



"Our oil used to be your oil"

American Petroleum Environmental Services
113535 N. Force Ave
Portland, OR 97217

August 23, 2016

Luis Bivens
Air Quality Permit Engineer
Oregon Department of Environmental Quality
700 Multnomah Street, Suite 600
Portland, OR 97232-4100

RE: Pre-Enforcement Notice
American Petroleum Environmental Services
PEN No. 2016-PEN-1781
File No. 26-3021-ST-01
Multnomah County

Dear Mr. Bivens:

Please consider this letter to be the formal reply of American Petroleum Environmental Services, Inc. (APES) to the Pre-Enforcement Notice (PEN) referenced above. Per the discussions held during our meeting at Portland Refinery on the 17th of August, which also involved Michael Orrman of DEQ, and Colin Gregg of Clearlube Re-refining (CLRR), this reply contains the TACT information requested in the PEN.

Additionally, this letter will remind the DEQ of our conversation of August 12, 2016, and the request made to revise the PEN to reflect the condition that APES was not responsible for the decision to remove the electric thermal oxidizers from the refinery site. APES recognizes, and understands that it has the ultimate responsibility for the resolution of these violations as a result of its purchase of the facility. However, I reiterate that for the perception of the general public, the notice stating that APES was the decision maker is, has, and will continue to cause damage to our reputation and business. In the aforementioned discussion, DEQ stated they would review the phrasing of the letter. As I have not yet received a revised PEN, I reiterate my objections while submitting this letter showing APES compliance with all requirements and request the revised PEN be issues as soon as possible.

Background Information From Other Facilities

Emerald Oil - Tacoma, WA: Emerald Oil installed their refinery in 2012 with an oil heater serving as a thermal oxidizer. However, the burner supplied with the plant was too small for the effluent gas they were sending it. As a result, they installed a stand-alone thermal oxidizer to handle the effluent gasses. The facility has run on natural gas as they do not have a source for No. 2 distillate to use as a fuel.

Bango Refining – Fallon, NV: Bango refinery originally vented their effluent to atmosphere, then installed oil heaters to operate as thermal oxidizers. However, similar to Emerald Oil, their oil heaters proved to not be large enough to handle all effluent sources, so they added a wet scrubber to the process. They do not currently operate a thermal oxidizer (unless the undersized oil heater is considered a TO). Bango reprocesses its No.2 distillate to make a fuel they sell into a diesel market, netting them enough money to offset natural gas. If the market shifted, they would burn No. 2 distillate instead of natural gas.

Best Energy – Portland, OR: This facility, currently under construction, has an effluent system similar to what we are proposing as TACT below. They have a small oil heater, dual fired (NG or No.2), with the



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exhaust running through a thermal oxidizer. The thermal oxidizer is also designed as dual fuel source to allow market economics to dictate which fuel they consume.

TACT

The Typically Achievable Control Technology (TACT) for controlling VOCs intended to be implemented is as follows:

- 1) Retrofit both front and back plant oil heaters with reconfigured internal ceramic combustion chambers and burner management systems to increase efficiency and thermal oxidation within the heaters. A blind flanged tee will be installed prior to the oil heater effluent inlet for the potential future installation of a clay filtration system effluent.
- 2) Re-pipe the cook tank condenser effluent through a pressurization blower and into the front plant oil heater's combustion chamber. A blind flanged tee will be installed prior to the oil heater for the future installation of the sulfonation plant effluent stream.
- 3) Specify, purchase, and install a new, natural gas thermal oxidizer for installation at either the front or back plant (final location to be determined on installed cost basis), designed for 99.99% Destruction Removal Efficiency (DRE) for total volatile organic compounds (VOC). This thermal oxidizer will be designed to operate at >1500°F with a total residence time of >1s. Attached to this letter is a proposal from EPCON Industrial Systems (www.epconlp.com) with a proposed thermal oxidizer. The final manufacturer of the Thermal Oxidizer has yet to be determined (cost analysis will be performed). This quote is provided as proof of system viability.

The combination of these steps will solve VOC emissions in a multitude of ways. First, the original emission points will be routed to a single stack. Second, the proposed solution will function as a two-stage thermal oxidation process. Preliminary VOC destruction will occur in both the front and back plant oil heaters. Once the streams are combined, a final thermal oxidation step based on natural gas heating will ensure the TACT 99.99% DRE of VOCs.

The added benefit of this solution is that it contains built in redundancy. If either front or back plant oil heaters go offline, the second-stage thermal oxidizer will have the necessary BTU capacity to process the and oxidize the cold effluent stream. This ensures the VOC emissions will be properly handled, even during an excursion from normal operating conditions.

It is my belief that the above solution presents the most efficient path forward for both APES, DEQ, and the surrounding community to resolve the underlying issues surrounding the PEN.

Sincerely,


Michael P. Mazza

President, American Petroleum Environmental Services

Cc: Michael Orman, DEQ, NWR AQ Manager
Office of Compliance and Enforcement, DEQ Headquarters

Attachments (2): EPCON Proposal 16V-069.PDF, Stream Composition.PDF

MAILING ADDRESS
P.O. Box 7060
The Woodlands, Texas 77387
Phone: (936) 273-3300



PLANT ADDRESS
17777 I-45 South
Conroe, Texas 77385
Fax: (936) 273-4600

EPCON INDUSTRIAL SYSTEMS LP
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August 23, 2016

ECOLUBE RECOVERY
40 Lake Bellevue Dr.
Bellevue, WA 98005

Ph.: 425-599-9035
Email: colin.gregg@ecoluberecovery.com

Attn.: Colin Gregg

Proposal # 16V-069

Subject: 3,000 SCFM **Direct Fired Thermal Oxidizer.**

Dear Mr. Gregg,

EPCON® Industrial Systems, LP is pleased to submit this proposal for your consideration. This proposal has been prepared accordance with your specifications. The systems will be engineered, designed, and manufactured at EPCON®'s manufacturing facility in Conroe, TX.

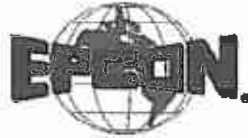
For almost 40 years, Epcon® has been providing state-of-the-art technology to custom design, manufacture and install **Air Pollution Control Systems** such as **Thermal Oxidizers, Industrial Ovens, Process Heating Systems** and **Finishing Systems** to a variety of industries such as Petrochemical, Pharmaceutical and Aerospace, to name a few. Epcon® has a history of exceeding the demands of clients from every industry.

- Under this proposal EPCON® shall supply 3,000 SCFM Direct Fired Thermal Oxidizer with the following

Each shall include:

- Burner System
- Combustion Air Fan
- Dilution Air Fan with VFD
- Process Piping with Process Isolation Damper
- Main Gas Train (pre-piped and pre-wired)
- Pilot Gas Train (pre-piped and pre-wired)
- UL Listed NEMA- 4 Control Panel for Oxidizer
- Safety interlocks

*AIR POLLUTION & HEAT PROCESSING SYSTEMS
THERMAL & CATALYTIC OXIDIZERS * AFTER BURNERS * INDUSTRIAL OVENS & FURNACES*



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TERMS

Price – See Price Sheet

Drawing Submittal: 3 to 4 weeks after receipt of PO

Delivery – 12 to 16 weeks after approval to construct

Shipping – FOB Origin.

Payments

30 % with order due upon receipt of invoice

30 % with approval to construct and completion of engineering

40 % prior to shipment

The price(s) herein quoted are firm for a period of thirty (30) days and subject to our Terms and Conditions and credit approval. These Terms and Conditions are part of this Proposal and are the basis for acceptance of this Proposal and the resulting order or contract.

Payments are due upon receipt of invoice.

The equipment purchased under this proposal will be warranted for a period of 12 months from the date of shipment.

The prices presented do not include any and all taxes (federal, state, local and sales) and permits. IT IS THE SOLE RESPONSIBILITY OF THE CUSTOMER, PRIVATE INDUSTRY, OR GOVERNMENT TO PAY ANY AND ALL THE APPLICABLE TAXES SUCH AS; BUT NOT LIMITED TO, FEDERAL, STATE, LOCAL, EXCISE, SALES, INCOME, PROPERTY, IMPORT/EXPORT AND DUTIES. Any government projects also exclude any and all taxes.

In some cases special crating and/or handling in preparation for shipment may be necessary (i.e. loads in excess of 50,000 Lbs. per section and/or for export shipment) which shall be priced separately. However, in most cases special crating and handling shall not be required.

Unless specified otherwise, all shipments are priced ex works and the title of Manufactured Goods shall stay with EPCON® until all payments are made in full. EPCON® reserves the right to repossess any and all the equipment supplied under the purchase order if customer fails to pay the full amount.

Costs associated with compliance testing, permit fees or any related expenses are excluded from pricing.

Thank you for the opportunity of submitting this proposal and we look forward to working with you on this project.

Sincerely,

Vipul Patel

Project Manager

Epcon® Industrial Systems, LP



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Proposal # 16V-069

August 23, 2016

EPCON® MAKES A DIFFERENCE

HISTORY

- Epcon® Industrial Systems, LP was founded in 1977.
- Epcon® has an impeccable reputation in the industry.
- Epcon® is a leader in the industry, and prides itself on its leading-edge technology.
- Epcon® employs highly educated, skilled and experienced employees at all levels.

LOCATION/PLANT

- Epcon® has its own 250,000 sq. ft. modern manufacturing facility, equipped with state-of-the-art fabricating machinery.
- Epcon® systems are designed, manufactured, and tested under one roof -- from concept to completion.
- Epcon® is conveniently located on Interstate 45, the main highway between Houston and Dallas and is close to the Port of Houston.

EPCON®'S FINANCIAL HEALTH

- Epcon® is a financially sound and stable company, has no debts and carries a large line of credit with Bank of America.
- The entire facility is all paid for; no long term debts.
- Epcon® carries highest credit rating.
- Epcon® has open credit, of large sums, from its suppliers.

CORE VALUES AND BELIEFS

- Epcon® treats its employees, suppliers and customers, on an equal basis ...
- always seeking 100% customer satisfaction.
- Epcon® stands 100% behind every product manufactured.
- Epcon® always delivers on time and more than we promise.
- Epcon® is extremely flexible in working with customer requirements.



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CUSTOMER SERVICE

- Epcon® is always seeking the customers' full satisfaction.
- Epcon® employees are empowered to do anything to please the customer.
- Epcon® is always seeking new ways to better serve its customers.
- Epcon® has a long list of happy and satisfied customers and a majority of our business is repeats business.

DIFFERENTIATION

- Epcon® specializes in designing and building "uncommon systems for uncommon applications."
- Epcon® delivers on-time, quality, cost-effective products and services to its customers.
- Epcon®'s systems are dependable; because we use highly reliable components and the design approach is very conservative ... we pay attention to details.
- Each system is designed to meet the customer's specific process requirements.
- Epcon® has experienced Engineers with Master's and Bachelor's degrees in Mechanical and Chemical Engineering, who provide the highest level of Engineering and Manufacturing of custom-engineered manufactured systems for its customers.
- **Epcon® designs and builds UL listed control panels.**
- **Our own manufacturing facility allows:**
 - **Control over the production and delivery schedule**
 - **High quality standards maintained**
- **Epcon® designs and builds UL listed control panels.**
- **Most systems are preassembled at Epcon®'s plant and undergo rigorous quality checks and Factory Testing prior to shipment.**
- **Fabrication, Assembly and Factory Acceptance Testing all under the same roof.**
- **Turnkey Installation.**



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Proposal # 16V-069

August 23, 2016

SAFETY

- Epcon® is committed to the safety of its employees, and conducts Safety Meetings weekly for the shop employees and monthly with the Safety Committee members.
- Epcon® conducts and participates in Haz Op meetings for its customers.
- Epcon® complies with all OSHA rules and regulations.
- Continuous education and communication is provided to all employees.

AFTER SALES SERVICE

- Epcon®'s Service Group is available on a 24-hour basis.
- Proficient after-sales service.
- Field Installation, Mechanical and Electrical.
- Start-up and Personnel Training.

PATENTS/CREDENTIALS

- Epcon® is an ASME Code shop.
- Epcon® is NQA-1 Compliant for Nuclear Work on Government projects.
- Epcon® holds several U.S. patents pertaining to Heat Processing Systems.

TRADE ORGANIZATIONS

- Member of Air & Waste Management Association (AWMA)
- Member of Institute of Clean Air Companies (ICAC)
- National Coil Coaters Association (NCCA)



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ECOLUBE RECOVERY

Proposal # 16V-069

August 23, 2016

1.0 GENERAL

This proposal is for a standard 3,000 SCFM Direct Fired Thermal Oxidizer package designed to treat the process gas stream described as under.

Assumption:

Total Process Flow Rate: 3,000 SCFM at 1300°F

Total Oxidizer Design Flow: 3,000 SCFM

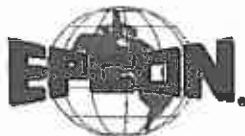
Process Composition:

	PROCESS-1			PROCESS-2			TOTAL PROCESS FLOW	
VOL. FLOW	1200 SCFM			1500 SCFM			2,700 SCFM	
TEMPERATURE	1300°F			1300°F			1300°F	
PRESSURE	<3 Psig			<1 Psig				
COMPOSITION	ppm	SCFM	LB/HR	ppm	SCFM	LB/HR	SCFM	LB/HR
Benzene	0	0	0	1.5	0.00225	0.027795	0.00225	0.0278
Chlorine	1.5	0.0018	0.010105	4	0.006	0.033685	0.0078	0.0438
Dioxane	0	0	0	100	0.15	2.090034	0.15	2.090
H2S	0	0	0	2	0.003	0.016138	0.003	0.016
SO2	100	0.12	1.214527	10	0.015	0.151816	0.135	1.366
Chloroform	20	0.024	0.45363	10	0.015	0.283519	0.039	0.737
Naphthaline	30	0.036	0.729719	40	0.06	1.216198	0.096	1.946
Mercaptans	5	0.006	0.07412	5	0.0075	0.092649	0.0135	0.167
Ethyl Mercaptans	500	0.6	5.889598	80	0.12	1.17792	0.72	7.067
Methyl mercaptans	25	0.03	0.227931	200	0.3	2.279314	0.33	2.507
CO	25	0.03	0.132891	5	0.0075	0.033223	0.0375	0.166
Nox	8	0.0096	0.051643	1	0.0015	0.008069	0.0111	0.0597
Hexane	25	0.03	0.408855	140	0.21	2.861986	0.24	3.271
Carbon Disulphide	25	0.03	0.360622	5	0.0075	0.090155	0.0375	0.451
Carbonyl Sulphite	30	0.036	0.341651	6	0.009	0.085413	0.045	0.427
Oxygen		251.79	1274.216		314.808	1593.065	566.608	2867.280
Nitrogen		947.25	4196.458		1184.278	5246.544	2131.525	9443.002
TOTAL		1200	5480.569		1500	6850.056	2700	12330.6257

Estimated Max. Heat Release: 242,172.00 BTUH Max. (based on 11,939 BTU/lb HHV)

Diluted Process LEL: 2.30% (Based on LEL% Value 3.0)

NOTE: For safety we need to keep %LEL of Process stream <49% (This is standard industry safety practice).



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ECOLUBE RECOVERY

Proposal # 16V-069

August 23, 2016

Process Inlet Temperature: 1300°F

Design Operating Temperature: 1500 - 1600 °F

Residence Time: 1.0+ Seconds

Designed DRE: 99.99% of NMHC or 20 PPMV whichever is less stringent.

2.0 PERFORMANCE

- ◆ The system will be designed for a destruction removal efficiency (DRE) of 99.99% of Non-Methane Hydrocarbons or 20 ppmv whichever is less stringent for volatile organic compounds (VOC's) based on the code of Federal Regulations, Title 40 – Protection of Environment, Chapter 1 – Environmental Protection Agency – Subchapter C – Air Programs, Part 60 – Standards of performance for new stationary sources, Appendix A – Test Methods, Method 25A – Determination of total gaseous organic concentration using a flame ionization analyzer and based on the maximum hydrocarbon loading as per section 1.0.
- ◆ Epcon® shall specifically design, manufacture, deliver, and warrant a Thermal Oxidizer system, solely based on the information furnished by the purchaser; information or data such as exhaust sources and flow rates, types of solvents or VOCs, concentration of VOCs
- ◆ The design specifications shall be developed based on this information.
- ◆ And the performance guarantees shall be based on the engineering data furnished.
- ◆ The purchaser, hereby understands, approves and accepts responsibility for the correctness of the design specifications, either refurbished by purchaser or Epcon®'s understanding of the specifications and the design basis, concerning the conditions under which the system is required to operate and perform.
- ◆ Any modifications or changes to the process, not limited to flow rate, changes in types of solvents, or the operation of the system beyond the design parameters designed Epcon®, will invalidate all the performance warranties and guarantees. And, the system warranty shall be null and void.
- ◆ **Likewise, any physical modifications or process changes to the system, without Epcon®'s written approval and authorization shall make all system warranties null and void.**
- ◆ These unauthorized changes may lead to undesirable consequences, and Epcon® shall be held harmless and free of any and all liabilities.



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- ◆ Any compliance testing must be accomplished within 45 days from startup or within 90 days of shipment, whichever comes first. Third-party testing for regulatory requirement is the responsibility of the Buyer.
- ◆ Compliance testing is a joint effort between Epcon® and the Purchaser to develop a comprehensive Test Plan, together.
- ◆ Sometimes it is necessary to fine-tune the system to attain peak performance and to accomplish desired performance.
- ◆ In the event the equipment fails to meet the performance criteria, Epcon® shall investigate the reasons, and, if it is Epcon's responsibility, and solely at Epcon®'s own discretion, make the necessary changes to the Epcon® system, which shall allow the system to meet the performance criteria and hence the warranty. Purchaser understands and agrees to make the system available for Epcon® to perform work.

3.0 SCOPE OF SUPPLY

3.1 The Direct Fired Thermal Oxidizer will be provided with the following:

- 3.1.1 Burner System
- 3.1.2 Combustion air blower
- 3.1.3 Dilution Air Blower with VFD
- 3.1.4 Process Piping with Process Isolation Damper
- 3.1.5 Choke and ring to insure proper mixing and create high turbulence to achieve higher rate of destruction efficiency
- 3.1.6 Main Gas Train (pre-piped and pre-wired)
- 3.1.7 Pilot Gas Train (pre-piped and pre-wired)
- 3.1.8 UL Listed NEMA- 4 Control Panel with Chart Recorder for Oxidizer.
- 3.1.9 Safety Interlock

4.0 COMBUSTION / RETENTION CHAMBER

- 4.1 Residence Time: 1.0+ seconds
- 4.2 Operating Temperature: 1500 - 1600 °F (or sufficient to achieve the desired destruction efficiency).



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4.3 Turbulence shall be sufficient to achieve the desired temperature profile.

4.4 Materials of construction

4.4.1 Outer shell: 3/16" thick A36 Carbon Steel

4.4.2 Structural reinforcements as required to withstand the systems static pressure, load, and wind forces.

4.4.3 Insulation: ceramic fiber block insulation, 2,200 °F rated

4.4.4 Insulation thickness shall be sufficient to limit the shell temperature to be less than 70°F above the ambient temperature with a 5 mph wind speed.

4.5 Personnel access to the inside is provided via a man-way door for inspection purposes.

5.0 BURNER

5.1 One (1) 1.75 MMBTUH Maxon "Kinedizer LE" burner (or equal) with 20:1 turndown will operate on natural gas.

5.2 Sizing shall be for a maximum burner output of 1.75 MMBTUH total. During the process gas treatment mode the burner will utilize its thermal turndown to adjust to varying conditions as determined by the temperature controller.

5.3 A regulator will reduce the incoming natural gas pressure from 10.0 psig to the required operating pressure at the burner.

6.0 COMBUSTION AIR FAN

6.1 Capacity: 500 SCFM

6.2 Type: New York Blower (or equal)

6.3 Motor: 7.5 HP, TEFC (480V/3PH/60HZ)

7.0 DILUTION AIR FAN

7.1 Capacity: 1,000 SCFM

7.2 Type: New York Blower (or Equal)

7.3 Motor: 10 HP, TEFC (480V/3PH/60HZ)

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8.0 VARIABLE FREQUENCY DRIVE (FOR DILUTION AIR FAN)

The variable frequency drive shall be housed in the control panel, or free-standing by the panel. The VFD shall adjust the fan capacity as per the temperature inside the oxidizer. The variable frequency drive shall increase the RPM of the fan as the temperature increases.

The drive is a microprocessor based adjustable frequency drive, designed to provide exceptional reliability when controlling three phase induction motors. The drive produces a 3-phase, adjustable frequency output that controls and adjusts motor speed. Drive output voltage blower speed requirements can be adjusted to match motor. The input signal can be fed to the drive, either directly from the process or through a PLC. In either option, the variable frequency drive is required to control air volume.

9.0 PROCESS PIPING

9.1 Approx. 15Ft. long, 24" I.D. Process Piping

9.2 Material: 310 Stainless Steel

9.3 Insulation: Ceramic Fiber Blanket

9.4 24" ON/OFF type, Process Isolation Damper, with Fail Close spring return pneumatic actuator with limit switches. **(310 stainless steel)**

10.0 FUEL GAS TRAIN

A pre-piped and pre-wired, FM/IRI approvable, NFPA fuel gas train and pilot train will be provided for the burner and will be equipped, at a minimum, with the following:

10.1 An automatic fuel flow control valve modulated by a temperature controller with electric operator (Internal Shutter with Honeywell mod motor).

10.2 Pressure regulator (Sensus) (Or Equal)

10.3 Low and high fuel gas pressure switches (Barksdale) (Or Equal)

10.4 Y-strainer (Mueller) (Or Equal)

10.5 Fuel gas safety shutoff valves (Honeywell) (Or Equal)

10.6 Gas cocks (Apollo) (Or Equal)

10.7 Pressure gauges (Miljoco) (Or Equal)



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11.0 PILOT TRAIN

- 11.1 Pressure gauges (Miljoco) (Or Equal)
- 11.2 Pressure regulator (Sensus) (Or Equal)
- 11.3 Gas cocks (Apollo) (Or Equal)
- 11.4 Automatic igniter with ignition timer
- 11.5 Solenoid shut off valves (Asco) (Or Equal)

12.0 OXIDIZER CONTROL PANEL

- 12.1 The control panel is NEMA – 4 and will meet all applicable NEC standards.
- 12.2 Electrical classification: General Outdoor
- 12.3 The control panel at a minimum will be complete with the following:
 - 12.3.1 Disconnect switch
 - 12.3.2 High temperature limit (indicating)(Honeywell) (Or Equal)
 - 12.3.3 Chart Recorder (Honeywell DR450) (Or Equal)
 - 12.3.4 Motor starters
 - 12.3.5 Fuses & Relays
 - 12.3.6 Transformer
 - 12.3.7 Safety interlock system
 - 12.3.8 Burner management system
 - 12.3.9 Pilot timer
 - 12.3.10 10 HP VFD (For Process/Dilution Air Fan) (Yaskawa or equal)
 - 12.3.11 Allen Bradley Compact Logix L24 PLC
 - 12.3.12 Allen Bradley Panelview Plus HMI (7" color touch screen)



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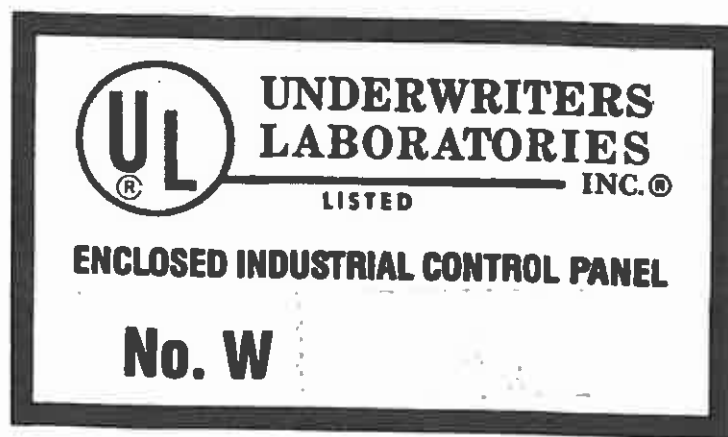
ECOLUBE RECOVERY

Proposal # 16V-069

August 23, 2016

13.0 UL LISTED CONTROL PANEL (OPTIONAL FOR HAZARDOUS LOCATION)

- 13.1 Epcon® offers a UL listed control panel with UL label which signifies that:
- 13.2 The control panel has been built in accordance with UL requirements.
- 13.3 All the components used inside are UL listed or UL documented.
- 13.4 UL listed control panels help reduce your insurance cost and are well worth the cost



NOTE:

Epcon® Control Panels are built to UL 508A standards.

These are for NON HAZARDOUS locations only.

If UL listed panel for *hazardous locations* is required (Class I Div II), it will be separately priced, starting at \$10,000.00 per panel and up. Further discussion is required for this option.

14.0 UTILITIES

- 14.1 Main: 480V/3PH/60HZ
- 14.2 Air: 80-100 Psi
- 14.3 Natural Gas: 10 Psi



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15.0 EXHAUST STACK

- 15.1 Height: 25' tall From Grade
- 15.2 Diameters: 26" I.D. or 36" O.D.
- 15.3 Materials: Carbon Steel
- 15.4 Insulation: 5" thick Ceramic Fiber Block Insulation
- 15.5 Test ports: Two 3" diameter at 90°
- 15.6 Heavy Duty base plate, gussets, Lifting lugs, drain flange, Breaching etc.

16.0 SURFACE PREPARATION AND PAINTING

- 16.1 The unit shall be painted with EPCON®'s standard enamel paint (for outdoor use and hot surfaces) in tan, green, or blue.
- 16.2 Paint samples can be furnished, upon request. The following procedures are observed:
 - 16.2.1 Wire brush clean and/or sandblast the surfaces before painting
 - 16.2.2 One (1) coat of primer
 - 16.2.3 Two (2) coats of finish paint
- 16.3 Other paint systems or colors such as urethane or epoxy may be used at an additional charge and shall be stated in customer's bid specifications.
- 16.4 Unless specifically stated elsewhere in this revised proposal, no field painting is included.
- 16.5 Special surface preparations and special paint requirements shall be priced on a case-by-case basis.

17.0 STANDARDS AND CODES

Equipment manufactured by Epcon® complies with the applicable sections of the Occupational Safety and Health Act (OSHA), National Fire Protection Association (NFPA), National Electric Code (NEC) and National Electric Manufacturers Association (NEMA).



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18.0 DOCUMENTATION

18.1 Under this proposal Epcon® will submit the following drawings and diagrams:

18.1.1 General arrangement

18.1.2 Piping & Instrumentation

18.1.3 Electrical and logic ladders

18.1.4 Additional drawings may be furnished at an additional charge based on a predetermined daily rate.

NOTE: Any drawings accompanying this proposal are the property of Epcon® and are not to be published, reproduced or used for construction purposes.

18.2 Epcon® will provide One electronic copy of the operations and maintenance manual containing the following sections:

18.2.1 Introduction

18.2.2 Bill of materials

18.2.3 Material safety data sheets

18.2.4 Burner, blower and drive data

18.2.5 Spare parts list

18.2.6 Startup and shutdown procedures

18.2.7 Preventive maintenance procedures

18.2.8 Troubleshooting procedures

18.2.9 Drawings itemized above

18.3 Epcon® will provide one CD containing technical literature corresponding to the Bill of Materials.



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19.0 INSTALLATION REQUIREMENTS

19.1 Site preparation is by others

19.1.1 Utility hookup is by others

19.1.2 Epcon® can provide mechanical and electrical installation. A cost estimate for this work will be calculated based upon the final approved design.

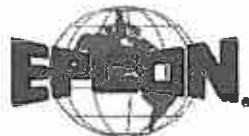
19.1.3 Installation Supervision by Epcon® is priced on a daily basis. Please see our daily rate sheet.

20.0 SYSTEM COMMISSIONING

20.1 Any contract resulting from this proposal will require startup assistance and commissioning to validate our warranty. An Epcon® representative will be present at the time of initial startup and must give release of operation of the equipment in accordance with the operations and maintenance manual.

20.2 The customer's operations and maintenance personnel will be trained at the time of startup.

20.3 Start-up/Commissioning/Training shall be priced on a daily basis. Please see our daily rate sheet.

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DESIGN SPECIFICATIONS**DIRECT FIRED THERMAL OXIDIZER**

Size	3,000 SCFM
Inlet temperature	1300°F
Design operating temperature	1500 - 1600°F
Hydrocarbon destruction efficiency	99.99% NMHC or 20 ppmv whichever is less stringent
Residence time	1.0+ seconds

BURNER

Type	Maxon "Kinedizer LE" (or equivalent)
Burner capacity (each)	1.75 MMBTUH
Quantity	1

COMBUSTION AIR FAN

Type	New York Blower (or equivalent)
Capacity	500 SCFM
Motor HP	7.5 HP

DILUTION AIR FAN

Type	New York Blower (or equivalent)
Capacity	1,000 SCFM
Motor HP	10 HP

MISCELLANEOUS

Burner management System	Honeywell
Chart Recorder	Honeywell Truline (or equal)
Instrumentation	UL listed NEMA 4 (General Outdoor)
Diesel Train	NFPA/FM
Power supply	480V/3PH/60HZ
Approx. Overall Dimensions	20-22' L x 8-10' W x 25' H
Estimated Weight	20,000 to 25,000 lbs.

** Dimensions and capacities may change based on final design*



Est.-1977

ECOLUBE RECOVERY

Proposal # 16V-069

August 23, 2016

FUEL CONSUMPTION

Capacity: 3,000 SCFM

Process Flow: 2700 SCFM

Operating Temperature: 1500°F

Process Inlet Temperature: 1300°F

Approx. Estimated Heat Required for Start-Up: 1.63×10^6 BTUH

Installed Burner Capacity for Start-up purpose: 1.75×10^6 BTUH

Assume Solvent Contribution (Heat Release): 0.24×10^6 BTUH

Approx. Estimated Net Fuel Usage with solvent loading 0.53×10^6 BTUH

Approx. Estimated Energy Lost of System 0.05×10^6 BTUH

Approx. Estimated Total Fuel Usage with solvent loading 0.58×10^6 BTUH

Estimated Approx. Natural Gas Cost per Hour for normal operating condition (Based on \$5.00/MMBTU N.G.) = \$2.9 / Hour

