Innovative LFG Energy Project Case Studies
The Benefits of Modular Power Generation Systems

2G CENERGY Power Systems Technologies Inc.
a 2G Energy AG Group Company
Three Rivers
Solid Waste Management Authority

Pontotoc, Mississippi
The Landfill in Three Rivers County generates a significant Amount of LFG for many Years to come.
Initially the Tree Rivers Waste Management Authority planned to construct a Power Generation Building to house Generator Sets, very similar to what's shown on these Photos and Drawing.
During the Public Bid Process the Waste Management Authority quickly learned that a modular System without constructing a Power Generation Building with Engine Room Facility is much more Cost effective. The Project Owner decided to purchase a 100% pre-manufactured and modular LFG Power Generation Plant. This “all-in-one” Module was placed next to an Office and Warehouse Building, with direct Access to the Power Generation Module.
A smart and Cost effective Solution.
1200kW/h – 2G® avus® 1200 with MWM Prime Mover Engine
Complete Package including Siloxane Gas Treatment & Dehumidification System
100% pre-manufactured, “all-in-one” and “plug & play” LFG Power Generation Plant.
Edgecombe County analyzed their LFG Availability for the next 20 Years. Based on those Numbers the Landfill Owner decided to apply two (2) Generators sized between 370 and 400kW/h each.

<table>
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<th>Year</th>
<th>LFG Flowrate (SCFM) (100% recovery)</th>
<th>LFG Flowrate (SCFM) (75% recovery)</th>
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Initially the County planned to construct a Power Generation Building with Engine Room. During the Public Bid Process it was determined that it would save the County more than $850,000 by selecting modular pre-manufactured LFG Power Generation Systems.
The originally designed Building Plans were discarded.

The County not only saved a significant Amount of Money, but the Landfill Owner was also able to reduce the technical Risk and Project lead Times quite significantly.
2G CENERGY manufactured and supplied two identical LFG Power Generation Modules 2G® *patruus*® 370kW/h (total 740kW/h) with MAM Prime Mover Engines. Complete Package including Siloxane Gas Treatment & Dehumidification System all positioned next to an existing Landfill Storage Building.
100% pre-manufactured, “all-in-one” and “plug & play” LFG Power Generation Plant. Installation Time approx. 3 Days.
The Business Technology Center of Rockingham County in North Carolina planned to construct a Power Generation Building with Engine Room for their local Landfill.

After carefully analyzing all available Options and based on Results from the Public Bid Process, Rockingham County changed their Plans. Instead of the traditional Approach to construct such Building the Decision was made to purchase a Modular LFG Power Generation & CHP System. Substantial Cost Savings have been achieved.
A smart and Cost effective Solution.
800kW/h – 2G® avus® 800 with MWM Prime Mover Engine
Complete Package including Siloxane Gas Treatment & Dehumidification System
100% pre-manufactured, “all-in-one” and “plug & play” LFG Power Generation Plant.

Designed to a sound pressure level of 65 dB (A) in a distance of 10m (mean value, open field conditions)

Foundations on site

Container color: RAL 6005
In the 80’s the European CHP Cogen and On-Site Power Generation Industry initiated a Transition from Custom-Built to Modular Pre-Manufactured “All-In-One” and “Plug & Play” Cogeneration Systems.
Modular CHP and On-Site Power Generation Systems are completely engineered and designed for most efficient utilization, applying best practice, standardized, consistently production-line manufactured, and don’t require any additional engineering at all.
A professional CHP Cogeneration & Landfill (LFG) Energy Conversion System contains the entire Technology required to function most efficiently, and effectively. An advanced Gas Engine is just one Component.

Designed as complete “All-In-One” and “Plug & Play” Package. This includes a closed Loop Heat Extraction Technology if needed, “Best Available Control Technology” for Exhaust Emissions, sophisticated Electronics, and many other vital High Tech Components.
Modular CHP and On-Site Power Generation Equipment is supplied:

- All Inclusive – One Package
- Fully Factory Tested
- Connection Ready

- One Stop – One Source
- No Need to invent the Wheel again
- Proven Design
- Functionality is guaranteed
- Thousands of Modular Units in Operation
No Need to build Engine Rooms or a Power House. Also large Modules can be placed inside an existing Building / Structure, significantly reducing Investment Costs.

Larger Systems up to 2000kW single, or multiple e.g. 3MW, 4MW, etc.
Integration into existing Buildings.
Outside Building Installation Example

A containerized Solution is always the most Cost-effective Solution.
Very easy to transport,… and easy to install.
Enlarged Container Design
10’ (118”) 3 m wide, 10’ (118”) 3 m high available in various Length (depending on Engine Size and System Configuration)

Large Floor-Space for easy Access, Movement, and comfortable Service & Maintenance.
A genuine “Walk-In”

“All-In-One” CHP & Energy Conversion Module

Professionally designed and purpose manufactured Power Generation Modules are especially made for this Application and are genuine Walk-In, very easy and convenient to Service.
Complete and highly advanced Controls & Switchgear included. Also includes Controls of all Ancillaries as well as the Gas Detector & Fire Warning Systems, etc.
The Heart of a modular On-Site Power Generation System is a comprehensive and very advanced Digital Control Technology monitored On-Line around the Clock.

24/7
The Electrical Grid Interconnection is also pre-engineered and genuine “All-In-One” Modules are adequately prepared for Synchronization and Paralleling.
Combining Multiple Modules

All Modules are combined into one Central Thermal Heat Distribution Assembly, if Thermal Energy is required.
During the traditional design-engineering and custom on-site built process, literally thousands of pages of paper, bid specs, drawings, etc. are produced.

It’s an attempt to re-invent the wheel over and over again,…

….and the outcome is often less than suitable or technically adequate.
The traditional approach drives cost up, makes Power Generation in general unnecessarily expensive, and last but not least increases risks.

Because too many people and entities are involved, finger pointing happens frequently when things do not work out as planned.
Mechanical Engineers can focus on the important Tasks of Interface Connection and Integration.
Connecting a Modular Systems to the Grid

Electrical Engineers can focus on the important Tasks of Interface Connection and Integration.

Genuine “All-In-One” and “Plug & Play” Modules can be connected very easily to the Grid. The entire Grid Paralleling Technology is an integral Part of the Systems Control.
Advanced Grid Interconnection Protection Relay Technology is optionally 100% fully integrated into the CHP & Power Generation Module Controls. The Interconnection is also monitored 24/7 around the Clock.
The Market is currently in a Transition Phase from “Customary Design Built” to “Modular Pre-Manufactured”.
Thank You for Your Attention.