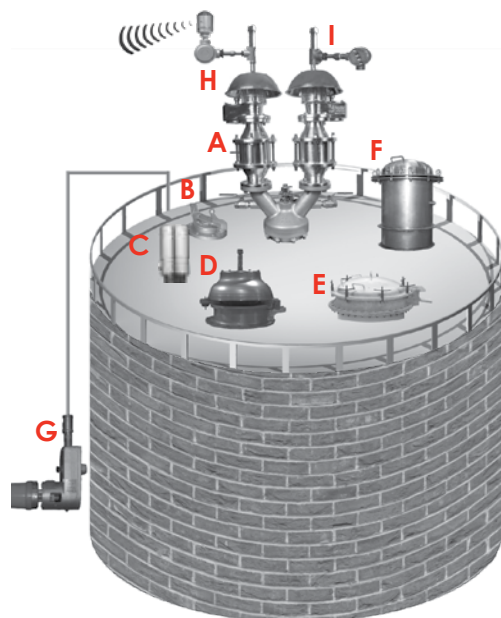


**MADE IN THE USA**

Serving Municipal Sewage  
Treatment Plants, Landfills,  
Breweries, Dairies and  
Food-Processing Plants

**BIOGAS**  
**SHAND & JURS**  
an L&J Technologies company

# Typical Digester Cover Equipment System\*



- A. 94020 Pressure & Vacuum Conservation Vent with 94306 Flame Arrester and 97190 3-Way Safety Selector Valve
- B. 95021 Gauge Hatch
- C. evo 2600 Radar Gauge
- D. 94225 Emergency Vent & Manhole Cover (Pressure & Vacuum)
- E. 95220 Clamping Manhole Cover
- F. 97187 View Port Inspection Cover
- G. 92021/ 92500 Cover Position Indicator with MCG 2000MAX Transmitter
- H. MCG 1097 WirelessHART Relief Alarm
- I. MCG 1097 Wired Proximity Switch

This diagram is for general guidance only and does not represent a specific design.

## Digester Cover Equipment\*



### 94020 Pressure/Vacuum Conservation Vent

- Sizes 2", 3", 4", 6", 8", 10" and 12"
- Standard Aluminum or SS Materials
- Open or Closed Options Available
- Pallet Reaction Lip for Smooth Lift & Reseating
- Vertical Lift Pallets Assure Reliable Operation and Maximum Flow
- Expanda-Seal™ Available
- Optional: CE & ATEX Approved, "All Weather," Proximity Switch



### 94309 Flame Arrester (Plate Element)

- Sizes 2", 3", 4", 6", 8", 10" and 12"
- Standard Aluminum or SS Materials
- Easy to Access Element/Frame
- Inspect in Place
- Vertical or Horizontal Configuration
- FM Approved
- Optional Insulation Jackets Available



(vertical shown)

### 94306 - Flame Arrester 94406 - Deflagration Arrester

- Sizes 2", 3", 4", 6", 8", 10" and 12"
- Standard Aluminum or SS Materials
- Serves as a Barrier Between External Flame and Internal Vapors
- Protects Digesters Containing Flammable Gases
- Easy Inspection and Maintenance due to Simple Removal of Tube Bank
- Optional Taps to Measure Differential Pressure
- 94306 - FM Approved
- 94406 - ATEX EN 12874 Approved, ISO 16852 Approved



### 94407 Horizontal Deflagration Arrester

- Sizes 2", 3", 4", 6", 8", 10" and 12"
- Standard Aluminum or SS Materials
- Inhibits Flame Propagation in Gas Piping Systems
- Protects Digesters Containing Flammable Gases
- Offset Design Prevents Condensate from Accumulating
- Easy Inspection & Maintenance due to Simple Removal of Tube Bank
- Standard Sensor Ports
- Temperature monitor device to be installed on unprotected side of Tube Bank
- ATEX EN 12874 Approved, ISO 16852 Approved



### 97190 3-Way Safety Selector Valve

- Sizes 2", 3", 4", 6", 8" and 10"
- Permits Switchover Function
- High Flow Capacity with Minimal Pressure Drop
- Positive Shutoff of Isolated Branch
- Low Torque Operation During Switchover
- Provided with Red Position Indicator and Lockout Position



### 97570/97571 Combination Conservation Vent and Flame Arrester

- Sizes 2", 3", 4", 6", 8", 10" and 12"
- Standard Aluminum or SS Materials
- Serves as a Barrier Between External Flame and Internal Gases
- Provides Protection Against Flame Propagation
- Open or Closed Vent Configurations
- Available with 94309 Flame Arrester (97571)

\* See back cover.

# Digester Cover Equipment\*



## 92021/92500 Cover Position Indicator

- Standard Aluminum Materials, Other Materials Available
- Gauges for Floating or Spirally Guided Covers
- Optional: Switches for Alarm and Transmitter for Remote Monitoring



UL/ULC Listed,  
ATEX Approved

## MCG 2000MAX Transmitter

- Magnetic Absolute Xmitter
- Digital or 4-20 mA Output
- Couples to Most Mechanical Gauges
- Easy Maintenance & Calibration
- Lightning and Surge Protection
- Not Affected by Power Loss
- Optional: Wireless/Battery Powered



## 94210 Emergency Vent & Manhole Cover

- 10", 16", 20", 24", 30" & 36" Base
- Materials of Construction Include Aluminum, Steel & 316 SS
- Designed for Emergency Pressure Relief
- Designed to Fit ANSI/API Flange (Other Flanges Available)
- Optional: Limit Switches
- Expanda-Seal™ Available



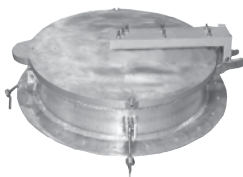
## 94225 Emergency Pressure & Vacuum Vent/Manhole Cover

- Sizes 16", 18", 20", 24" ANSI/API
- Materials of Construction Include Aluminum, Steel and 316 SS
- Design Incorporates Pressure and Adjustable Vacuum Relief
- Hinged Cover Provides Precise Sealing and Safety
- No Unbolting of Vent for Seal Replacement or Tank Examination
- Expanda-Seal™ Available



## 95021 Gauge Hatch

- Sizes 4", 6", 8", 10" and 12"
- Standard Aluminum, Steel, 316 SS and Bronze
- Easy Access
- Teflon Diaphragm Ensures Safe Tight Seal
- "Quik-Clamp" Option Allows for Hands-Free Operation



## 95210 Clamping Manhole Cover

- Sizes 12", 16", 18", 20", 24", 30", 36" & 48" ANSI/API/MSS
- Materials of Construction Include Aluminum, Steel and 316 SS
- Steel, Stainless Steel, Brass or Bronze Clamps
- Easy Access to Tanks for Maintenance and Inspection
- Threaded Clamping Handle Provides Gas-Tight & Watertight Seal



## 95220 Clamping Manhole Cover

- 42", 48", 54" and 60" ANSI, API, DIN
- Easy Access to Digester for Maintenance and Inspection
- Lightweight Dome
- Gas-Tight and Watertight Seal
- Self-Locking Pedal
- Maximum Working Pressure of 1 PSIG
- Materials of Construction Include Aluminum, Base & Cover with Brass, Bronze or Stainless Steel Clamps



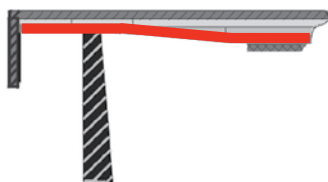
## 97187 View Port Inspection Cover

- Sizes 8", 10", 12", 16", 20" & 24" ANSI, API, Puddle Flange Connection
- Easy Viewing of Vessel Contents
- Gas Tight
- Light Weight, Hinged Cover for Glass Protection
- Stainless Steel, Aluminum, or Carbon Steel Construction
- Maximum Working Pressure 1 PSIG
- Optional: Illumination and Sprayer

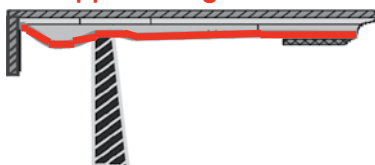
## Expanda-Seal™\*

To reduce emissions, Shand & Jurs designed and patented a high performance valve sealing technology called Expanda-Seal™, which offers reduced tank emissions and odors for every process environment imaginable. This innovative design actually uses the internal tank pressure to create a tighter seal the closer the pressure gets to the set point. The Expanda-Seal pallet design of 0.5 SCFH @ 95% of set pressure far exceeds the API 2521 published guidelines for leakage of weight loaded venting devices. This technology is available for normal pressure relieving devices, as well as emergency/fire case venting devices. The end result is a nearly bubble tight seal.

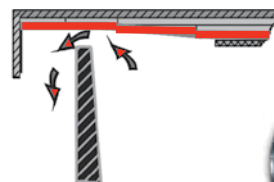
Pressure Below Set Point



Approaching Set Point



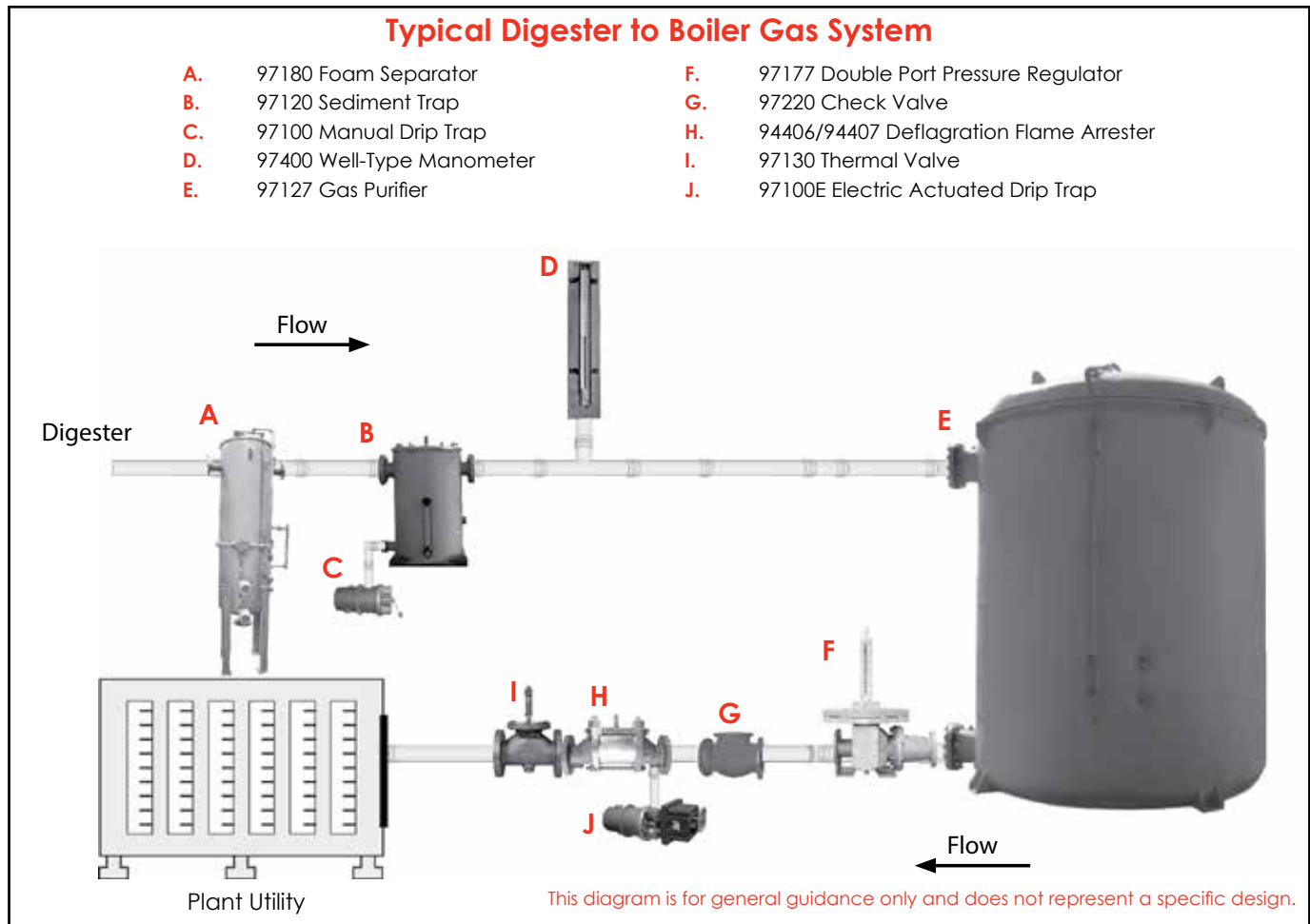
Set Point Exceeded



\* See back cover.



# Digester Gas Stream Equipment\*



## Digester Gas Stream Equipment\*



### 97120 Sediment Trap

- Inlet Sizes 2", 3", 4", 6", 8", 10", 12", 14" & 16"
- Steel and Stainless Steel Materials
- Removes Sediment and Condensate
- Large Capacity
- Easy Clean Out
- Low Pressure Drop Design
- Optional: Sight Glass & Cooling Coil
- Consult Factory for Special Configurations



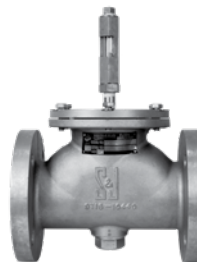
### 97125 Condensate Accumulator

- 13 or 125 Gallon Capacities
- Efficiently Stores and Evacuates Condensate Through Internal Drip Leg
- Large Storage Capacity
- Optional: Alarm Switches, Sight Glass and Solenoid
- Consult Factory for Special Configurations



### Gas Purifier

- Efficient Removal of H<sub>2</sub>S
- Designed for Low Pressure Biogas Applications
- Handles Finite Range of Operating Conditions
- 8' and 12' Diameters
- Fiberglass Tank Provides Optimum Corrosion Protection
- Manual or Continuous Regeneration Configuration



### 97130 Thermal Valve

- Inlet Sizes 2", 3", 4", 6", 8", 10" & 12"
- Aluminum or 316 SS Material
- Positive Emergency Shutoff
- Valve Closed Indicator Rod
- 255°F Fusible Link
- Optional Proximity Switch and Insulation Jackets Available
- Can Be Used in Conjunction with Deflagration Flame Arrester

## Digester Gas Stream Equipment\*



### 97177 Double Port Pressure Regulator

- Sizes 2", 3", 4", 6" & 8"
- Upstream or Downstream Control
- Balanced Double Port/Plug Design
- Large Diaphragm for Increased Sensitivity
- Externally Adjustable Set Point with Visual Indicator
- Fewer Moving Parts for Longer Service Life
- No External Power Source Required



### 97180 Foam Separator

- Sizes 2", 3", 4", 6", 8", 10" & 12"
- Continuous Wash Spray System
- Removes Foam and Particles
- Large Reservoir with Baffle
- 304 SS, 316/316L SS Construction
- Optional: Visual Drain Flow Indicator, Water Solenoid Valves, and Alarms for High and Low Water Level
- Consult Factory for Special Configurations



### 97220 Back Pressure Check Valve

- Sizes 2", 3", 4", 6", 8", 10" & 12"
- Eliminates Reverse Flow
- Replaceable Pallet/Seat
- Maximum Flow with Minimum Pressure Drop
- Flanged or Threaded Connections



### 97400 Well-Type Manometer

- Sizes 12", 20", 24" or 30"
- Aluminum or SS Materials
- Pressure or Vacuum Measurement
- Measures Differential or Point Pressure Readings
- Indoor or Outdoor Use
- Easily Bank Mounted
- Optional: Float Check Valve, Vented Petcock and Isolation Valve
- Optional Mounting Panel
- 97401 U-Tube Type Manometer Available

## Digester Gas Stream Equipment - Drip Traps & Panels\*



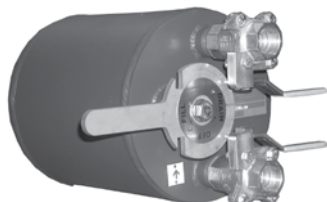
### 97100 - Manual Drip Trap

- Positive Gas Shut-off While Draining
- Operated Manually
- 5 PSI or 25 PSI
- 3 or 6 Quart Capacities
- Internal Parts and Hardware Stainless Steel - Standard
- Optional: Air Inlet and Insulation Jackets



### 97100E - Electric Actuated Drip Trap

- Positive Gas Shut-off While Draining
- Automatic Operation with an Electronic Timer
- 5 PSI or 25 PSI
- 3 or 6 Quart Capacities
- Optional: Air Inlet and Insulation Jackets
- Local Control Panels Available



### 97101 - High Pressure Manual Drip Trap

- Positive Gas Shut-off While Draining
- 100 PSIG Standard
- 4 Quart or 6 Quart Capacity
- Locking Lever
- Double Seal Ball Valves
- Carbon Steel or Stainless Steel Construction

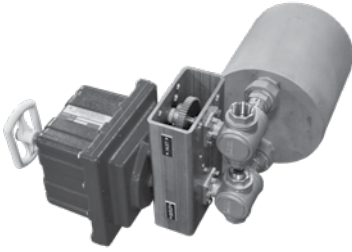


### 97110 - Automatic Drip Trap

- Positive Gas Shut-off While Draining
- Automatic Unattended Removal of Condensate
- 5 PSI or 25 PSI
- 2 Quart or 4 Quart Capacity
- Float Operated
- Inlet Size 1"



## Digester Gas Stream Equipment - Drip Traps & Panels Cont.\*



### 97101E - Electric Actuated Drip Trap

- Carbon Steel or Stainless Steel Construction
- 4 Quart or 6 Quart Capacity
- Positive Gas Shut-Off While Draining
- Double-Seal Ball Plug Valves
- 100 PSIG Standard
- Programmable Timer (Internal or in LCP)



### 97100P/97101P - Local Control Panel

- Can Control Up to 8 97100E/97101E Units
- Selectors Include Auto/Local Mode and Local Fill/Drain
- Indicators Show When The Drip Trap is Filling or Draining
- Optional Fail Indicator and Status/Fail Dry Contacts
- The Local Control Panel is Available for Manual Control Only or With Automatic Timers
- Typical Enclosures are Nema 4X Fiberglass, 304 Stainless Steel, 316 Stainless Steel or Nema 7 Aluminum

## Insulation Jackets\*

Shand & Jurs insulation jackets provide heat retention for equipment in cold weather environments. Construction of the insulating jacket is silicone impregnated woven glass cloth lining with 1" thick fiber glass material. The jacket is easy to install and remove in the field and are available for most equipment.



94020 Pressure & Vacuum Relief Valve (Open)



94306 Flame Arrester

## Service\*

Our Shand & Jurs Biogas field service technicians are available to provide expertise to maintain your valuable biogas operations. We are equipped for repairs at our state-of-the-art factory in Hillside, Illinois. We also have the capabilities to recertify pressure relief devices.

- Site Surveys of Existing Equipment
- Preventative Maintenance Contracts
- Installation Inspection and Start-Up Assistance
- Operator and Maintenance Training

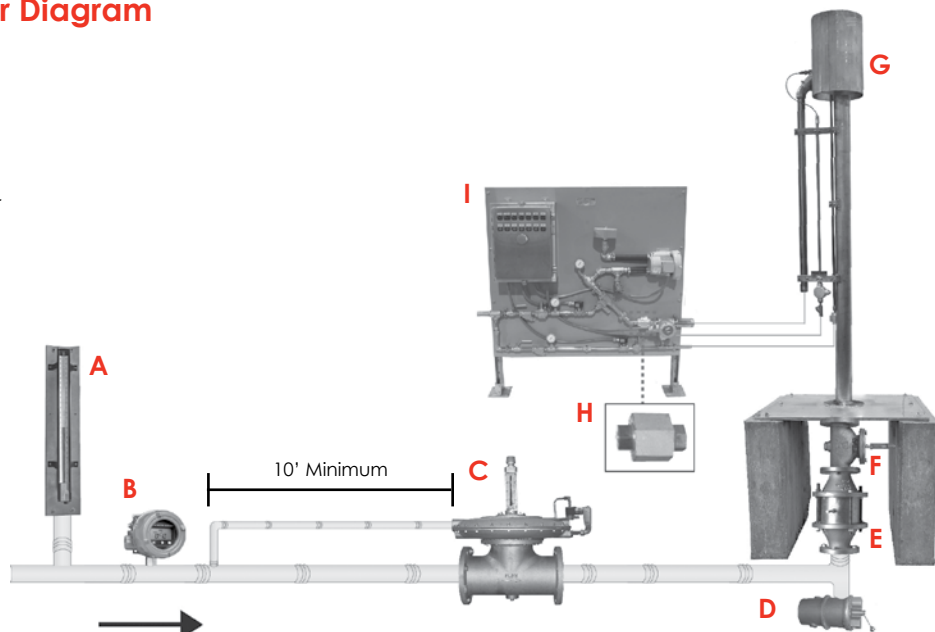
Call **708-236-6000** for scheduling.

## Waste Gas Flares & Burners - Accessories\*

### Typical Waste Gas Burner Diagram

- A. 97400 Well-Type Manometer
- B. Pressure Switch or Transmitter
- C. 97150 Single Port Regulator
- D. 97100 Manual Drip Trap
- E. 94406 Deflagration Flame Arrester
- F. 97130 Thermal Valve
- G. 97301 Waste Gas Burner
- H. 97200 Flame Check
- I. 97301 Control Panel with Ground Level Pilot Ignition

This diagram is for general guidance only and does not represent a specific design.



\* See back cover.

# Waste Gas Flares & Burners - Accessories\*



## 97150 Single Port Regulator

- Sizes 2", 3", 4", 6", 8", 10" & 12"
- Internal/External Sense Tap
- Large Diaphragm Operated/Spring Loaded for Sensitivity
- Maintain Upstream Pressure
- Simplified Cleaning and Maintenance
- 3-Way Solenoid and Bypass Available



## 97200 Flame Check

- Sizes 1/4", 1/2", 3/4", 1", 1 1/2" and 2"
- Standard Aluminum or Stainless Steel
- Prevents Flame Flashback in Pilot or Small Gas Lines
- High Flow Capacity
- 25 PSIG Working Pressure



## 97162 Pressure Relief/Deflagration Flame Trap Assembly

- Sizes 2", 3", 4", 6", 8", 10" & 12"
- Internal/External Sense Tap
- Positive Emergency Shut-off
- Maintain Upstream Pressure
- 255°F Fusible Link
- 3-Way Solenoid and Bypass Available
- Combines 97150 Pressure Regulator with 94407



## 943XX Detonation Flame Arrester

- Withstands instantaneous pressure at the Flame front in excess of 500 psig
- Tube bank design ensures consistent functioning
- 316 SS housing construction and 316 SS tube bank
- Optional fittings for pressure taps or temperature probes
- Standard drain plug
- U.S. Coast Guard Approved



## 97300 Waste Gas Burner

- Sizes 2", 3", 4", 6", 8", 10" & 12"
- High Performance Stoichiometric Pilot
- No Flame Front Burn-out of Pilot Gas During Ignition
- Burns High Flow, Low BTU "Wet" Methane
- No Venturi Maintenance
- State-of-the-Art Digital Control
- Fully Automated Continuous or Intermittent Pilot
- Provides Alarm Outputs



## 97301 Waste Gas Burner

- Sizes 2", 3", 4", 6", 8", 10" & 12"
- High Performance Stoichiometric Pilot
- Burns High Flow, Low BTU "Wet" Methane
- Stainless Steel Flame Area
- Superior Pilot Wind Protection
- Solid State Controls
- Fully Automated Continuous or Intermittent Pilot
- Ground Level Venturi Pilot Ignition
- Provides Alarm Outputs



## 97310 Enclosed Waste Gas Burner

- Sizes 2", 3", 4", 6", 8", 10" & 12"
- No Visible Flame
- Controlled Combustion Environment with Natural Draft Design
- High Destruction Removal Efficiency
- High Turn Down Ratios
- Convenient Sampling Ports
- Operates with Low Input Pressures
- Advanced Automatic Ignition System



## 97311 Enclosed Waste Gas Burner

- Sizes 3", 4", 6", 8", 10" & 12"
- No Visible Flame
- Controlled Combustion Environment with Natural Draft Design
- High Destruction Removal Efficiency
- High Turn Down Ratios
- Ground Level Inspiring Venturi Pilot/Ignition Lines
- Operates with Low Input Pressures
- Advanced Ground Level Automatic Ignition System



## 973XXT Series Touch Screen Control Panel

Designed with the system operator in mind, the new touch screen control panel offers easy, more precise control. The touch screen control panel is designed for complete automatic operation of the entire Flare System and can monitor the flare's temperature, the pilot, spark, etc. S&J's system gives the operator much more flexibility in controlling the system with more parameters easily configured via the touch screen. The Control Panel can also be connected to a local PLC.

Shand & Jurs Biogas' latest touch screen control panel option is now available on the 97300T, 97301T, 97310T and 97311T Burners and Flares.







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Point/Multi-Point Level  
Controls & Continuous  
Level Sensors



Tank Vents, Flame and  
Defonation Arresters,  
Fittings & FRP Equipment



Digester Gas Equipment  
Waste Gas Burners



Mold Level & Strip  
Guiding Measurement  
& Control Systems for  
Metals/Steel Industries



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