Clean Energy from Challenging Waste Materials ……A Sustainable Solution!

Stephen J. Myers, Founding Member and CEO
Synstainable Energy Systems, LLC

The Twin Problems!

- ✓ ***MANAGEMENT OF CHALLENGING WASTES***

- ✓ ***GLOBAL ENERGY CRISIS… NEED FOR ADVANCED TECHNOLOGIES***

What's the Objective?

- *A transportable/mobile clean energy system that utilizes available wastes as a fuel without toxic exposure to our military- eliminate open burn pits*

- *To develop a sustainable application of this system to meet global needs for clean energy and effective waste management*

"…sustainable waste management and the production of clean renewable energy…"

What's the Solution?

"THE CONTINUUM ENGINE"

A PROVEN PATENT-PENDING INCLINED ROTARY *GASIFICATION* TECHNOLOGY THAT CAN PRODUCE CLEAN ENERGY FROM WASTE ANYWHERE!

Attributes:

- ✓ **Low - No feed preparation**
- ✓ **Problem Feedstocks**
- ✓ **Rapid Startup & Shutdown**
- ✓ **Mobile & scalable**
- ✓ **Produce a higher than normal BTU clean syngas**
- ✓ **Low Emissions**
- ✓ **Recyclable ash**
- ✓ **Solid Waste Volume Reduction**

Continuum's Underlying Magic

2) MOISTURE PASSES THROUGH THE SYSTEM AS SUPERHEATED STEAM DISCHARGED THROUGH ENGINE EXHAUST

4) SYNGAS PRODUCT SCRUBBED AND USED TO FUEL THE GENERATOR TO PRODUCE ELECTRICITY

5) WASTE HEAT RECYCLED TO GASIFIER SHELL

1) COMPRESSION DRIED (20-50% MOISTURE) HIGH TEMPERATURE ROTATING BED WITH MIN. PRESIZING AND CONVERTED TO SYNTHETIC GAS (SYNGAS)

SYSTEM IS FULLY AUTOMATED

RAPID STARTUP AND SHUTDOWN IN AS LITTLE AS 15 MINUTES

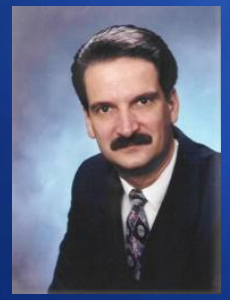
3) TARS AND PYROLYTIC OIL: RECYCLED AND CRACKED INTO GASEOUS BTEX COMPONENTS TO ENRICH THE SYNGAS (BTU 2.5X ORIGINAL)

Patents
US (15/305,985)
Canada (2,946,729)
national phase entries of international patent application (PCT/US2015/026854)

Value Proposition

- Avoid Landfilling of Dirty Plastics, Tires, other Challenging Wastes
- Alternative to Recycling Plastics When There is No Market
- Mobile and Scalable, Low Emissions
- Clean Sustainable Energy Production from Wastes in Difficult Locations

Management Team



➢ *Stephen Myers – CEO*

- ➢ B.S. in Chemical Engineering and M.S. in Environmental Engineering
- ➢ Over 40 years engineering, operations and business experience in both industry, professional services and business startups in the Energy, Environmental and Risk Management Industries

➢ *Paul Amodeo, Ph.D. – CTO/PI*

- ➢ Doctorate in Environmental Engineering
- ➢ IT Expert and Professor
- ➢ Entrepreneur with various roles in four former startups

➢ *David Waage, P.E. – Chief Engineer, Research*

- ➢ Professional Engineer, Mechanical Engineering
- ➢ Professor
- ➢ Inventor of the Continuum Engine for Waste to Energy Applications

Near Term Steps…

- Operational Prototype for Demonstration and Testing
- Completing Engineering Specs Drawings and Technical Info
- Install “Next Generation” Demonstration System
  - Military: DOD/ESTCP Award $1.6 M at USMA
- Pursuing Specific Commercial Markets and Applications
- Identifying Funding Sources for Growth and Expansion

Summary of Key Points

1) Full-Scale Prototype Developed for Military Application
   - Portable, Scalable, Mixed Waste Stream to Energy
   - IT WORKS!
2) Commercial Adaptation for Global Use- On and Off Grid
3) Effective on Wet and Challenging Waste Streams With Low Emissions- THINK PLASTICS AND TIRES
4) Safely Produces High Quality Synthetic Gas to Fuel Electric Generator Engines
5) Significant Interest/Growth Potential in Several Markets Globally

Thank You

Synstainable Energy Systems Team

Stephen Myers – CEO
smyers@myersenvconsulting.com
Cell: 518-423-4806

VIDEO HERE???

David Waage, PE. Chief Engineer
waagedj@gmail.com
Cell: 518-231-2188

Paul Amodeo, Ph.D., CTO
amodeopajr@gmail.com
Cell: 518-258-7452