Waste, Energy, and the Environment

Los Angeles County Public Works

ALTERNATIVE TECHNOLOGY ADVISORY SUBCOMMITTEE

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Presented by

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Taking advantage of natural sources of energy, i.e. wind, solar and geo-thermal, is a reasonable path to near-zero emissions electricity. However, they do not address the issue of waste reduction...

Population growth, lifestyle changes and the global market, have created increased waste, with dramatic increases in packaging and single-use items.

Extracting energy from collected waste is a value proposition worthy of serious consideration. Separating and sorting waste into conversion specific groups increase energy extraction and output quality.

Who are we?

NEXTEC International, LLC, a Delaware corporation, with a business office in Yorba Linda, California, government liaisons in Alexandria, Virginia (Washington D.C)and technical operations in Rovereto and Arcugnano Italy.

We are a system design and consulting company specializing in thermal dynamics and anaerobic thermo-chemical conversion technology for the efficient processing of waste to various forms of energy.

This presentation addresses the conversion of non-recyclable and excess recyclable plastics with a process suited to end-of-life tires as well.

Circular Energy

Distributed Power

Electrical power

ORC power

Transportation fuels

Commercial and Consumer use, Home, businesses, Manufacturing, etc.

EVO NEXTEC Process

Consumer and commercially generated waste

Collection Services

Sorted for recycling and repurposing

Material sorting

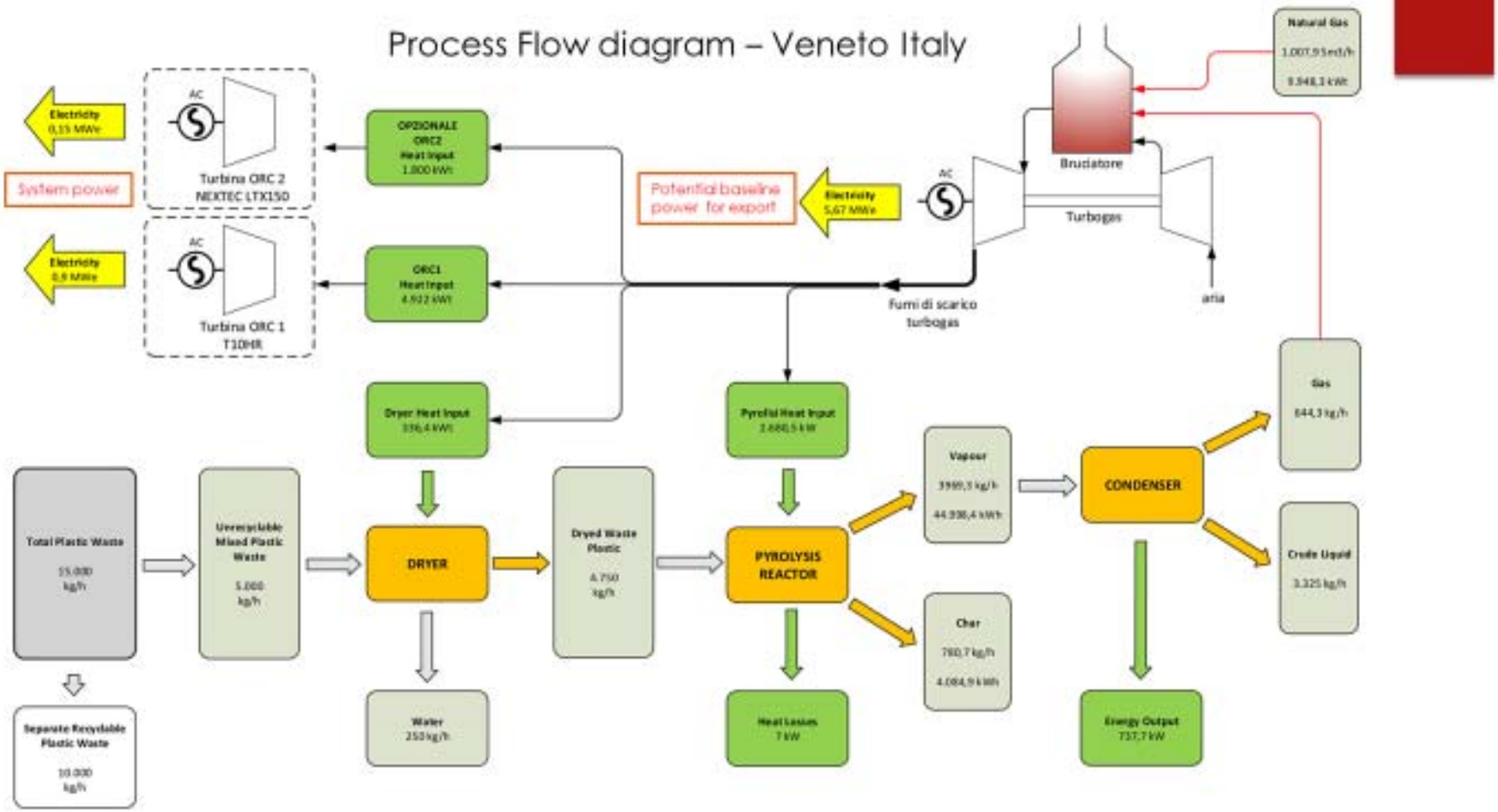
Thermo-Chemical Conversion

Syngas

EVO Nextec process

- Anerobic Thermo-Chemical Conversion
- Continuous operation
- Mixed-waste capable
  - Initial system design fitted to plastics and end-of-life tires
- Compound separation at the molecular level
- Produces high-value commodities
- Combined heat and power with Solar Turbines GenSet
- Ultra-low emissions
- Reduces or eliminates landfill dependency

Process Flow diagram – Veneto Italy



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Input and Output Values

Estimate based on 5,000 kg p/hr.*

Feedstock input:	Mixed Plastics @ 5,000 kg/hr.
Water content:	5% (est.)
LHV estimate (dried material)	35,700 MJ/kg
Pyrolysis Conversion:	13.6% syngas, 70% crude oil, 16.4% Char (carbon, etc.)
Distillation rate:	25% gasoline, 70% diesel, 5% heavy oil

*Calculations based on information derived from, and prepared for, the Italian region of Veneto, 2019

Estimated hourly output:

Water	250 kg
Syngas	644.3 kg
Carbon Char	780.7 kg
Crude Liquids	3,325 kg

Distilled liquids:	
Diesel fuel	2,328 kg
Gasoline	831.3 kg
Heavy oil	166.3 kg

The process heat source is the Taurus 60 Solar Turbines gen set.
The combined power output is approximately 6 MW continuous.
The turbine is fueled with 45% syngas (from production) and 55% distributed natural gas.

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What does this technology need to be successful?

- State agencies must properly designate pyrolysis as non-combustion technology
- California law must be changed to include pyrolysis as a renewable process
- Categorize fuels produced by this process as “renewable”
- Investors and developers will be more inclined to support thermal conversion technology if, through proper designation, were permitted access to state support, grants, incentives, RINs, renewal credits, etc.
- Funding support and investment

Conclusion

There is no single solution to elevate the management and reuse of waste. Combining anerobic digestion, modern incineration , other forms of thermal conversion AND meaningful recycling offer the best use of the things we throw away.
Authorities must decide what is best for their respective communities. Is it merely to eliminate waste? Recycle everything? Or make to best use of an energy-rich commodity.

Thank you!

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