

Qualco Energy Bio-Gas Project



Werkhoven Dairy

Jon Van Nieuwenhuzen
Secretary/Treasurer

Andy Werkhoven
Board Member



NW Chinook Recovery

John Sayre
Vice-President

Clare Nordquist



Tulalip Tribes

Daryl Williams
President

Ryan Miller
Board Member

<http://www.Qualco-Energy.org>

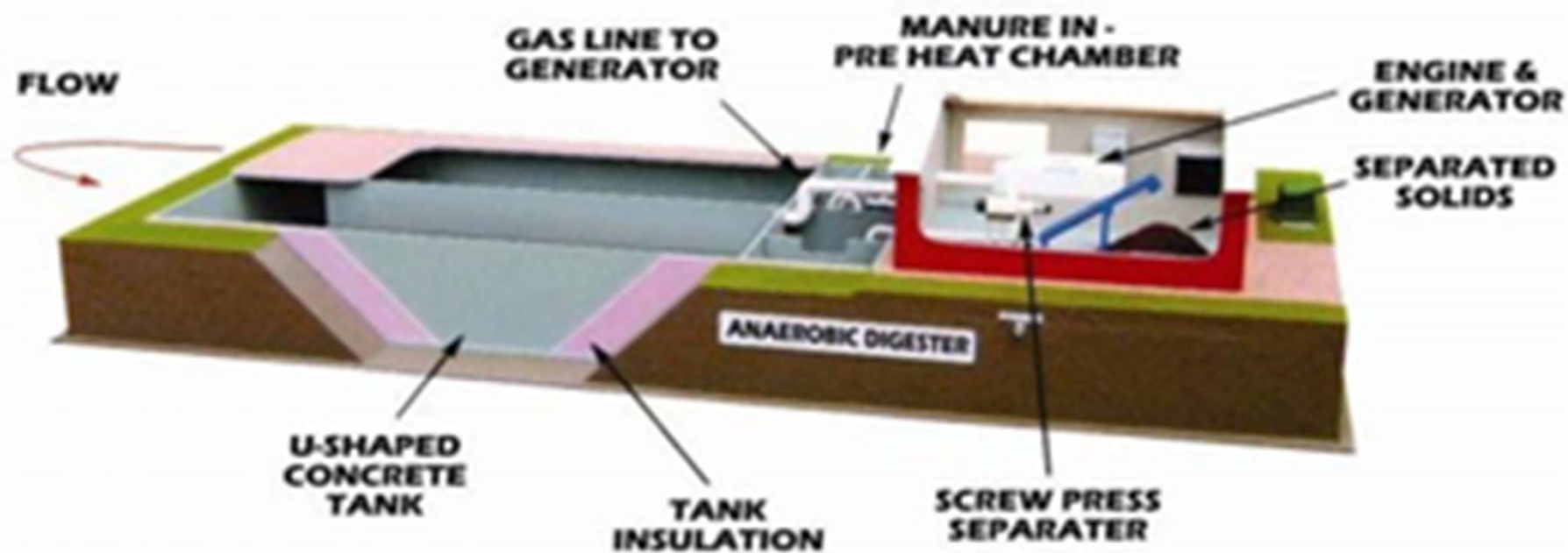
Introduction

- Qualco Partnership
- Description of Project
- Current status of Project
- Future Expansion
- Power Generation Partnership
- Pilot Project for Producing Pure Hydrogen
- Benefits of Digester Project
- Questions

Project Description

- Sewage Treatment for Cow Manure
 - Collect Cow Manure from Dairy
 - Collect Ag. Waste and Pre-Consumer food Waste
 - Pump into Anaerobic Digester
 - Capture Methane Gas
 - Burn Gas to Produce Electricity
 - Compost Bio-solids
 - Return Effluent & Compost to Farms

Patented digester design



Biogas Project



- Started Operation December 2008
- Currently Operating with 2000 cows and other agricultural substrates and pre-consumer food wastes.
- Washington State Law exempts dairy digester operations from waste handling permits. Digesters must use at least 50% manure, may use other agricultural wastes and use up to 30% Pre-consumer food waste.
- Generator capacity is 760 KWh





Expansion Opportunities

- Concentrating nutrients from liquid effluent for farms to use instead of commercial fertilizers.
- Add additional digester capacity.
- Clean and Liquify gas for RNG or pure hydrogen gas.

Power Generation Partnership



- New partnership agreement with SnoPUD to generate power.
- SnoPUD installed a new 750 kwh generator to replace our old 450 kwh Generator.
- Qualco will sell SnoPUD biogas to generate electricity.
- SnoPUD provides waste heat from the generator for use to heat the digester.



Pilot Project to Convert Methane to Pure Hydrogen



- Cooperative Project with Modern Electron Based in Bothell, WA.
- Next Spring, they plan to install equipment to strip out the impurities to produce pure methane and then strip out the carbon to produce pure hydrogen.
- The carbon will be extracted in a powder form.

Benefits of Project



- Improved Water Quality from Stormwater Run-Off
 - 92-98% Pathogen Reduction in Effluent for Irrigation
 - Converting Nutrients from organic to inorganic forms
- Reduced Waste going to Landfills and Wastewater Treatment Facilities
- Creation of Renewable Energy
- Recycling Nutrients for use on Neighboring Farms
- Reduced Methane Emissions
- Improved Economic Viability for Farms



Questions?

DarylWilliams@TulalipTribes-nsn.gov