



Design, manufacture, commissioning and support of equipment and systems for site remediation and industrial pollution control.



QUOTE NUMBER: 902774R0-C

C O R A N C O G R E A T P L A I N S

K E R S T E N S E R V I C E  
S V E / S P G S Y S T E M

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## A.1 Corporate Profile

MLEE Equipment is a North American manufacturer and supplier of wastewater treatment equipment, groundwater/site remediation systems, drinking water treatment systems, and PLC based control panels.

Since 1992, MLEE has supplied high quality treatment equipment to the Canadian, United States, and international markets.

With over 50 years of combined technical experience in petroleum/water separation, water treatment and project management, MLEE staff continues to lead in the design and application of innovative new technologies in the environmental business.

MLEE is an exclusive distributor for QED Environmental Systems, Inc. groundwater sampling and remediation pumps, sample filters, interface meters and air strippers.



## **B.1** *Technical Assumptions / Equipment Summary / Exceptions*

The equipment proposal we have provided in this document is based on our understanding of your requirements. The following sections review the design of the system and detail the individual components. The information provided in this proposal may be modified prior to the construction of the equipment. If no modifications are required, the system will be built as specified, for the price quoted, within the delivery time specified.

### Engineering Assumptions:

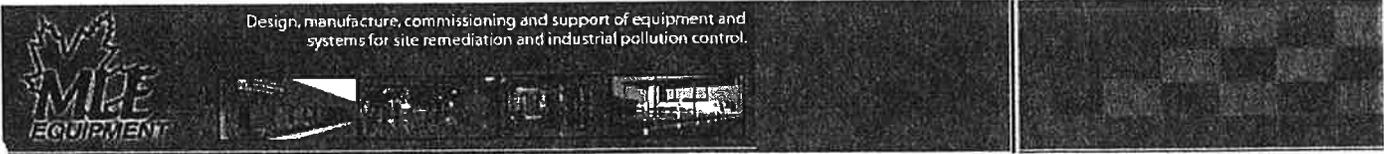
- 230V three-phase power available
- Hazardous CL 1 DIV 2 location for equipment
- Non-hazardous location for control panel
- Site noise constraints: none specified
- Contaminants: not specified
- Ambient up to 100 degrees F
- Altitude 1,300 feet

### Design Parameters:

- Control panel to be UL certified
- MET US Laboratories approval of system
- SVE system to have a one branch four leg influent manifold
- SVE system capacity – 200 SCFM at 50" WC (230 ACFM)
- MLEE 55 G vapor liquid separator
- Transfer pump from vapor liquid separator – 10 GPM @ 100' TDH
- AquaPure water filtration unit
- 90 lbs liquid phase carbon filtration unit
- Air sparge system compressor capacity – 40 SCFM @ 7 PSI
- Air sparge system to have a two branch nine leg manifold
- Equipment mounted in 8'x 12' enclosure, piped, wired and tested; all wiring suitable for Class 1 Div 2 locations
- PLC based control system with control and alarm features

### Special Notes:

1. Liquid phase carbon vessel sized based on customer request and flow rate only. MLEE can provide approximate carbon consumption rates based on groundwater contaminants and their respective concentrations if this data is made available.
2. The system has not been quoted according to NFPA 30 requirements.
3. MLEE General Terms & Conditions are located at the end of the quote in Section C.1.



4. MLEE Warranty Statement is located at the end of the quote in Section D.1.
5. Obtaining any required site permits (i.e. building) is the responsibility of the customer; MLEE is not responsible for any such items.
6. All required site inspections including but not limited to electrical, building and fire are the responsibility of the customer; MLEE is not responsible for any such items.

Exceptions to request for quote:

1. Substitutions:
  - a. Dwyer VFC rotameter type flow meters have been quoted instead of Blue-White rotameters on the SVE manifold.
  - b. Chemline FST rotameter type flow meter has been quoted instead of the Blue-White rotameter on the SVE dilution line.
  - c. An MLEE vapor liquid separator has been quoted instead of a Rotron model.
  - d. A Kunkle vacuum relief valve has been included instead of a Rotron model.
  - e. Solberg filter/silencers have been quoted instead of Universal models.
  - f. The piping on the SVE system has been quoted as 3" diameter instead of 2.5" diameter.
  - g. The piping on the water discharge line has been quoted as 1" diameter instead of 3/4" diameter.
  - h. The piping on the main sparge system line has been quoted as 1.5" diameter instead of 2" diameter.
  - i. Indumart pressure gauges have been quoted instead of Ashcroft gauges.
  - j. Dwyer RMC rotameter type flow meters have been quoted instead of Blue-White rotameters.
  - k. MLEE standard actuated ball valves have been quoted on the sparge manifold header instead of Centura valves.
  - l. The pressure relief valve in the sparge system has not been included as the Becker KDT compressor has an integral relief valve.
2. Support wires for exhaust stack to be provided and installed by others.



## B.2 Equipment Description

### Miscellaneous Items to be Supplied Loose:

- (2) Chemline FST10000 rotameter type flow meters (21-177 SCFM)
- (1) Dwyer 477-3 Digital manometer
- (2) Sets of replacement vanes for Becker KDT 3.8
- (4) Sets of replacement internal filters for Becker KDT 3.8 (intake and exhaust)
- (2) Replacement gaskets for Becker KDT 3.8
- (4) Replacement filters for SVE in-line air filter
- (4) Replacement filters for SVE dilution air filter
- (4) Replacement filters for SPG inlet air filter
- (2) Aquapure AP811 water filters

### Vacuum Extraction Manifold Module:

3" Vacuum extraction manifold, schedule 80 PVC, constructed with four 2" legs

Each Leg:

- Union
- Dwyer VFC-123-EC rotameter style flow indicator (10 - 100 SCFM)
- Sample port
- Ball valve
- Union
- Termination outside of enclosure

### Vapor Liquid Separator Module:

MLEE model **VLD-400**, 55 G vapor liquid separator with:

- Interior to be epoxy coated
- Exterior to be painted with urethane gloss enamel (MLEE Blue)
- Removable lid
- Sight glass with column level switch assembly:
  - High level alarm switch
  - High level pump control switch
  - Low level pump control switch
- Manual drain plumbed to exterior of enclosure

Vapor inlet piping to vapor liquid separator to contain:

- Sample port
- PVC piping

Goulds NPE model **1ST** centrifugal transfer pump with 1 HP 230/460V/3P motor:

- Performance: 10 GPM at 100' TDH
- Motor: TEFC (Suitable for CL 1 DIV 2)

Water inlet piping to pump to contain the following components:

- Ball valve
- Check valve

Water discharge piping to contain the following components:

- Pressure gauge
- Sample port
- Gate valve
- Check valve



- Aquapure AP801-C water filtration unit with unions either side for easy removal
- Pressure gauge
- PVC piping

#### **Liquid Phase Carbon Filtration Module:**

MLEE model HPV90 contactor vessel with:

- Dimensions – 13" diameter x 60" high
- Disposable vessel
- Pressure rating – 75 PSI
- 90 lbs of regenerated liquid phase carbon
- Pressure gauge
- Sample port
- Anti-siphon safety valve
- Two flex hoses (each 3' in length) with cam lock fittings

#### **Soil Vapor Extraction Blower Module:**

Rotron model EN808BA72MXL regenerative blower with a 7.5 HP 230/460V/3P motor:

- Motor: EXP
- Performance at inlet of blower: 200 SCFM at 50" WC (230 ACFM)
- Expected inlet pressure losses through MLEE system: 15" WC
- Discharge temperature: 150F at an inlet of 68 F
- Noise rating: 85 dBA
- Integral inlet and discharge silencers

Inlet piping to blower to contain the following components:

- Solberg inlet filter/silencer
- Differential pressure gauge
- Sample port
- Dilution line to contain:
  - Solberg filter/silencer
  - Chemline FST10000 rotameter type flow meter (21 – 177 SCFM)
  - Ball valve
- Vacuum gauge
- Low air flow alarm switch
- Vacuum relief valve
- PVC piping

Discharge piping from blower to contain:

- Sample port
- Steel piping to be terminated outside of enclosure with 3" diameter steel exhaust stack to extend 20' above grade with rain cap (shipped loose for installation at site by others, may require additional anchoring and support to be provided by others)

#### **Air Sparge Compressor Module:**

Becker KDT 3.80 rotary vane compressor with 7.5 HP 230/460V/3P motor:

- Motor: TEFC (Suitable for CL 1 DIV 2)
- Performance: 40 SCFM at 7 PSI
- Discharge temperature: 140F at an ambient of 100 F
- Noise rating: 76 dBA
- Integral inlet filter
- Integral discharge filter



- Integral pressure relief valve
  - Integral vibration isolators
- Air inlet piping to compressor to contain:
- Solberg inlet filter/silencer
  - Vacuum gauge to denote plugging of inlet filter
  - PVC piping
- Air Discharge piping from compressor to contain:
- Discharge silencer
  - Check valve
  - Pressure gauge
  - Temperature gauge
  - High temperature alarm switch
  - Steel piping

The vanes in rotary vane compressors are intended to wear over time and eventually fail. In order to minimize the time and costs associated with the regular replacement of vanes (4,000 to 6,000 hours) MLEE recommends using rotary claw compressors in place of the rotary vane compressors. Rotary claw compressors do not have any parts that wear and need to be replaced in time. Rotary claw compressors cost slightly more but the amount is likely less than the cost of replacing one set of vanes. Vanes are not included in MLEE's standard warranty, they are considered to be a consumable item.

#### **Air Sparge Manifold Module:**

1.5" Air sparge discharge manifold constructed with two 1.5" branches and nine 1" legs

Each branch to contain:

- NEMA 7 actuated valve
- Air bleed valve with Solberg filter/silencer
- Termination outside of enclosure

Each leg to contain:

- Ball valve
- Dwyer RMC rotameter style flow indicator (1-10 SCFM)
- Sample port
- Termination outside of enclosure

#### **Remediation Enclosure:**

MET US certified, built to NEC Class 1 Div 2 standards, all wiring intrinsically safe and all equipment pre-piped factory tested and mounted in enclosure

8' x 12' enclosed cargo trailer with the following standard features:

- 6.5' standard interior height
- Tandem 3,500 lbs axles
- 4,500 lbs payload capacity
- Aluminum siding (white)
- Independent suspension
- Electric brakes
- Break away kit
- Safety chain
- (4) Jack stands
- Interior painted plywood
- Insulated walls and ceiling
- Sound attenuating insulation



- Tie down tabs on corners
- Barn-style rear double doors
- One man door located on passenger side of trailer
- Control panel mounted to exterior

Interior to contain the following:

- Vacuum extraction system
- Air sparge system
- Lighting
- Ventilation fan with thermostat and hood
- Heater with thermostat
- Passive vent louvers with hood
- All influent, effluent, and drain lines plumbed to outside of building

#### **Control System Module:**

PLC Series Direct Logic PLC based control panel with the following standard features:

- UL certification
- AIC rating of 5000
- NEMA 4 lockable panel enclosure
- Inner swing panel
- Primary circuit protection using fused main disconnect
- Surge and lightning protection for control system
- Main power block
- Branch circuit protection with circuit breakers for motors
- Motor starters with overload protection
- 120V/1P power transformer
- Branch circuit protection with circuit breakers for powered devices
- Direct Logic PLC control system
- 24 VDC IS power supply
- Intrinsically safe barriers
- Duplex 15 Amp GFI receptacle
- Wired and installed
- Factory tested prior to shipping

Outside cover of inner swing panel to contain the following:

- HOA switches with green run lights
- Power on light
- Red alarm indicator lights
- User interface display screen
- Alarm reset button
- Emergency stop button

#### **Telemetry Module:**

MLEE model SL-WP Wireless remote access system for PLC based control systems:

- P & ID user interface will display status of all inputs, outputs and alarms
  - Standard 20 digital inputs/16 digital outputs, expandable with digital/analog inputs and outputs
- P & ID user interface will allow for Hand/Off/Auto control of all motors, valves or other auxiliary outputs
  - Standard 16 digital outputs (expandable)
- Remote reset of alarms
- Remote shutdown and restart



- Accessible from any PC with access to the Internet
    - Requires installation of software on PC
    - Requires SL-Server for Mac applications
  - Datalogging capabilities
    - Alarm history including data and time for each event
    - Motor run times
    - Main Datalog to record a maximum of 5 daily totalized data points and up to 7 analogue or digital values in 680 records with user selectable time interval
  - Initial setup up by MLEE
    - Hardware included
    - Monthly service fee: \$55.00 (not included)
- MLEE model SL-EMonitor, Daily email status report
- Hardware included
  - Monthly service fee: \$30.00 (not included)
- MLEE model SL-Server, if user cannot install software on PC
- Accessible via MLEE Website with Internet Explorer
  - Hardware included
  - Monthly service fee: \$25.00 (not included)
- MLEE model SL-EAlarm, Instant text message or email on alarm
- Accessible via MLEE Website with Internet Explorer
  - Hardware included
  - Monthly service fee: \$10.00 (not included)

All monthly services must be purchased separately, the MLEE Telemetry Services Agreement must be completed in order to obtain the services. If MLEE SL-W wireless remote access is part of the scope of work, the monthly fee of \$55.00 a month is mandatory. All other monthly fees are optional.

**Operation And Maintenance Manual (Two Copies):**

- Operating instructions for all treatment system components
- Copy of operating manual for each piece of equipment
- Summary of system components
- Summary of system operation principles
- Summary of operation controls and failsafes
- Summary of maintenance requirements for each piece of equipment

**MLE Parts Web Store:**

The MLE parts web store is available for your system operation and maintenance needs. Please visit our web store and sign up for your account to begin using the various available services. The web store address is <http://store.mleequipment.com/>.