

## GLOBAL TECHNOLOGIES Dual Therm-Cat

April 10, 2002

Proposal # GBL – 4328A

Prepared for :

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**Section I - Design Considerations**

**APPLICATION DATA AND DESIGN PARAMETERS**

- Process Producing Emissions: Soil Vapor Extraction
- Waste Stream Flow Rate : 140 SCFM (450 acfm @ 20 in Hg)
- Waste Stream Temperature: 100 deg F

VOCs	Concentration
Misc. Non-halogenated VOCs	6.2 lb/h

- Oxidizer Location: Outdoors
- Required Fuel: Natural Gas or propane @ 1-5 psig
- Available Power: 230 or 460 V / 60 Hz / 3 Ph

**DESIRED RESULTS**

- Bring the current process into compliance with the EPA and local regulatory agency by obtaining 99% volatile organic compound destruction efficiency
- Keep the overall cost of the project to a minimum
- Minimize yearly operational cost of the system
- Create no adverse effects on the operation of the current process

**EQUIPMENT RECOMMENDATION**

- One (1) Global Model 2 Dual Therm-Cat Oxidizer

**EQUIPMENT BENEFITS**

- Fully automated PLC based control system
- Field tested and proven technology
- Full equipment warranty
- Short start-up and cool down periods
- Full factory test prior to shipment
- 24 hour service support

## Section II – Therm-Cat Equipment Specifications

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**One Global Therm-Cat** will process up to 140 SCFM of VOC laden air, providing 99% destruction efficiency.

During the system operation, VOC laden air will be exhausted from the process into the system fan and discharged into the burner section and will be heated to the preset oxidation temperature. When the VOC laden air is oxidized an exothermic reaction will take place. The VOCs in the air stream are converted to carbon dioxide and water. The hot purified air will then finally be exhausted to atmosphere.

The equipment will be assembled, factory pre-wired and supplied per the following specifications:

### **REACTOR**

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- Reactor interior lined with high temperature ceramic fiber element rated for 2300° F
- Hot rolled steel exterior reactor shell
- Exterior shell painted with 2 coats of UV resistant polyurethane paint
- Reactor designed for a 1 second residence time at a temperature of 1500° F to guarantee a destruction efficiency of 99%
- Thermocouples will be located before and after the reactor to ensure proper temperature control

### **DILUTION AIR CONTROLS**

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- A series of automatic air dilution controls will be supplied to dilute the inlet air stream during high VOC concentrations
- The amount of dilution air will be controlled by the exit temperature of the reactor
- Fresh air damper allows for oxidizer to be brought up to oxidation temperature with 25% outside air
- Fresh air damper also used to control the temperature of the oxidizer by regulating the amount of dilution air entering the oxidizer

### **SYSTEM FAN**

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- Sized to overcome the pressure drop through the oxidizer only
- 2 Hp, 230 V/60Hz/3PH TEFC (Totally Enclosed Fan Cooled) motor

### **FLAME ARRESTOR**

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- Metal grid type
- Placed between system fan and oxidizer inlet

### **LEL MONITOR (Quoted as an Option)**

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- Sensor located at oxidizer inlet
- Monitor will shut down oxidizer at high LEL concentrations
- Recommended for operation above 25% LEL

## Therm-Cat Equipment Specifications

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### BURNER/GAS TRAIN

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- Fuel source – Natural gas or propane
- Burner capacity – 500,000 BTU/hr
- Fabricated to FM specifications
- 18% oxygen required
- 9:1 maximum turndown
- Burner mounted to allow the flame to fire in the same direction as the airflow
- Burner selected to bring reactor up to reactor-ready temperature with ambient air during start-up
- Burner will have capacity to maintain system operating temperature during VOC free, full air flow conditions
- Expected system heat up time from cold start is 30 minutes

### EXHAUST STACK

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- Constructed of stainless steel
- Guy wired, no-loss type (guy wires by others)
- Stack height will be 15' above grade
- 1" Ø Sampling ports are provided

### SYSTEM CONTROLS

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- Fully automated PLC (Programmable Logic Controller) controls
- Allen Bradley Micrologics 1200 PLC or equal
- NEMA 3R panel
- A flame strength meter shall indicate the strength of the flame signal to indicate any burner service needs.
- First out shutdown detector
- Honeywell two pen hard copy chart recorder/controller to control and monitor the reactor inlet and outlet temperatures

### SAFETY SHUTDOWNS

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- Loss of proper airflow
- Loss of electrical power
- Loss of gas pressure
- High reactor outlet temperature
- Low reactor inlet temperature

### ADDITIONAL ITEMS

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- Two sets of Operation and Maintenance Manuals (O&M)
- O&M Manuals available on CD-ROM
- Thorough factory quality run and test

## Therm-Cat Equipment Specifications

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### ITEMS NOT INCLUDED AS PART OF THIS PROPOSAL

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- T-dampers and all other external duct work
- All compliance testing of reactor
- Guy wires for stack
- Power wiring to starter panel and control panel
- Natural gas service connection to equipment fuel train at required pressure
- All local and regulatory permits
- Mechanical and electrical installation
- Start-up and training services
- Sales tax, freight charges, crating and insurance

\*Note: All weights, dimensions, horsepower ratings, burner sizing, and specific engineering details within the proposal are approximate and will be confirmed by Global Technologies following order placement.

**Section III – Purchase Pricing**

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**One (1) Global Model 2 Dual Therm-Cat** will process 140 SCFM of VOC laden air, providing 99% destruction efficiency.

**PRICE, FOB Fabrication Facility:** **\$ 37,700.00**

**LEL Monitor (recommended for operation above 25% LEL):** **\$ 3,180.00**

**Start-up and training services:** **\$830.00/day**  
plus travel and living expenses

**ESTIMATED SHIPMENT:**

8-10 weeks after receipt of order (assuming no drawing approval process)

**PAYMENT TERMS:**

30% down payment upon order placement

30% due at midpoint between order placement and scheduled shipment

30% due prior to shipment or notification of readiness to ship

10% due upon start-up not to exceed 30 days from shipment.

Order acceptance is subject to credit approval

ALL PRICES HAVE BEEN QUOTED IN US DOLLARS  
ALL PRICES WILL REMAIN FIRM FOR 60 DAYS;  
THEREAFTER, A RE-QUOTE MAY BE REQUIRED

Section IV – Rental Pricing

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Rental Duration	Rate per Month
	Model 2
1-6 months	\$3,100
7-12 months	\$2,900

**Terms of Rental:**

- Monthly rental rate is fixed at time of agreement for duration of rental. A minimum of three months rental is required.
- Freight, off-loading and on-loading of equipment are customer's responsibility.
- Start-up is \$930 per day plus travel and living expenses.
- After equipment arrives on site a 10 day grace period is allowed before rental begins.
- Rental duration may be extended month-to-month after initial commitment. Customer must sign a month-to-month rental extension agreement. Rate is fixed at previous rate.
- Rental is subject to equipment availability.

## Section V - Warranty and Terms

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### Warranty Scope and Duration

GLOBAL TECHNOLOGIES, Inc. (GLOBAL) warrants to buyer that the products to be delivered will (a) be free from defects in material and manufacturing workmanship (b) conform to manufacturer's applicable product descriptions attached to Seller's quotation. If no product descriptions or specifications are attached to the quotation, manufacturer's specification in effect on the date of shipment will apply.

GLOBAL guarantees the conversion efficiency of the system as long as the catalyst bed temperatures are kept within a specified range and certain neutralizers are kept out of the air stream. The neutralizers are halogens (such as chlorine), heavy metals (such as lead, mercury and zinc), sulfur, phosphorous, and silicones. **(Catalytic mode only)**

GLOBAL also guarantees compliance of the stack emissions with respect to current federal and local VOC regulations.

GLOBAL guarantees the conversion efficiency of the system or an outlet concentration of 20 ppmv as C1, whichever is less stringent.

The product warranties are for a period of 12 months from the date of shipment or start-up, if start-up is within thirty (30) days of shipment.

GLOBAL shall rely on process and chemical information provided by the Customer or its agents and not be liable for undisclosed or unknown process or chemical materials.

### **WARRANTY EXCLUSIONS**

Warranty coverage does not include: (a) freight, labor, travel, and living expenses associated with parts replacement (b) normal maintenance items such as lubrication, fan belts and cleaning of the equipment.

In the event the customer, or any installation contractor employed by the customer, contracts outside GLOBAL for installation work or erection of quoted equipment, the customer will assume full responsibility for workmanship resulting from said contract.

## Warranty and Terms

### Standard Terms and Conditions

#### **1. Prices**

Prices are quoted in U.S. dollars and may be accepted only within 60 days from date of quotation by Global Technologies, Inc. (Global). Quotations do not include taxes unless otherwise noted. Orders accepted prior to any price increase will be invoiced as quoted provided Global is allowed to ship under its normal delivery schedule. Global may adjust prices on any order changed by the Purchaser after acceptance of the order by Global.

#### **2. Cancellations**

Orders canceled by the Purchaser are subject to a cancellation charge which may include engineering service, work in progress, special purchased parts charges, and other similar charges.

#### **3. Shipping Schedules**

Global will not be liable for any loss or damage from delays in shipping beyond Global's reasonable control. Shipments delayed at Purchaser's request will be invoiced and dated on the day shipment is ready and a 1% per month service charge will be added. Global reserves the right to make partial shipments and to invoice pro-rata upon such shipments.

#### **4. Electrical Equipment and Installation**

Electrical equipment includes only those electrical components referred to in the quotation. Changes to electrical equipment to comply with any local, state, provincial or national regulations are the Purchaser's responsibility unless Global specifically agreed to meet these regulations. Installation service is available from Global at per diem rates plus lodging and travel expenses, but it is not included unless specifically quoted.

#### **5. Acceptance and Testing of Equipment**

Purchaser will upon delivery inspect and test the equipment and notify Global in writing within 30 days of installation of all defects discovered including failure of the equipment to meet quoted performance standards. Failure to give such notice constitutes an irrevocable acceptance of the equipment and the equipment will be deemed to conform with the terms of this Agreement, and Purchaser will be bound to pay for the equipment. Upon notification of a defect as above provided, Global will repair the equipment and correct the system's performance.

#### **6. Risk of Loss**

Quotations are F.O.B., place of shipment, unless otherwise noted. The risk of loss of the equipment shipped will pass to Purchaser upon Global's delivery of the equipment to a carrier. Claims for damage in shipment must be filed by Purchaser with the carrier.

#### **7. Warranty**

##### **Scope and Duration**

Global warrants to Buyer that the products to be delivered will (a) be free from defects in material and manufacturing workmanship (b) conform to manufacturer's applicable product descriptions attached to Seller's quotation. If no product descriptions or specifications are attached to the quotation, manufacturer's specification in effect on the date of shipment will apply.

Global guarantees the conversion efficiency of the system as long as operating temperatures are kept within specified temperatures.

Global also guarantees compliance of the stack emissions with respect to current federal and local VOC regulations. If required, Global will make measurements at the time of start-up demonstrating performance. Thereafter, the customer is responsible for maintaining and monitoring the system to sustain a state of compliance.

## Warranty and Terms

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### **Standard Terms and Conditions**

#### **7. Warranty**

The product warranties are for a period of 12 months from the date of shipment or start-up, if start-up is within thirty (30) days of shipment.

#### **Warranty Exclusions**

Warranty coverage does not include: (a) freight, labor, travel and living expenses associated with parts replacement and (b) normal maintenance items such as lubrication, fan belts and cleaning of the equipment.

In the event the customer, or any installation contractor employed by the customer, contracts outside Global for installation work or erection of quoted equipment, the customer will assume full responsibility for workmanship resulting from said contract.

#### **8. Limitation of Liability**

*In no event will Global, its subcontractors, or representatives be held responsible, or liable for any claim, whether in warranty, contract, tort or strict liability for any special, indirect, incidental or consequential damages resulting from the purchase of equipment (including but not limited to incidental or consequential damages for labor, lost profits, lost sales, injury to person or to property or any other incidental loss or damages).*

*Purchaser agrees that Purchaser's exclusive remedy and Global's sole liability on any such claim will be limited to reimbursement from Global of the purchase price actually received by Global from Purchaser for the equipment in question.*

#### **9. Security Interest**

Purchaser grants Global a security interest in the equipment to secure payment of the balance due hereunder. Purchaser authorizes Global to file this Agreement as a Financing Statement or to sign on behalf of Purchaser and file any other Financing Statements with respect to the equipment in any place Global deems necessary.

#### **10. Attorney's Fees**

Purchaser will be liable for all reasonable expenses and attorney's fees incurred by Global in enforcing its rights and remedies under this Agreement.

#### **11. Ordinances**

Any and all required licenses, certificates and operating permits will be the sole responsibility of the Buyer unless otherwise specified by Global.

#### **12. Miscellaneous**

The terms and conditions contained herein and any other terms and conditions stated in Global's proposal or specifications attached hereto will constitute the entire agreement between Global and Purchaser. The terms and conditions stated herein are applicable to all orders accepted by Global unless otherwise specifically agreed to by Global in writing. Purchaser will be deemed to have assented to all such terms if any part of the described equipment is accepted. If Purchaser finds any terms not acceptable, Purchaser must so notify Global within 15 days. Any additional or different terms contained in Purchaser's order to response hereto will be deemed objected to by Global and will be of no effect. This proposal and its acceptance will be governed in all respects by the laws of Wisconsin. In the event of a breach, both parties agree that any suit will be brought in the jurisdiction of the Courts of Wisconsin.

**GLOBAL TECHNOLOGIES  
CHANGE ORDER APPROVAL**  
8855 NORTH 55<sup>TH</sup> STREET  
MILWAUKEE, WI 53223 U.S.A.  
PHONE: (414) 365-6430 / FAX: (414) 365-6410

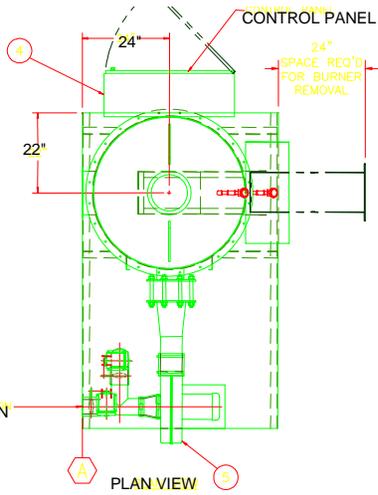
August 5, 2003

Customer Name: <b>Pease Construction, Inc.</b>  Phone: (253) 584-6606 Fax: (253) 581-7855	Customer P.O. Number:  <b>To be advised</b>	Model Number: <b>Model 2 Dual ThermCat</b>  Job Number: #10826
Requestor:  <b>Mr. Tim Gibson</b>	Change Reported To:  <b>Andy Talaga / Sandra Beal</b>	

Description of Changes:	Change Amount:
<b>RETROFIT MODEL 2 DUAL THERMCAT TO MODEL 5 (500 SCFM)</b>	
<b>1. Add new PB14, 3 hp fan and motor with shaft seal, add motor starter</b>	
<b>2. Add new Maxon 12" burner with profile plates</b>	
<i>Above pricing includes engineering time to procure items and revise existing engineering drawings</i>	
<i>Installation of above items to be coordinated with local contractors by Pease Construction, Inc.. Global Technologies installation supervision quoted on a T&amp;M basis per the attached rate sheet</i>	
<b>TOTAL CHANGE ORDER VALUE FOR BURNER/BLOWER</b>	

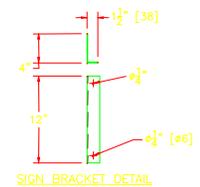
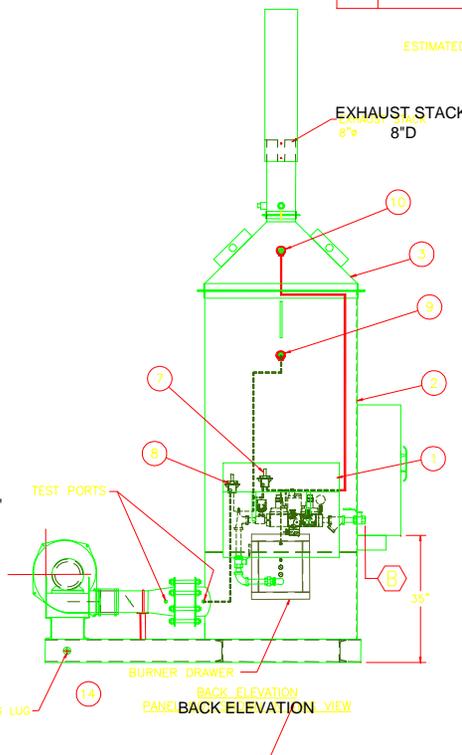
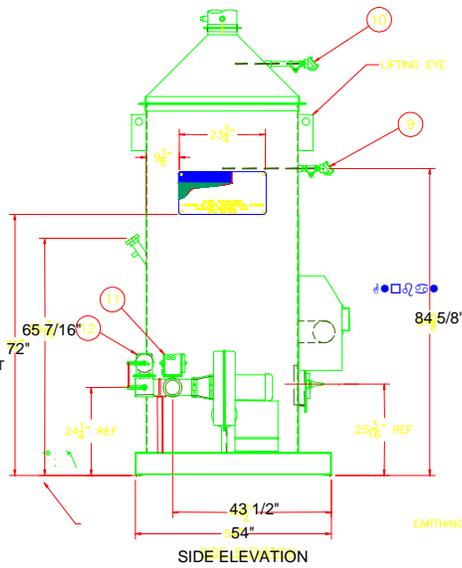
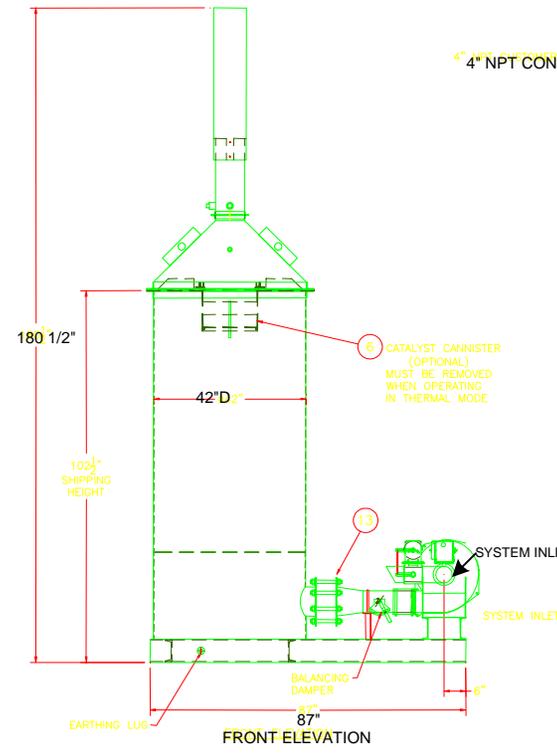
<p><b>Customer Approval:</b></p>   <p align="center"><b>Date:</b></p>
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Upon approval, please sign and fax back a copy to Deborah Anguil at (414) 365-6410. In addition, a new purchase order number will have to be issued for this contract.



3	EXHAUST STACK	M02RCE000	
4	CONTROL PANEL ASSEMBLY	34" X 36" X 12"	
5	SYSTEM FAN ASSEMBLY	M02RCE000	
6	CATALYST ASSEMBLY (OPTIONAL)	M02RCE000	
7	CATALYST DIFFERENTIAL PRESSURE INDICATOR	POSH-126	
8	BURNER AIR PROVING SWITCH	POSL-106	
9	CATALYST INLET THERMOCOUPLE (24")	TE-121 A/B	
10	CATALYST OUTLET THERMOCOUPLE (18")	TE-122 A/B	
11	FRESH AIR DAMPER W/ MODULATING ACTUATOR	TOV-102	
12	PROCESS INLET DAMPER W/ 2-POSITION ACTUATOR	XV-101	
13	FLAME ARRESTOR, #6"		
14	6" BALANCING DAMPER		

ESTIMATED TOTAL WEIGHT: 2760 LBS.



<b>GLOBAL</b>		Global Technologies Div. of Anguil Environmental Systems, Inc. Milwaukee, Wisconsin	
TITLE MODEL 2 DUAL THERM CAT GENERAL ARRANGEMENT		DRAWING NO. 4328-7 SCALE 3/4"=1'	
DRAWN BY	DATE	CUSTOMER	REV.
CHECKED	DATE	SAMPLE	
APPROVED	DATE	FOR INFORMATION ONLY	
LAST DRAWN	DATE	SOURCE	PAGE OF
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LAST PLOT BY		DATE	
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