



Gold Seal Industries LLC

"Making The World A Better Place By Converting Negatives Into Positives"®

**California Bioresources Alliance Symposium
14th Annual November 14-15, 2019**

"Advanced Tech and Bio Products"

Presenter Charles A. Smith

CEO, Integrated Sustainability Solutions, Inc.

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Electro Magnetic Induction Heating

An Advanced Technology Solution for today's and tomorrow's
Environmental Challenges

Yielding Valuable Marketable Commodities with Zero Emissions &
No Landfill Deposits

Multiple Revenue Streams producing **Sound Financial** Performance

Fully Mobile – No grid needed – 3-5 acre site – Stackable – lowest decibel rating

Guaranteed World Wide by LLOYDS OF LONDON for **operational performance**

Twenty-Five (25) year Component Warranties

Carbon Sequestration, No GHG's

NO - SO₂, SO₃, NO_X, VOC's or CO₂



Feedstock Diversity

Our system works best when the input waste is carbon-rich:

- Municipality Solid Waste (MSW) / Refuse
- Cooking Oils & Grease
- Medical Waste, Bio-hazardous and Pharmaceuticals
- Paper / Cardboard
- Coal, Petroleum Sludge, Oils, Oil Sands, Desalination
- Wood, Yard Waste, Biomass,
- Construction & Demolition Materials, Mattresses & Furniture
- Tires / Rubber / Plastics / Textiles
- Automobile Shredder Residue (ASR) or Auto fluff
- Sewage & Sludge Treatment
- Agricultural Wastes, Plant Stock, Manure
- Commercial & Industrial Waste, Chemical Waste
- Environmental Remediation, Soil, Surface & Groundwater
- Brownfield Sites & Redevelopments



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No Nuclear, Radioactive or Ammunition/Explosives



Target Customer

- Military Base, Airlines, Shipping
- Municipalities (Cities, Counties, etc.)
- Sanitation Districts
- Landfills/Waste Disposal
- Waste Water Treatment Facilities
- Agriculture Manure
- Tires, Petroleum, Hydraulic Fracturing
- Forestry Biomass
- Recycling Facilities
- Major Hotels/Casinos
- Indian Reservations
- Manufacturing
- Universities
- Hospitals
- Coal Mines



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Zero Landfill

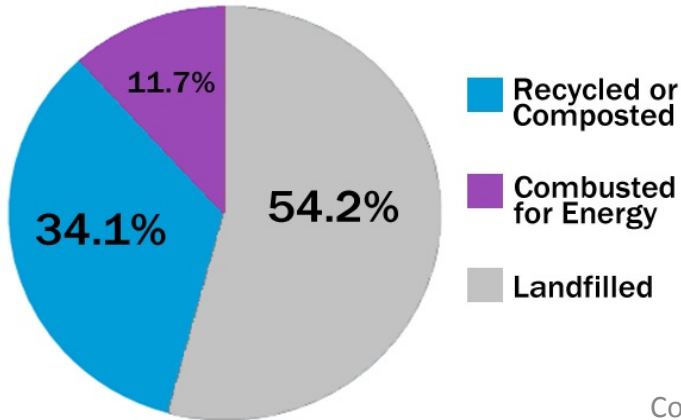


“ZERO” Landfills Waste

100%



What Happens to Stuff We Throw Away*?



*Based on the 2010 Municipal Solid Waste Characterization Report



Technology

Ultimate Conversion[®] Systems

- Electromagnetic Induction Heating super-heats waste in a vacuum to extract gas from material, also known as Syngas. The gas is hydrogen-rich and contains ultra-low sulfur, with zero air emissions.

Synthetic gas can be used to:

- Run boilers, Cogeneration Power Plants (CHP) and fuel cells to produce electricity, hot water and steam
- Create liquid Biofuels, Synthetic fuels like diesel, ethanol, gasoline and jet fuel, via a Fischer-Tropsch refiner

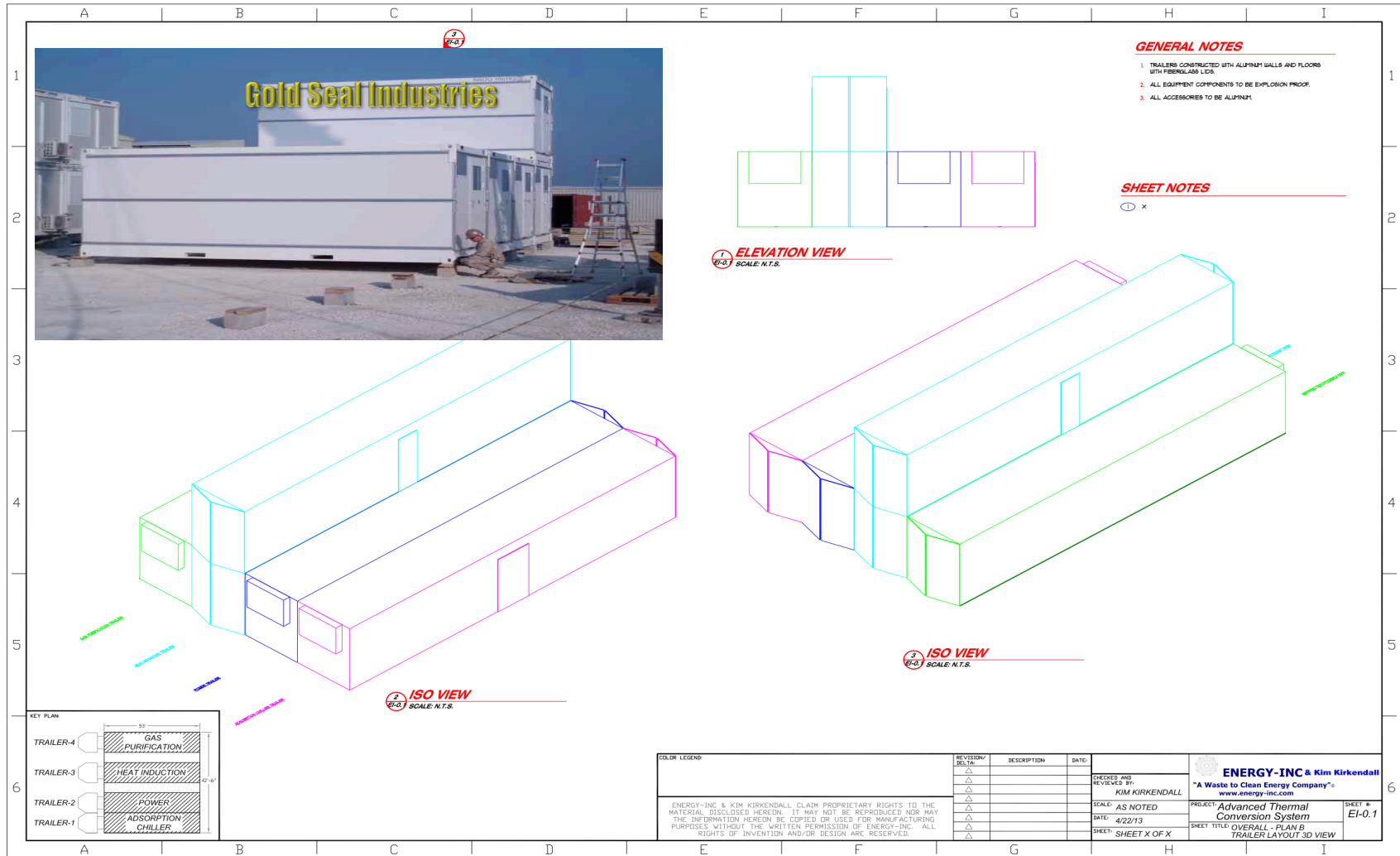
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“Zero Air Emissions”





Stackable Units



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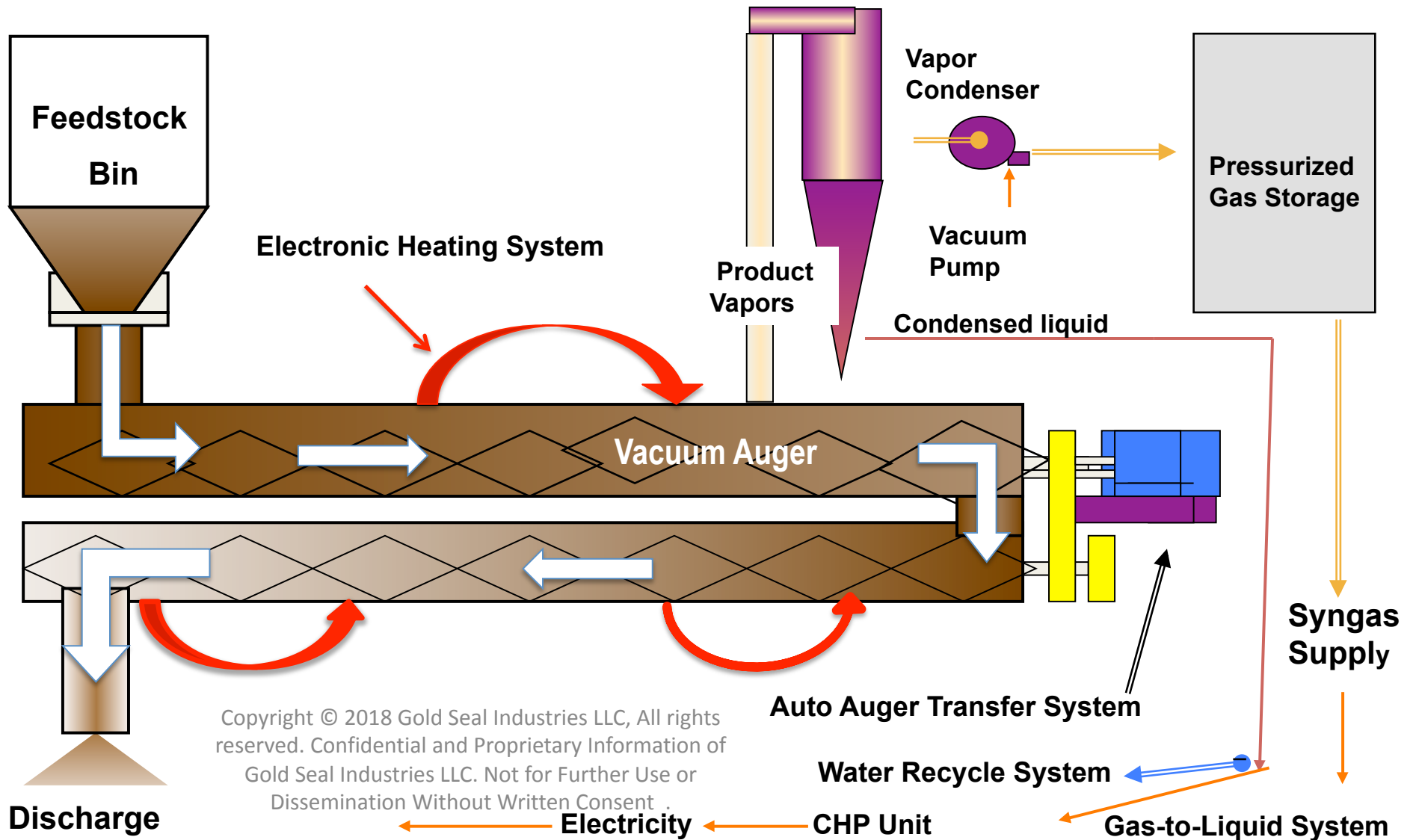
Strategic Partners

Systems integration provides for adaptability, reliability, and cost-effectiveness.





Ultimate Conversion System.®





Distilled Water System



Gold Seal Industries



“Highest Purity - Distilled Water”

MODULAR EVAPORATOR

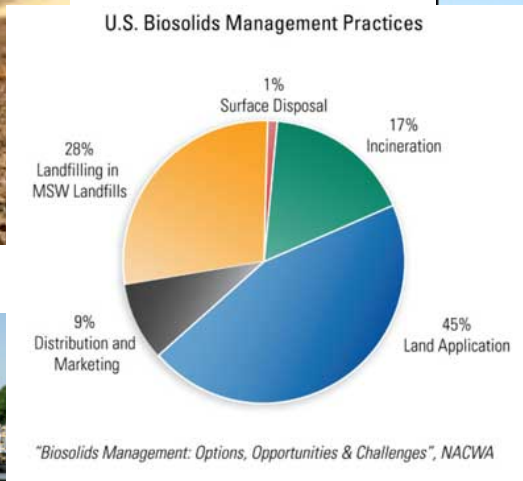
1 Million Gallons Per Day



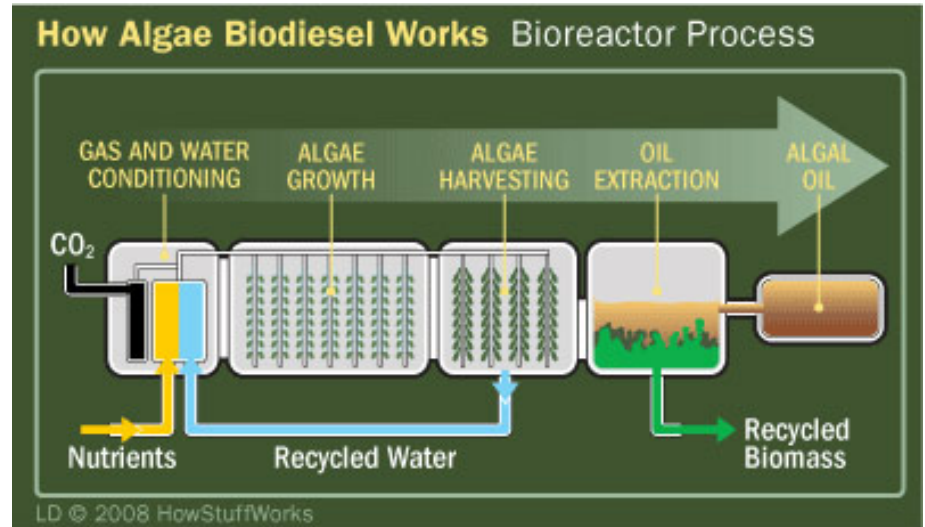
Water recovered can be used for clean-in-place procedures



GSI | Sewage Sludge



GSI | Algae



GSI | Wood - Biomass



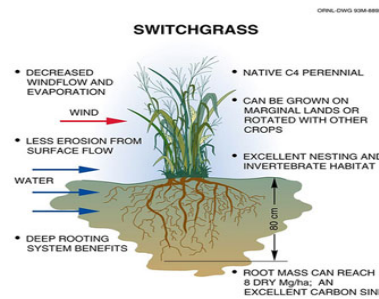
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GSI

Renewable Fuel Pathways

Multiple Renewable crops

- Sweet Sorghum
- Switchgrass
- Organic Fertilizers (Biochar)



GSI



Industrial Chemicals and Waxes



GSI | Wet Manure Products

- Electricity
- Synthetic gas (syngas)
- Surplus heat (water/steam)
- Biochar
 - Creates revenue stream
 - USDA Certified organic
- Water recovery



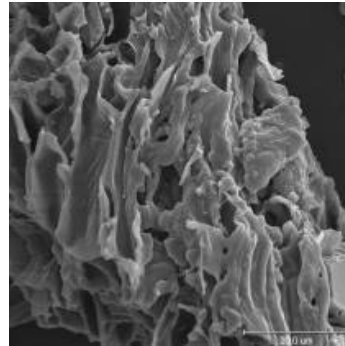
GSI | Biochar

Biochar is a natural by-product of the **Ultimate Conversion© process.**

Biochar is also used as a blacking agent for many industries, commodity applications for carbon char across many different disciplines including:

Biotechnology Increased crop productivity and soil enrichment
The benefits of mixing the char in with soil are well known, as a highly effective and organic means for **binding nitrogen** which helps plants to thrive

Environmental sciences **Carbon sequestration** Nanotechnology
Carbon fiber



GSI

Tire Products

Increase Revenue



- Electricity
- Fuels
- Carbon Black
- Steel recovery



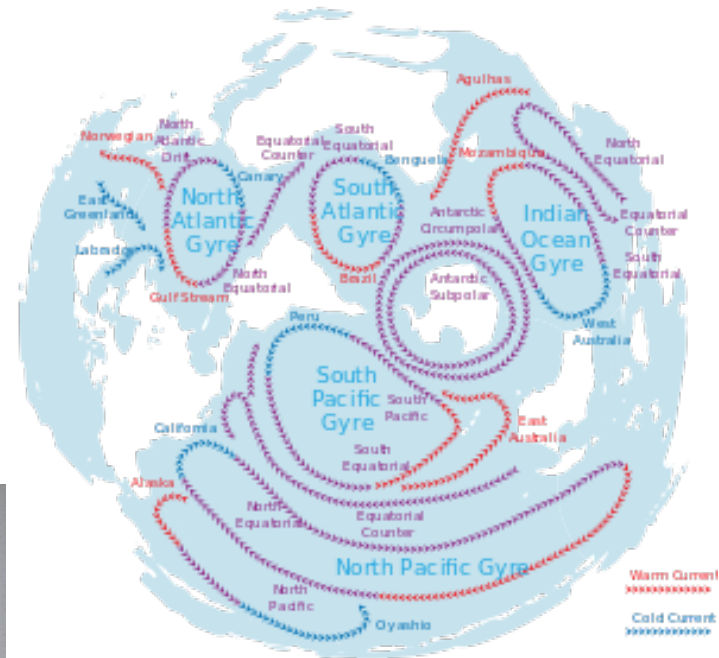
THE OUTPUT FROM A GENAN PLANT CONSISTS OF APPROX.
10% textile fibres, 75% rubber powder & granulate

15% STEEL



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GSI | Ocean Plastic



GSI | Las Vegas "Phase 2" MSW Project

1,500 tons per day of MSW

Produces:

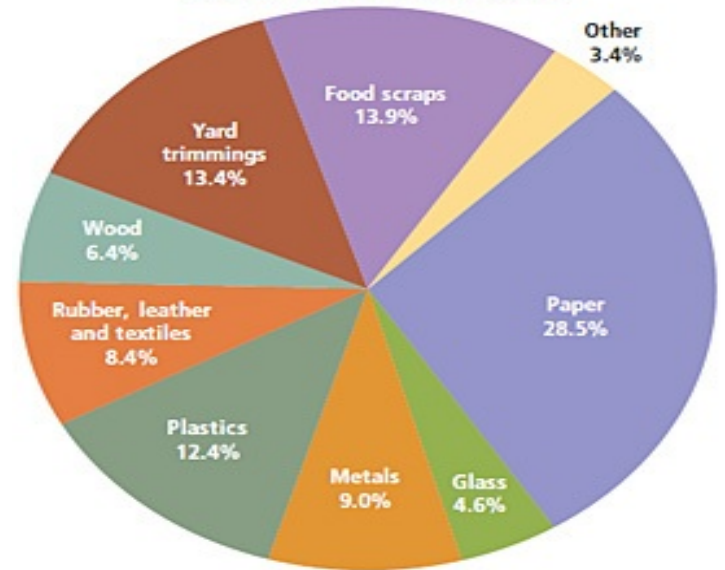
Synthetic Diesel – 13,830,000 gallons per year

Metals – 40,000 Tons per year

Water – 200,000,000+ Gallons per year



Figure 5. Total MSW Generation (by material), 2010
250 Million Tons (before recycling)





Strengths

- Turn environmental compliance into **positive financial investments - Capital Elasticity**
- Creates array of valuable market demanded commodities
- **Reduced Carbon Emissions - No GHG's**
- Flexible waste streams/ feedstock/ mobility
- Limited pre-treatment to handle MSW with recycling (limited sorting, labor savings)
- Efficient on site electricity generation
- Urban applications - Disadvantaged Communities
- **Environmental compliances with the EPA**
- Positive Environmental Solutions
- **Creation of Local Jobs & Educational Opportunities**
- **Positive solutions for Climate Change Initiatives**
- **Zero emissions and landfill deposits**



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Third Party Review

SOENECS
Innovative Sustainable Solutions

Social, Environmental & Economic Solutions (SOENECS) Ltd
Technology Report for Albion Energy



NEW TECHNOLOGY REVIEW

Author: Dr. David Greenfield
February 2017

It is the view of SOENECS that the Electromagnetic Induction Conversion System (EICS) has the potential to revolutionize the way that difficult wastes can be managed in an appropriate, localized and optimal way, according to their individual chemical and physical composition.

GSI | Insurance

Lloyd's

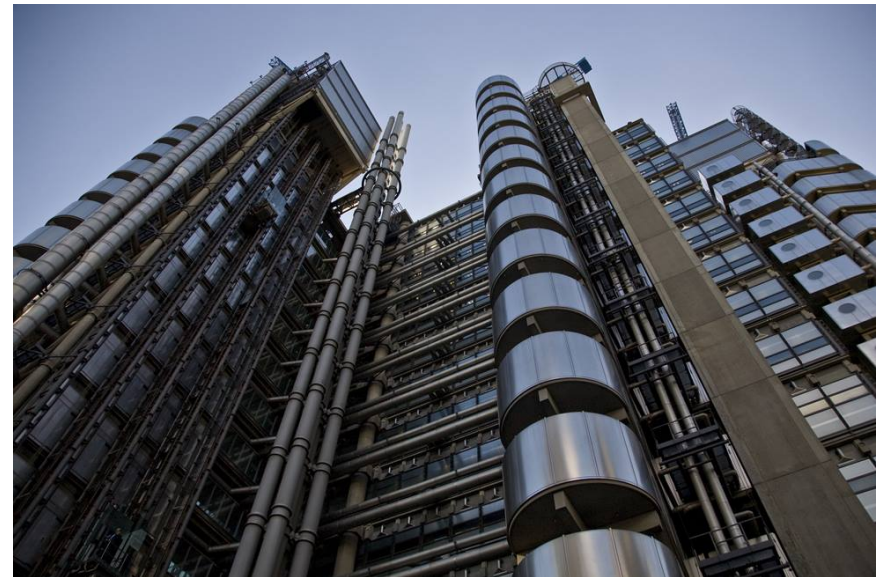
The world's specialist insurance market for over 325 years

Security up to 120%

The world's leading insurance platform

Underwriting since 1688

***"Guarantees Operational Performance
Worldwide"***



LLOYD'S
LLOYD'S OF LONDON



WASTE-TO-CLEAN-ENERGY TECHNOLOGY

MUNICIPAL SOLID WASTE PROJECT OUTPUT OVERVIEW **ESTIMATES**

Tons/Day	100	350	500	1,000	1,700
Net Useable	60	200	300	600	1000
# of Units	1	2	3	6	10
OUTPUT					
Commodities					
Electricity					
MW Per Hour	1.73	6.04	8.63	17.26	29.34
MW Per Day	41.52	144.96	207.12	414.23	704.19
MW Per Year	14,498.00	50,743	72,490.01	144,980.01	246,466.02
Diesel					
Gals/Hour	109.77	384.19	548.84	1,097.68	1,866.06
Gals/Day	2,634.44	9,220.53	13,172.18	26,344.36	44,785.41
Gals/Year	922,052.57	3,227,183.98	4,610,262.83	9,220,525.65	15,674,893.61
Syngas					
MMBtu/Hour	16	57	82	164	279
MMBtu/Day	393.52	1,377.31	1,967.59	3,935.17	6,689.79
MMBtu/Year	137,731.01	482,058.55	688,655.07	1,377,310.13	2,341,427.22
Water					
Gals/Hour	1,563	5,469	7,813	15,625	26,563
Gals/Day	37,500	131,250	187,500	375,000	637,500
Gals/Year	13,125,000	45,937,500	65,625,000	131,250,000	223,125,000
Char					
Tons/Hour	0.04	0.13	0.18	0.36	0.61
Tons/Day	0.86	3.02	4.32	8.64	14.69
Tons/Year	302	1,058.00	1,512	3,024	5,141
Metals					
Tons/Hour	0.317	1.11	1,583	3.167	5.38
Tons/Day	7.6	26.6	38	76	129
Tons/Year	2,660	9,310	13,300	26,600	45,220
COST**	Not cost Effective	\$24,574,856.00	\$32,077,466.02	\$61,368,295.42	\$102,357,456.58
EBITDA		\$9,743,590.00	\$11,698,557.00	\$24,557,621.00	\$42,560,310.00
ROI years/%		4.91/17.7%	4.01/22.01%	3.61/24.96%	3.46/26.23%

Feedstock: Municipal Solid Waste (MSW)

- 24 Hour Day for 7 Days Per Week Operation, 351 days/yr
- Moisture @ 25%** Turn Key Operation, Based on 100% Finance @ 5% over 25 years
- ALL ESTIMATED PROJECTIONS ARE SUBJECT TO CHANGE BASED ON FEEDSTOCK MAKEUP, RAW MATERIAL COST ADJUSTMENTS AND OPERATIONAL LOCATIONS.**