CATALYTIC OXIDIZERS

ELECTRIC AND GAS FIRED
SVE/VOC SYSTEMS 100-1500 SCFM

1000 SCFM Gas fired Catox with Preheat Exchanger.

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HITEMP TECH CORP

Hitemp Tech offers the world's first Catalytic SVE System with the capability to operate as either an Electric or as a Gas Fired System. We offer a basic shell module that can be setup with a catalyst module for 98% destruction efficiency and an integral Preheat Exchanger. On the top of the unit is a flange where an electric heating element or a gas burner can be mounted. Each heating system comes with a Nema 4 WP Panel and the components necessary for operation.

What makes this system unique is that we use the same shell, heat exchanger, and catalyst modules for both Electric and Gas fired units. An electric unit can be changed over to a gas fired unit in about 2 hours. The value is that you can purchase a single system and use for both Electric and Gas applications.

The Electric system comes with Honeywell temp controls, SSR, and shutoffs. Starters can be provided for an integral blower or external controls upon request. The gas fired systems come with a Nema 4 WP panel with temp controls and UL and FM combustion components including a Honeywell flame safety, and valve train.

The system is designed in a vertical configuration to minimize the footprint and mounted on a skid for ease of shipping and handling and for mounting of optional components. The unit is bolted together allowing easy access for inspection and repair of all heat exchanger welds, and for easy cleaning or replacement of the burner, electric heating elements, and a site assembled scaffold with a chain fall is used to access the catalyst module. NO HIDDEN PARTS.

300 SCFM Electric System with Optional blower and Flame Arrestor.

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Hitemp Tech Corp Systems offered and Typical Applications

Systems offered by HTT are of the three basic types to handle different waste gas streams.

1. The first is the most common. The application will have a waste gas stream that will be mostly ambient air with a small quantity of VOC (Volatile Organic Compounds). For these applications, you can select the size based on the flow rate in SCFM and the fuel or heat source.

2. The second type is more complicated. In these applications, the gas stream that will contain little or no oxygen and varying concentrations of VOC. In these applications, we will calculate the amount of combustion air necessary to burn all of the hydrocarbons in the stream and then must add sufficient additional combustion air so that the final exhaust gas will contain a minimum of 8-10 percent oxygen.

3. The third is when you have an exhaust gas stream from a Landfill or chemical process, that contains almost 100 percent VOC. This can be handled with a gas fired thermal oxidizer where the waste gases are combined with natural gas, and injected directly through the burner nozzle.

With this type of system the Oxidizer is started with natural gas and brought up to temperature. Once temperature is reached the waste stream is slowly added to the natural gas passing through the burner. When this occurs the temperature rises, the natural gas is automatically throttled back, and the system uses the waste gas and thus displaces the natural gas until the natural gas is shutoff completely.

Should the temperature in the chamber rises above set point, and the burner output throttles back to low fire, the second temperature controller opens the damper on secondary air blower. During this condition, the secondary air is used to maintain temperature.

In some applications the waste stream is diluted with secondary air before injection into the firing chamber. The same auxiliary temperature controller can be used to operate a bleed air tee valve thus controlling the amount of dilution air necessary during operation. For these special applications, we select a medium velocity premix type burner with an integral high-pressure combustion air blower sized for the waste gas volume plus the required combustion air.

Also furnished on our standard units, will be the natural gas valve train including, solenoid shutoff valves, flamerod detection, and gas butterfly valve with modulating control motor keeping the system in compliance with FM requirements. Components may be furnished pre-piped and wired or supplied loose for installation by others.

HITEMP TECHNOLOGY

TYPICAL HTT ELECTRIC CATOX SYSTEM

HTT shall supply one Fume Incineration System. The system shall raise the temperature of the exhaust gases to the required operating temperature. This will assure maximum destruction of the VOC in the exhaust gas. The system shall be packaged complete with an integral preheat exchanger, Inconel sheath low watt density heating elements, precious metal ceramic type catalyst module, refractory lined processing chamber, and the field installed stack.

CATOX SYSTEM CHAMBER

The Catox System shall be constructed of 304 stainless steel (Note: We use 316 L for HCl solvent applications) and insulated with a combination of Ceramic Fiber and high temperature insulating materials. The refractory shall be installed with SS anchors to maintain integrity. The lower chamber shall be constructed of carbon steel and coated with an acid resistant epoxy coating.

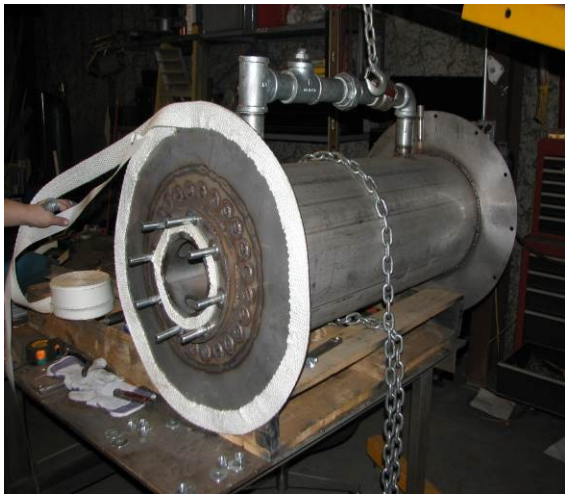
150 SCFM Catox Shell with EZ-Bolt on Type Catalyst Module

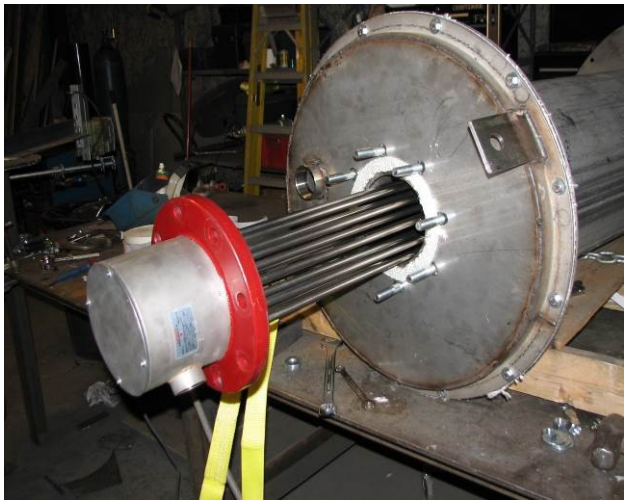
CATALYST BED

Catalyst shall be supplied in modular sections in separate frames. The frames will be complete with mounting flanges and gaskets. The frames will bolt directly to a SS support grid inside the chamber of the retention zone. The EZ-Bole Catalyst modules may be installed externally for ease of removal and maintenance.

PREHEAT EXCHANGER

The system shall include an integral preheat exchanger for raising the temperature of the exhaust gases prior to entering the firing chamber. The exchanger shall be a shell and tube type unit manufactured using easy clean 1 in alloy tubes.





ELECTRIC HEATING SYSTEM (E)

The system shall include a process air electric heater for raising the temperature of the gases to operating temp as required. System shall be complete with an Incalloy sheathed tubular heater rated at 20 watts/sq. in, mounted on a stainless flange with a weather-proof terminal housing, and screw type terminals.

NATURAL GAS BURNER (G Option)

The system is available with a packaged gas fired burner and controls, for raising the temperature of the gases to operating temperature as required. System shall be complete with flame safety, controls and valve train. A motorized modulating gas valve will regulate the burner output using digital controllers. Burner train components are supplied loose for field installation. Customer shall supply natural gas regulator.

1000 SCFM NAT GAS CATOX SYSTEM

TYPICAL SYSTEM OPTIONS

ID BLOWER (IDB Option)

The system shall include one (1) dilution air blower for maintaining minimal air ratio and for controlling chamber temperature. The blower shall include a control damper and modulating actuator.

SPARK ARRESTER (SA Option)

The system shall include one (1) spark arrester to prevent the gases and flame from backing up the supply duct.

AIR CONTROL TEE (T Option)

The system shall include one (1) waste gas diverting tee for closing off the stack during operation or for closing off the waste gas to the oxidizer when the system is not operational. Package shall include a spring return actuator that will divert up the stack during a power failure.

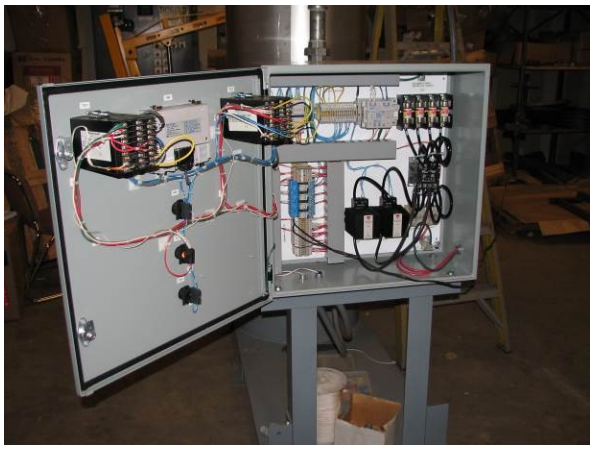
DATA LOGGING (DL Option)

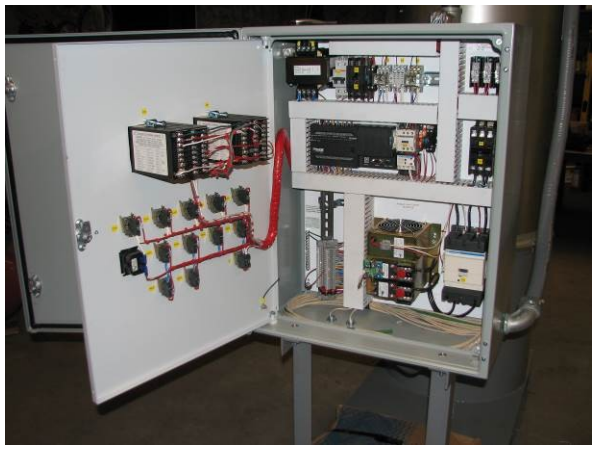
Package may include an optional Data Logging system as manufactured by HOBO and may be model H12-002 for a single channel type K TC. Other recorders shall are available that will accept T/C, MA, or DC inputs for required sensors.

CONTROL OPERATION

The operator shall start and stop the system from the main panel or from remote inputs. Startup shall prove the blower, start burner, prove set temperature, and signal to start fume injection. Blower pressure and the customer safety limits must be proven prior to burner ignition. Component failures will shut down system and alert the operator. Indicator lights will display fault.

The system shall be designed to operate with a variable waste gas input. Natural gas will be controlled to maintain a preset temperature. The system will be able to self regulate the fuel input to both maintain temperature and adjust conditions to match the flow of the waste gas stream.





CONTROLS

The package shall include one (1) Hoffman Nema 4 control panel, for remote control and monitoring. The system shall maintain a preset temperature utilizing a type K T/C and 4-20 ma digital controllers. The system shall be monitored with Honeywell DC-3000 temperature controllers for system operation located in the main panel. All controls and safeties are operated from this panel. The controller will modulate the heat input to maintain temperature. Contacts will be provided for remote start and stop, pressure limit switch, and for motor starter coil. PLC operation is optional.

ELECTRIC CATALYTIC SYSTEM DESIGN DATA

Flow Rate:	100	200	300	500	1000	1500	SCFM
Waste Gas Temp:	100	100	100	100	100	100	F
Preheat Temp:	415	415	415	415	415	415	F
Catalyst inlet Temp:	550	550	550	550	550	550	F
Temp rise from Elec:	135	135	135	135	135	135	F
Temp rise from VOC:	200	200	200	200	200	200	F @ 8% LEL
Catalyst outlet Temp:	700	700	700	700	700	700	F
Est. Stack Temp:	250	250	250	250	250	250	F
Calc. Heat Input:							
0% LEL	7.5	15	45	37,5	75	112	KW
3% LEL	4	8	16	20	40	60	KW
6% LEL	0	0	0	0	0	0	KW
Destruction Eff:	99	99	99	99	99	99	%
Preheat Eff:	70	70	70	70	70	70	%
Catalyst Volume:	0.5	0.5	1.0	1.5	2	3	Cu. Ft.

DELIVERY: Shall be 6-8 weeks after the receipt of a valid purchase order, progress payments, and all required approvals.

TERMS: 33.3% with order, 33.3% when fabrication period is half way, 33.3% when fabrication is completed prior to shipment.

Note: Costs of any and all emissions testing are extra. Any additional equipment or controls required above those stated herein shall be provided at extra charge.

INSTALLATION: Installation will require running utilities to unit from source. We suggest the gas train, supply duct, and main panel are located indoors, we will provide these components loose prior to shipment of the main unit to be installed prior to delivery of main units.

Typical Sources of Supply

1.	Refractory Materials	- FiberFrax - CARBORUNDUM
2.	System Controls	
	SWITCHES	- Control Concepts, Allen Bradley
	RELAYS	- 3PDT W\Neon indication
	PANELS	- Hoffman, NEMA 4
	CONTROLLERS	- Honeywell, UDC-3000
	VALVE TRAIN	- Asco, Honeywell
3.	Burners	- Midco, Haulk, Maxon
4.	Catalyst materials	- Air Flow Catalyst Corporation

Warranty: HTT shall warrant that the system described shall meet all pertinent emissions codes per the submitted documentation. HTT shall warrant that the equipment furnished shall be free of defects in materials and workmanship. This warrantee shall cover parts manufactured by HTT for a period of FIVE YEARS. HTT shall extend warrantees for parts not manufactured by HTT. Defective components shall be repaired or replaced per the manufacturers warrantee to be installed by customer's personnel.

Documentation: HTT shall provide operating and maintenance manuals that include operating instructions, component data, and drawings.