Central Coast Wine Services

Central Coast Wine Services
2717 Aviation Way, Suite 101
Santa Maria, CA 93455
(805) 318-6500 FAX (805) 928-5629

May 8, 2017

Mr. Kevin Brown
Santa Barbara County
Air Pollution Control District
260 North San Antonio Road Suite A
Santa Barbara CA 93110

Subject: Central Coast Wine Services
Response to District Comments ATC 15044
FID 11042; SSID 10834

Dear Mr. Brown,

Central Coast Wine Services has prepared the attached response to the District's May 2, 2017 comment letter that was written in regards to the application for ATC 15044. CCWS appreciates the District's expediting the review of our permit.

Please let us know if there are any questions or comments.

Sincerely,

Richard Mather
Business Manager
Central Coast Wine Services

Encl.

C: M. Miller, CCWS
MFSA

CCWS
Response to District Comment
May 8, 2017

District Comment

1. **Piping Diagrams**: Submit typical piping diagrams for both the EcoPAS and NoMoVo systems. Show how the fermentation tanks are connected to the manifold system, the piping route from the tanks to the control systems, and any piping downstream of the control systems.

CCWS Response

Attached are piping diagrams of the manifold system for both the NoMoVo and EcoPas systems.

District Comment

2. **Piping Specifications**: Provide the specifications for the EcoPAS and NoMoVo manifold piping from the tanks to the control system including the material used, pipe diameters, slopes, and any other relevant information.

CCWS Response

NoMoVo

The slope varies depending upon tank size and distance from tank to control device not to exceed 5 degrees when leaving the exhaust valve on the tank. The slope extends to 180 degrees as the piping connects to the reactor and parallels the tank. The main manifold line is 6"and the connecting piping is 3" diameter. The piping is constructed with schedule 80 PVC and standard cellular hoses. Please refer the attached piping diagram.

Post the reactor column outlet goes to the skid via the the slurry recycle line, then to the slurry tank. The skid is powered from a single 230VAC-3PHS flexible cable and can be disconnected at the skid.

EcoPas

The slope varies depending upon distance from tank to control device not to exceed 5 degrees when leaving the exhaust valve on the tank to 180 degrees as the piping parallels the tank. The piping is constructed with 6" tri clamp with PTFE gaskets the exit to the PAS is 12" tri-clamp also fitted with PTFE gaskets. The piping material is T304 and T316 stainless steel.

Jackets are made to be easily removed and to replaced, ensuring energy efficiency will not get in the way of regular maintenance. The jackets are made with a hook and loop straps, or 1 inch buckles and D-rings. Jackets are made with high-quality and state of the art materials by USA manufactures. Utilize heat resistant thread and jacketing to ensure the jacket can handle high temperatures, and use fully hydrophobic aerogel insulation or Glass mat, type E needled fiber as insulation. The components are sown together, ensuring the insulation interior is actively sewn into to jacket to prevent shifting. The result is a high quality durable jacket, able to withstand extreme temperatures and removal without losing quality or functionality.

District Comment

3. **Waste Streams**: For both the EcoPAS and NoMoVo control systems, provide information how the waste streams are collected, stored onsite, and disposed. For each disposal facility identified, provide the name, address, location, and detailed waste disposal methodology (cradle to grave).

CCWS Response

NoMoVo slurry and the effluent from EcoPAS are held in sealed containers at CCWS facility. The containers are trucked to Greenbelt for recycling through their membrane dehydration process. The attached information sheet details the operations at Greenbelt. Greenbelt is a fully certified organic waste recycler. This has been verified by the District in previous applications.

District Comment

4. **Non-Standard Operations**: Provide a list of all non-standard operations during which the operation of Best Available Control Technology (BACT) would not be feasible. For each non-standard operation, provide the following information: detailed description of the operation, how long the operation takes to complete, frequency of the operation, and any other relevant information unique to a particular operation.

CCWS Response

Non-Standard operations are any time the tank man-way is opened to perform normal winemaking operations (e.g. visual inspections or tank pump-overs). During peak fermentation this can occur several times per day the duration of each event is about 1 minute per ton contained in the tank. For example a single truck load fermenter containing 25 tons would be pumped over twice per day for 25 minutes each time. The duration of this activity can vary from winemaker to winemaker, and between grape color and variety. During this time, the control efficiency is zero. It should be noted that the tank man way is not sealed, it would become a safety hazard. Tank pressures can become great enough to lift the lid varying amounts and CO2 can escape at various rates.

When red wines are fermented, a cap (crust) develops on the surface of the must. It is necessary that this cap be broken up on a frequent and routine basis. At CCWS this is accomplished by performing a "pump over". A "pump-over" is the pumping of must from the bottom of the tank onto the top of the cap to break it up. The must is introduced on top of the cap through a nozzle inserted through the open tank hatch.

Delastage- aka Rack and Return. All the liquid volume is removed from the fermenting tank and then quickly pumped back into the fermenter over the top. This would typically take about two hours for every 6,000 gallons racked and returned.

Additions to the tanks. Any time liquid is removed from the tank, for any reason the lid needs to be removed so no vacuum is created. This keeps the tank from sucking in and collapsing. Juice is typically removed from a tank to mix with any additions like yeast nutrient, tannin, enzyme, etc., etc. A typical addition would take approximately 30 minutes or more, depending on the size of the tank and the size of the add.

Additional nonstandard operations include upset conditions including foam overs

District Comment

5. **Air Quality Impact Analysis**: In order to expedite this permit application, the District will issue this permit with a daily ROC emissions increase of 119.99 lb/day. This is the maximum allowable project emissions increase without triggering the Air Quality Impact Analysis threshold. Following this permitting action, the facility will have a daily ROC emissions limit of 174.98 lb/day. This value is based on adding the existing daily ROC emissions limit of 54.99 lb/day and 119.99 lb/day. At a later date, if CCWS wishes to increase the daily potential to emit of the facility over 174.98 lb/day, CCWS may perform an AQIA for the project in accordance with the modeling guidelines identified in District Rule 805 and Form-15i. No response is needed for this item.

CCWS Response

CCWS understands and will submit an application at a later date if the need arises.

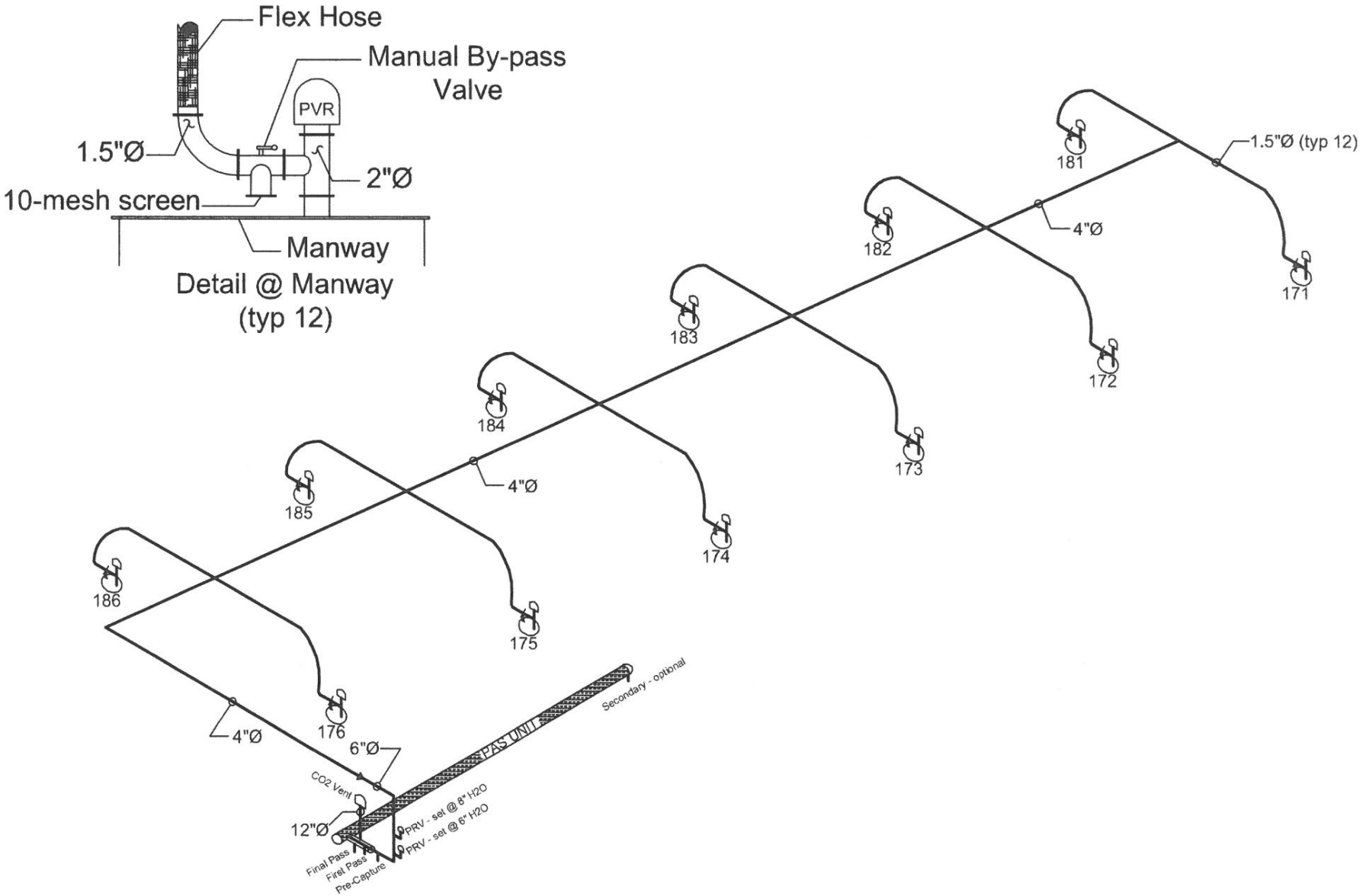
District Comment

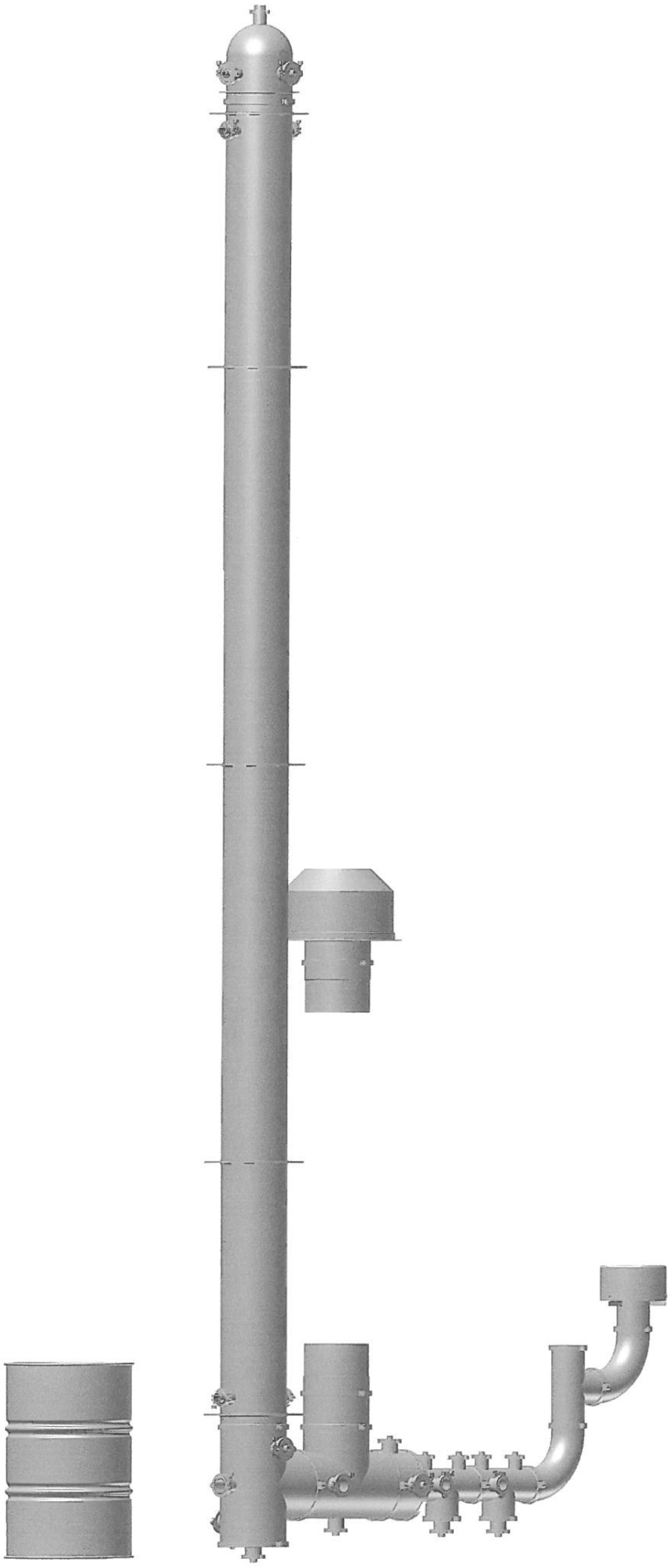
6. **Health Risk Assessment**: In order to expedite this permit application, the District will maintain the current permitted annual ROC emissions limit of 9.99 TPY. At a later date, if CCWS wishes to increase the annual potential to emit of the facility over 9.99 TPY, CCWS may perform an HRA for the entire stationary source in accordance with the modeling guidelines identified in Form-15i. No response is needed for this item.

CCWS Response

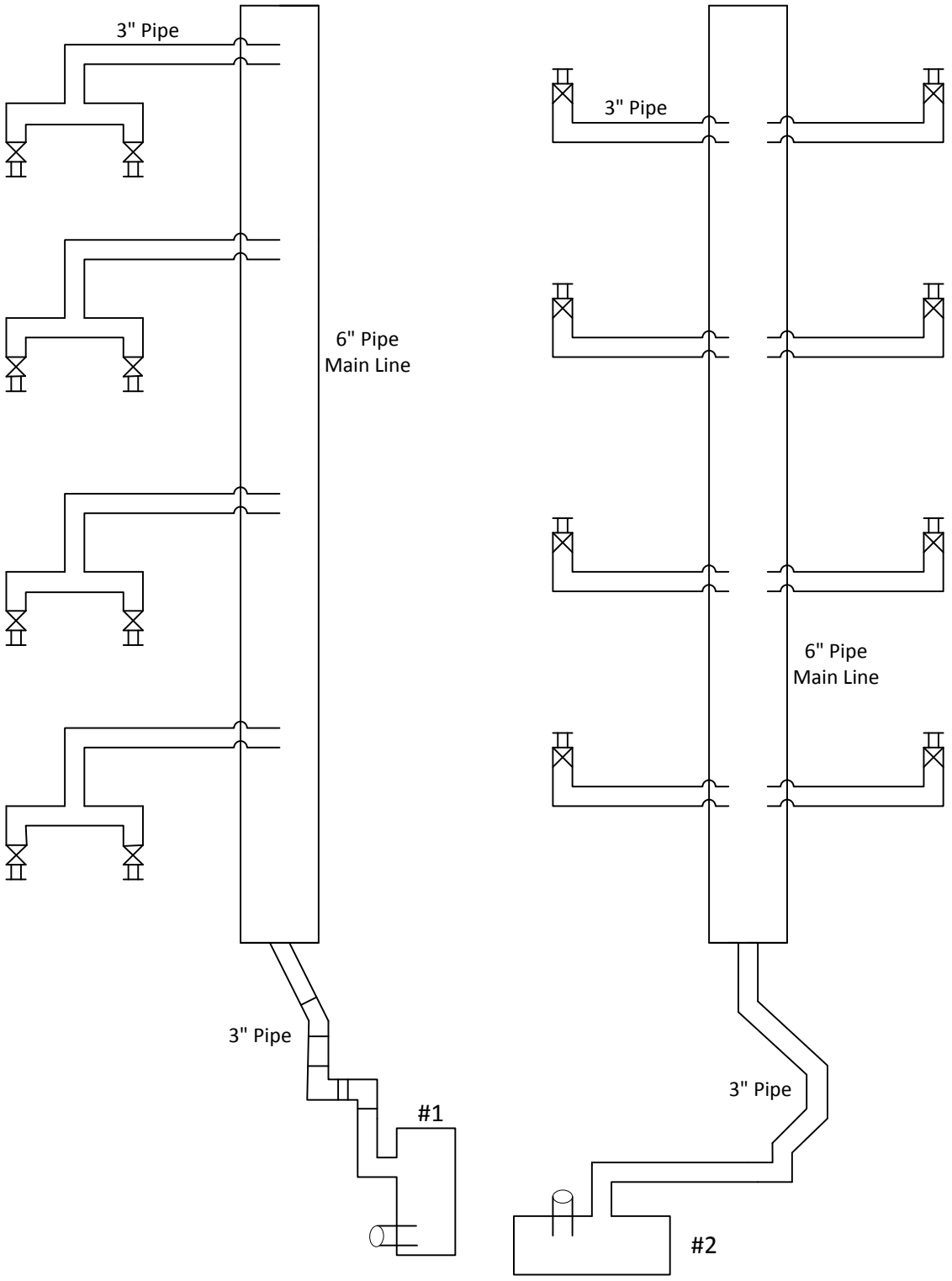
CCWS is surprised that an HRA will be required if the ton per year emission limit is increased, but understands the need to expedite the permitting process. If necessary an application will be submitted at a later date.

EcoPas Piping Specifications


Flex Hose
Manual By-pass Valve
PVR
1.5"Ø
2"Ø
10-mesh screen
Manway
Detail @ Manway
(typ 12)
1.5"Ø (typ 12)
4"Ø
4"Ø
4"Ø
6"Ø
12"Ø
181
182
183
184
185
186
171
172
173
174
175
176
PAS UNIT
Secondary - optional
CO2 Vent
PRV - set @ 8" H2O
PRV - set @ 6" H2O
Final Pass
First Pass
Pre-Capture



NoMoVo Piping Specifications



Piping Diagram, Version 1.0
Drawing No. 1
Nohvell
Central Coast Wine Services
M.F Strange & Associates, Inc.
By: Savanna Brown: 5/5/17.
Previous Drawing By Rick: 10/4/16.

WI 0795

Greenbelt Resource Corporation Data Sheets

Organic Waste Recycling System

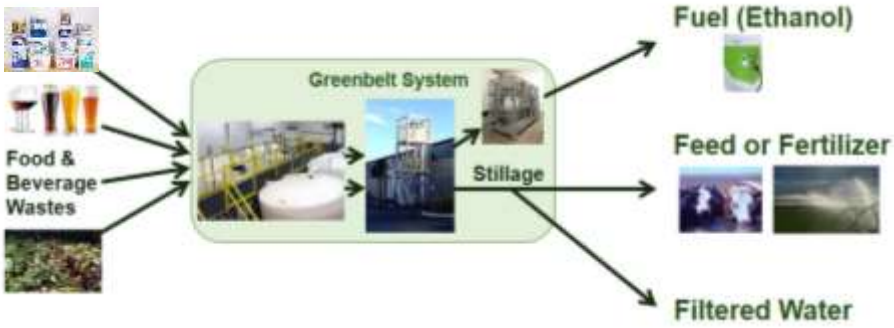
end-to-end modular ethanol production technology

"After an international search, choosing Greenbelt Resources as the partner for developing our bioenergy facility came easily due to their impressive technology and versatile business model. By adding this system we will gain added value…while we also begin to achieve a measure of local energy independence." **- Larry Walsh,** Director, Standard Ethanol Pty Ltd.

Greenbelt Resources is an innovator of sustainable energy production systems that delivers modular solutions designed for *localized* processing of *locally* generated wastes into *locally* consumed products. The small-scale, end-to-end modular systems designed, engineered and implemented by the Company, enable production of commercially viable (without subsidies) advanced biofuel (bio-ethanol) by fully recycling food, beverage and other cellulosic wastes into sellable products: fuel, feed, fertilizer, and filtered water.

Greenbelt technology recycles food and beverage "wastes" into the four F's:

Fuel, **F**ertilizer, **F**eed & **F**iltered Water.



Distillation & dehydration modules installed at the University of Florida Stan Mayfield Biofuel Center

Potential Feedstocks

Dairy Process Waste; Food Industry Waste; Public Food Waste; Beverage Waste; Brewery and Alcohol Wastes; Ag Industry Wastes; Advanced Biofuel Crops; Island Communities; Developing Countries.

Patent Pending Design

The *patent pending* membrane based ethanol dehydration module can remove water from process ethanol allowing the "dry" ethanol to be recycled for repeated use at a fraction of the current industry standard cost and energy consumption. Markets include: Advanced Cellulosic Demonstration Plants; Chemical Manufacturing

"Greenbelt has the most extensive knowledge of using membrane technology in the ethanol dehydration process in the U.S."

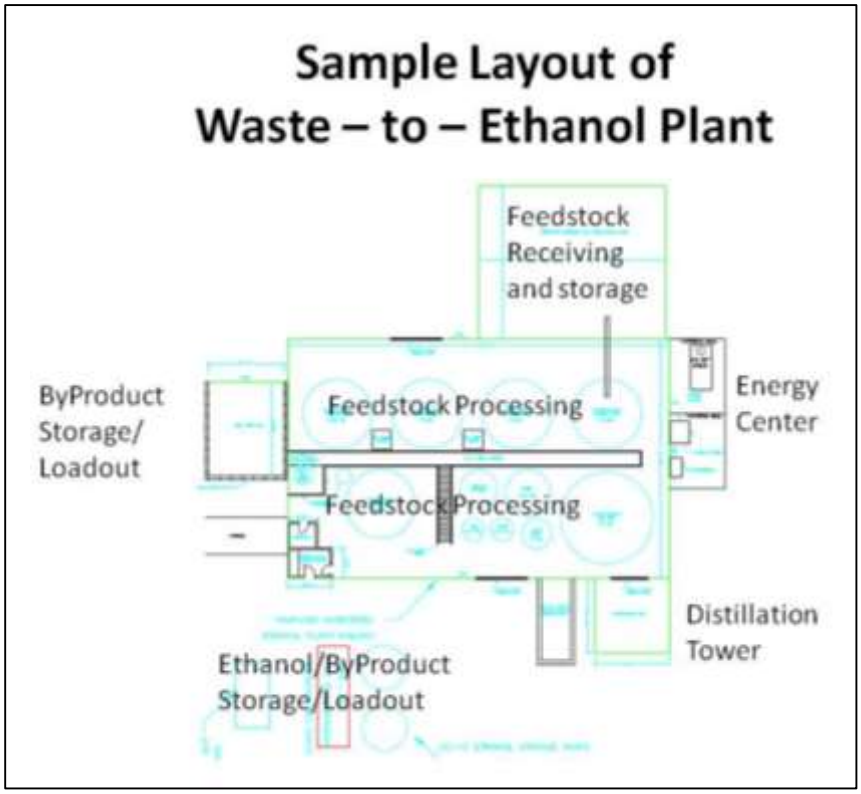
Dr. Masanobu Aizawa
GM of Research & Development Strategy, Hitachi Zosen

CONTACT: Darren Eng | CEO | darren@greenbeltresources.com | 888.995.GRCO (4726)

Client inspection of distillation module – reflux landing.

"Installing the distillation solution as part of our innovative and ground-breaking system helps ensure that we …achieve viable biofuel as one of the byproducts of our process. Greenbelt and Diversified have proven to be solid partners…"

- **Lonnie Ingram**, PhD | Director Florida Center for Renewable Chemicals & Fuels at the University of Florida.



CAPABILITIES – INPUTS/OUTPUTS

- Capable of processing wide range of feedstocks
- Flexible product output: biofuel to industrial grade (200 proof)
- Minimal energy consumption/Maximum efficiency via unique design
- Air cooling standard on dehydration module (water cooling optional)
- Modules sold as complete system or separately
- All modules capable of delivery via standard container transport
- Complete systems deliverable in as little as seven months
- System footprints ranging from 3,500 sq ft to 12,000 sq ft
- Capacity options: from 50,000 GPY to 3,000,000 GPY

About Greenbelt Resources Corporation: Greenbelt Resources Corporation™ is an award-winning provider of sustainable energy production systems focused on delivering modular solutions that enable localized processing of locally generated waste into locally consumed products. The Company designs, develops and implements technology that makes production of advanced biofuel reliable, practical and efficient. Controlled by proprietary automated controls, the Company's small-scale, end-to-end modular systems convert food, beverage and other cellulosic wastes into commercially viable advanced biofuels (bio-ethanol), animal feed, fertilizer and filtered water. For more information visit www.greenbeltresources.com.

CONTACT: Darren Eng | CEO | darren@greenbeltresources.com | 888.995.GRCO (4726)

Energy Efficient Ethanol Dehydration

ethanol dehydration through membrane technology

"Greenbelt has the most extensive knowledge of using membrane technology in the ethanol dehydration process in the U.S. "

Dr. Masanobu Aizawa, GM of Research & Development Strategy, Hitachi Zosen

Greenbelt Resources Corporation designs highly efficient zeolite membrane-based solutions for ethanol production and solvent recovery. Able to be integrated into a wide array of uses, the patent pending dehydration modules by Greenbelt are capable of rapid deployment and quick installation due to their modular design.

- Fully automated systems, maximize energy and water efficiency
- Retrofits to efficiently increase anhydrous capacity (which can work in parallel with existing systems)
- Module is delivered ready to operate with minimal setup
- Automated process controls come with 24/7 remote monitoring services and available tech support

Benefits

- Up to 50% energy savings possible in dehydration process
- Continuous process, not batch
- Modular: plug and play
- Limited annual maintenance
- From 80% ethanol up to 99.95% in a single continuous step
- No added chemicals, no regeneration

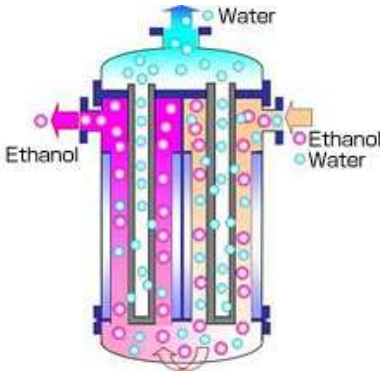
CAPABILITIES – INPUTS/OUTPUTS

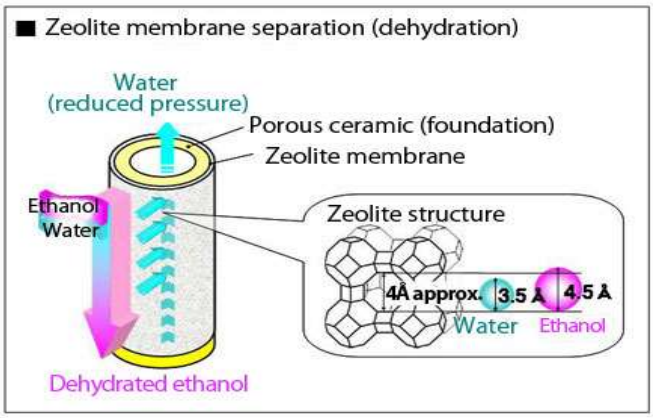
- Capable of processing vapor or liquid feed
- Minimal electricity consumption and steam use
- Air cooling standard (water cooling optional)
- Separates water from ethanol to achieve purity of >99%
- Flexible product output: biofuel to industrial grade (200 proof)
- Adaptable for recycling applications: such as organic solvent regeneration
- Fully scalable: from 5,000 GPY to 5,000,000 GPY

CONTACT: Darren Eng | CEO | darren@greenbeltresources.com | 888.995.GRCO (4726)

HOW IT WORKS

The Greenbelt Resources zeolite membrane module features outstanding durability resulting from its seal-less integrated structure, while the optimized membrane microstructure exercises superior dehydration capabilities over conventional dehydration membranes. The diagram below demonstrates conceptually how hydrous ethanol is passed by the outside of the ethanol phobic membrane exterior while a light vacuum draws the water through the hydrophilic zeolite.





HISTORY

Low-energy chemical separation is an indispensable technology for reducing CO2 emissions and boosting economic viability. One of the most promising forms of this technology is the dehydration capability of the zeolite separation membrane. The dehydration module from Greenbelt Resources uses a specially designed high-performance zeolite membrane to extract high-purity dehydrated ethanol from hydrous ethanol.

The first commercially deployed zeolite separation membranes for ethanol dehydration from Hitachi Zosen were installed at Hokkaido Bioethanol Co., Ltd. in March 2009. That system is still operating smoothly today.

Membrane Characteristics:
- Water tolerant
- Resistant to fusel oils
- Operating pressure range up to 87 psi
- Operating temperature range up to 320°F

Benefits of Zeolite Membranes in Greenbelt Resources Dehydration Module

- At least 20% more energy efficient than conventional distillation and PSA (adsorption) methods.
- Rapid transmission through membrane virtually eliminates contamination by impurities.
- Combination of all-ceramic (inorganic) materials and seal-less design improves durability and minimizes operating costs.

About Greenbelt Resources Corporation: Greenbelt Resources Corporation™ is an award-winning provider of sustainable energy production systems focused on delivering modular solutions that enable localized processing of locally generated waste into locally consumed products. The Company designs, develops and implements technology that makes production of advanced biofuel reliable, practical and efficient. Controlled by proprietary automated controls, the Company's small-scale, end-to-end modular systems convert food, beverage and other cellulosic wastes into commercially viable advanced biofuels (bio-ethanol), animal feed, fertilizer and filtered water. For more information visit www.greenbeltresources.com.

CONTACT: Darren Eng | CEO | darren@greenbeltresources.com | 888.995.GRCO (4726)