GRAVITATIONAL ENERGY SYSTEMS

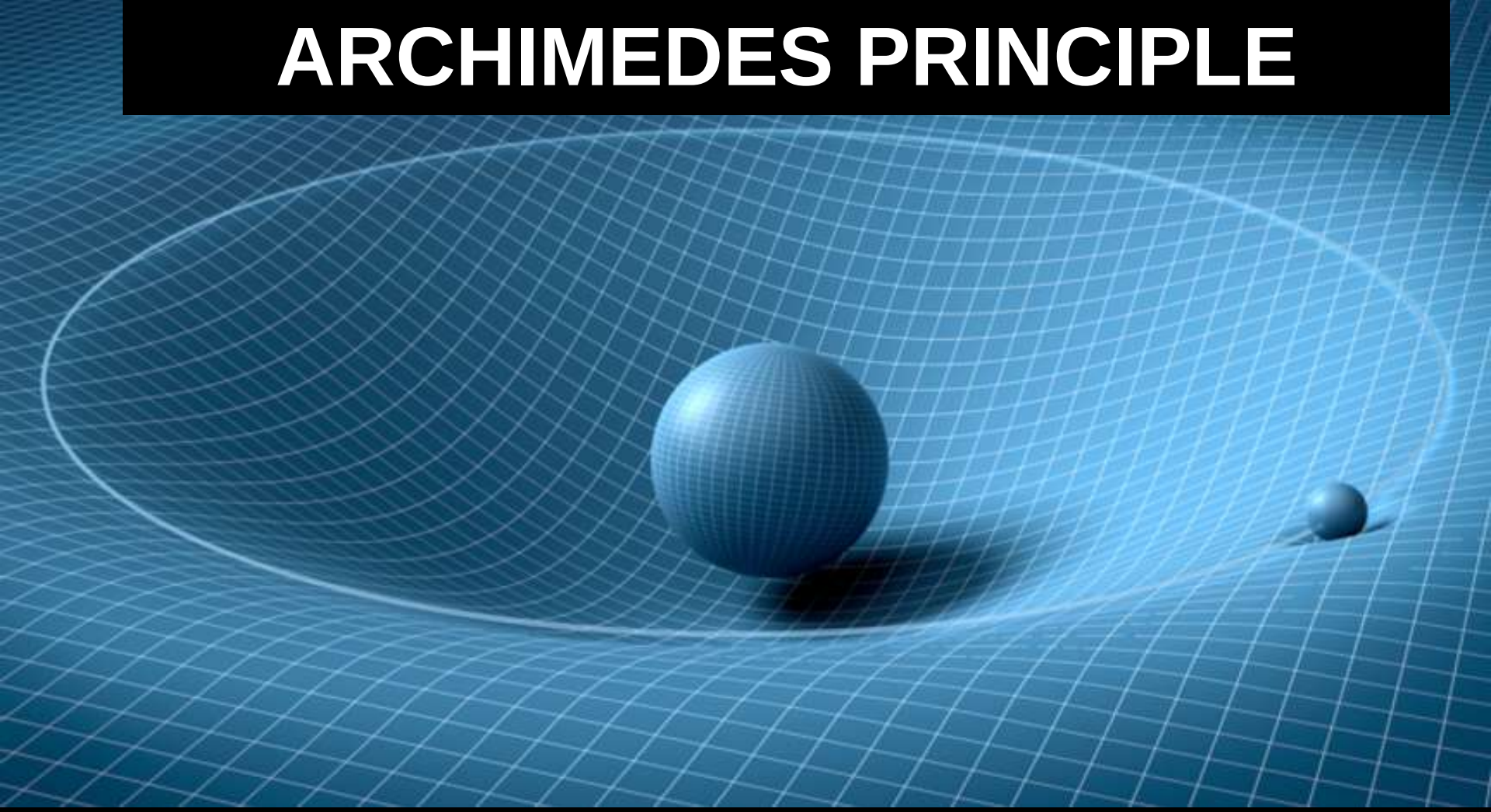
- ZERO SUN
- ZERO WIND
- ZERO FUEL
- ZERO COAL

=

ZERO POLLUTION

ARCHIMEDES PRINCIPLE

ARCHIMEDES PRINCIPLE



Archimedes' principle allows the buoyancy of any floating object partially or fully immersed in a fluid to be calculated. The downward force on the object is simply its weight. The upward, or buoyant, force on the object is that stated by Archimedes' principle, above. Thus, the net force on the object is the difference between the magnitudes of the buoyant force and its weight. If this net force is positive, the object rises; if negative, the object sinks; and if zero, the object is neutrally buoyant—that is, it remains in place without either rising or sinking. In simple words, Archimedes' principle states that, when a body is partially or completely immersed in a fluid, it experiences an apparent loss in weight that is equal to the weight of the fluid displaced by the immersed part of the body(s).

OUR MISSION

Our mission is to make clean, reliable, and affordable energy for everyone in the world 24 hours a day 7 days a week (“24X7”). To fulfill this mission, we have developed an, on-site electric power solution that is redefining the $2.4 trillion electric power market and transforming how power is generated and delivered. The commercial and industrial (C&I) segments are our initial focus. Our solution, the GES Platform, is a stationary power generation platform built for the digital age and capable of delivering highly reliable, uninterrupted, 24x7 constant (or base load) power that is clean, sustainable and independent of climate variables.

GES TECHNOLOGY

- The GES Platform is a Clean Energy Generation Technology harnessing the power of Gravity within metallic containers using a state-of-the-art train drive coupled with an electronic transmission to a certified WEG Alternator. Such power generated links with an Energy Management System supported by an Energy Storage System providing instantaneous Power Management to the Site Substation or Power Distribution Panels.
- This Technology is based on gravitational pull and upward movement to generate Clean Energy using a Synchronous Alternator working at 900 rpm using reinforced containers, transforming Gravity into Mechanical Torque using the Archimedes Principles.

The technical principle behind the system is relatively simple yet highly efficient. The unit is comprised of a number of air chambers that are secured to a chain drive system within a partially water filled container. Using Archimedes principle of bouncy, air is pumped into the chambers driving the chambers up. Conversely on the other side the chambers fill with water forcing them down to be refilled with air turning a shaft and thus producing energy.

A vertical standing, metallic container accommodates an internal structure that holds the drive train of a mechanical power generating system using air to obtain lifting force. Such force is expressed as a newton and is used to produce rotary mechanical power that is used to generate power through a synchronous alternator.

Such alternators work directly with a synchronic electrical panel, which requires an Energy Management System (EMS) for applications of 100 kW or higher capacity. The container is filled with treated or potable water (approximately 35,000 liters), minimal evaporation would require some additional water during operation as needed. In cold climates the water used by the system would be replaced by a fluid with a low freezing point.

Each container produces up to 100 kilowatts of power in a space approximately 125 times smaller than a solar power generation of equal magnitude. 100 kilowatts of power is roughly equivalent to the constant power requirement of a typical big box retail store. Any number of these units can be clustered together in various configurations to form solutions from hundreds of kilowatts to many tens of megawatts.

We intend also to work actively with financing partners, that purchase our systems that are deployed at end customers' facilities in order to provide the electricity as a service.

Grid power prices continue to rise in most regions of the world. The traditional centralized electric grid infrastructure requires significant investment for its maintenance, upgrade and operation, which has been continually driving up the cost of grid power. The U.S. Energy Information Administration (EIA) projects that grid power prices for all classes of customers including commercial and industrial are expected to increase by over 40% through 2026 in the U.S. By contrast, the GES Platform will typically provide a much lower cost of electricity to our customers than traditional grid power. In addition, our solution provides greater cost predictability versus rising grid prices. Through a relentless focus on cost reduction, we have driven down materials cost of our GES Platform.

The traditional grid is vulnerable to natural disasters as well as cyber-attacks and physical sabotage, which have become more frequent. The topology of the centralized grid has a tendency to cascade outages rather than to contain them. Because our on-site stationary power systems are located at the point of consumption, our GES Platform, when configured to provide uninterruptible power, largely avoid the existing electric power grid's inherent vulnerability to outages from weather events and other threats, as well as the additional losses of efficiency associated with the transmission of power over long distances. Our GES Platform is able to deliver this very high level of availability to our customers in part because they are modular, redundant, and can be "hot swapped," or serviced without interruption.

The electric grid typically delivers power generated by sources with a high carbon footprint, and there is increasing pressure to reduce resulting carbon dioxide and other harmful emissions. There is also a rising demand for clean electric power solutions that overcome the challenges of the traditional grid, and can address the requirements of the digital economy by delivering 24x7 electric power, with very high availability and quality.

Our GES Platform address these requirements and operate on-site at very high efficiencies and zero emissions. And, unlike prevalent renewable technologies such as wind and solar, provide a viable alternative and constant base load of electricity.

We have continuously innovated and evolved our technology over time. The latest generation GES Platform delivers five times the energy output of the first generation in a constant footprint. Similarly, we have also improved the beginning-of-life electrical efficiency (the start rate at to power up the system).

In addition, we have expanded the range of available accessories and an energy management and battery module which extend the capability and functionality of our GES Platform to meet additional customer requirements, providing an uninterruptable power capability. Our team has decades of experience in the various specialized disciplines and systems engineering concepts unique to this technology. We have issued patents in Mexico and 5 other countries and have patents pending in the United States as of March 31, 2020.

The GES Platform is capable of addressing customer needs across a wide range of industry verticals. Target industries include oil and gas, warehouse's, manufacturing, commercial, cloud services, technology and data centers, communications, government, healthcare, hospitality, retail and of course utilities. We believe we will be able to compete and capture a significant percentage of the opportunities we target on a total energy spent basis, which gives us a significant opportunity for growth. Moreover, as the price of our products decreases and the as price of grid power increases, more markets will become available for our products.

CAPABILITIES TRANSLATES INTO

- **"MODULARIZED ENERGY"** CAN BE RELOCATED ANYWHERE IN THE WORLD.
- **"FIXED ENERGY COST"** TO RESIDENTIAL NEIGHBORHOODS.
- **"IMPROVE COMMERCIAL INDUSTRY"** WORLDWIDE.
- **"LIGHT UP CITIES"** WITH CLEAN EFFICIENT ENERGY.
- **"MINING & AGRICULTURAL"** IMPROVE EFFICIENCY.
- **"EXPORTABLE"** EASILY TRANSPORTED, SMALL FOOTPRINT.

What is GES

Technology based on gravitational pull & upward bouyancy movement to generate Clean Energy using a Synchronous Alternator working at 1,800 rpm using reinforced containers, transforming Gravity into Mechanical Torque using the Arquimedes Principle.

24/7
365

Clean Energy with small space usage & no climate dependency.

What is GES

Energy systems include:

- Gravitational to torque converter.
- AC synchronous alternators.
- Air transfer module.
- Off grid system start and control.
- Industrial control and system monitoring.
- Remote process monitoring.
- Modular system housing.
- 10 Year full GES system warranty.
- Clean
- Cost Effective

Energy modules, benefits:

- Fixed cost energy savings.
- On demand energy 24/7.
- System ownership.
- Modular system can be expanded as your demand changes.
- Energy saving clean generator.
- Carbon free generation of energy.
- Supervision and tech support.
- 10 Year full GES system warranty.

Modular Energy Features

GES 100 KW, Clean, Cost Effective, energy systems include:

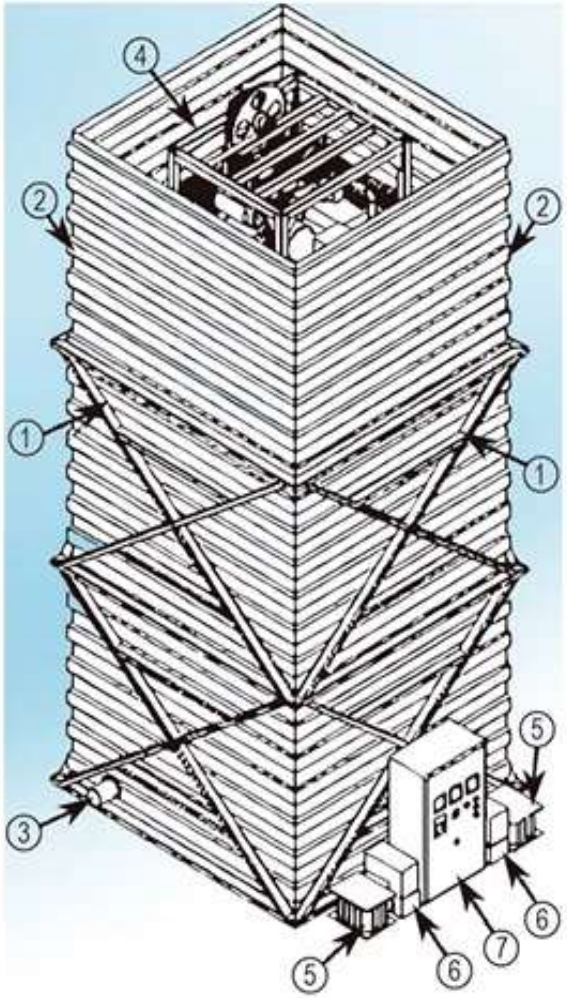
- Gravitaional to torque convertor
- AC synchronous ternators
- Air transfer module
- Off grid system start and control
- Industrial control and system monitoring
- Remote process monitoring
- Modular system housing
- 10 Year full GES system warranty

Modular Energy Benefits

GES 100 KW, Energy Modules, benefits:

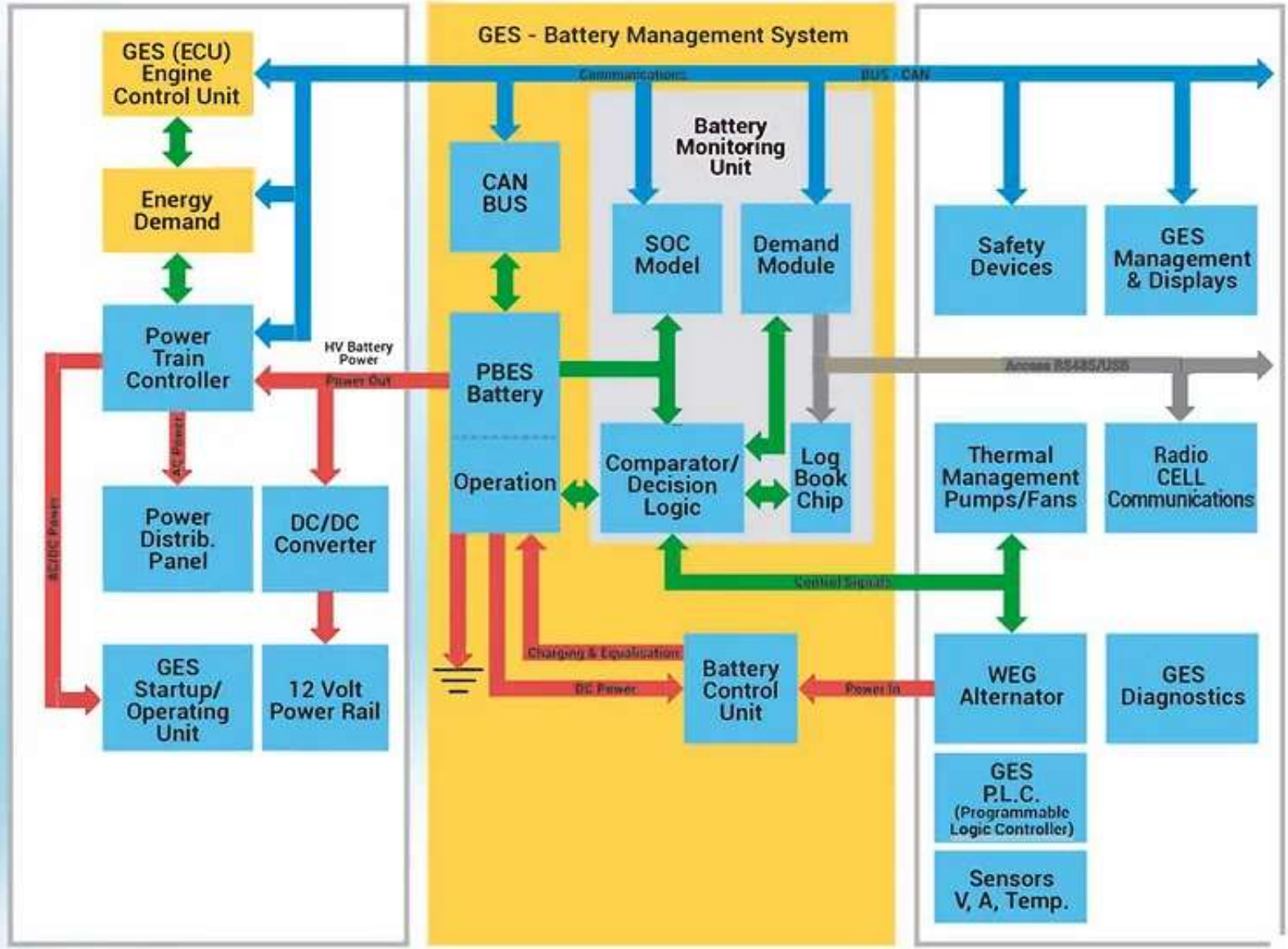
- Fixed cost energy savings
- On demand energy 24/7
- System ownership
- Modular system can be expanded as your demand changes
- Energy saving clean generator
- Carbon free generation of energy
- Supervision and tech support
- 10 Year full GES system warranty

Gravitational Energy System



GES Clean Electric Generator System

1. Generator housing
2. Container structure
3. System drain
4. Generator mount
5. Power inverter
6. Self starting module
7. Control cabinet


GES - Battery Management System
GES (ECU) Engine Control Unit
Energy Demand
Power Train Controller
Power Distrib. Panel
DC/DC Converter
GES Startup/ Operating Unit
12 Volt Power Rail
CAN BUS
PBES Battery
Operation
Battery Monitoring Unit
SOC Model
Demand Module
Comparator/ Decision Logic
Log Book Chip
Battery Control Unit
Safety Devices
GES Management & Displays
Thermal Management Pumps/Fans
Radio CELL Communications
WEG Alternator
GES Diagnostics
GES P.L.C. (Programmable Logic Controller)
Sensors V, A, Temp.
HV Battery Power
Power Out
AC Power
AC/DC Power
Charging & Equalization
DC Power
Power In
Control Signals
Access RS485/USB
Communications
BUS - CAN

Generation Equipment 100KW (Ver 2.0 2017)

Electrical	Eléctrico	
Output Frequency Range	Frecuencia de Generación	50 - 60HZ
Starting Lap Time	Tiempo de Arranque	15 s.
Speed Control Accuracy	Exactitud de Control Velocidad	3-5%
Output Operating Voltage	Voltaje de Generación	220 - 460 V
KWh Generated per Unit	KWh Generados por Unidad Modular	100KWh
Operating Capacity - KVA	Capacidad de Generación Alternador WEG	141 KVA / 112.8 KW
Synchronous Alternator Type	Alternador Síncrono WEG - Tipo	12 terminals / 4 Poles
Alternator Certifications	Certificaciones del Alternador	CSA (Canada), CE (Europe), UL (USA)
Isolation Class	Clase de Aislamiento (Alternador)	Class H
Alternator Max Temperature	Máxima Temperatura en Alternador	125 Celsius
Minimum & Maximum Capacity	Capacidad Mínima & Máxima GES	100KWh - 100MW

Physical	Físico	Specifications
Water Contained per 100KW GES Unit	Agua Contenida por 100KW GES Unit	38,000 l.
Shipping Weight	Peso Neto en Seco - Embarque	7 Ton
Net Weight of Full System	Peso Neto en Operación	45 Ton
Max Height required for operation	Altura Máxima Requerida	7m.
Base Area for Operation	Area de Base Operativa	9 m2
Recommended Space per Unit	Area Recomendada por Unidad	12 m2
Color of Unit	Color Estándar de Unidad	Blue/Azul
Operation Requirement	Requerimiento para Operar	Fill up with Clean Water / Llenar con Agua

Environmental	Ambiental	Specifications
Environment Temperature	Temperatura Ambiental Requerida	-5 to 45 °Celsius
Humidity	Humedad Ambiental	0 - 80%
Storage Temperature	Temperatura Almacenamiento	-20 to 85 °Celsius
Noise (dB)	Nivel de Ruido	72 dB
Height Over Sea Level Range	Altura sobre el Nivel Medio del Mar - Rango	1 - 3000 m.
Water Disposal every 3 yrs	Tratamiento del Agua cada 3 años.	Non Hazardous Water / Tratamiento de Efluente no Contaminante
Water in Storage Cycle	Ciclo del Agua Almacenada	5 yr / 5 años
Makeup of Evaporated Water	Recuperación de Agua Evaporada	Approximately 3% Monthly / Aproximadamente 3% Mensual

Operation & Maintenance	Operación & Mantenimiento	Specifications
Operation Requirement	Requerimiento Operativo	Only during Startup / Solo en Arranque
Maintenance	Mantenimiento	Yearly Preventive Maintenance / Mantenimiento Anual
Re-Start	Arranque	Instantaneous power loss restart / Re-arranque inmediato
Air Pumping Pressure	Presión de Aire en Bombeo	2 Bar
Energy Storage	Almacenamiento de Energía	10KWh - Battery / Batería
Yearly Operating Hours	Horas de Generación Anual	8590 hr.
Maximum Down Time per Yr.	Tiempo Máximo de paro de Mantenimiento	7 days / 7 días
Equipment Factory Guarantee	Garantía de Fábrica Total	10 yers / 10 Años

GES

Specification Sheet

Modular Energy Generation Systems 100KW to 100MW

GES 100 KWh
Area required:

GES 500 KWh
Area required:

GES 1 MWh
Area required:

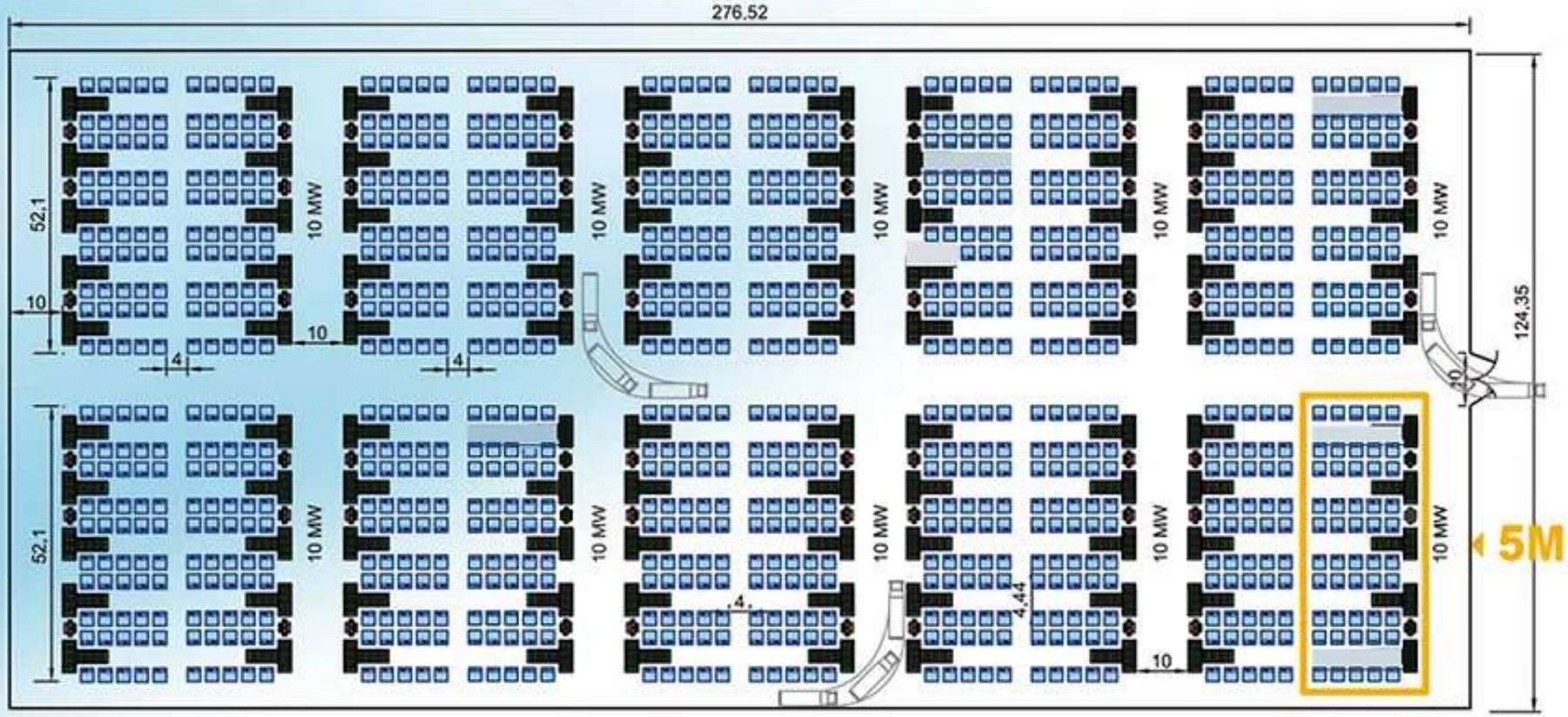
GES 5 MWh
Area required:

GES

LAYOUT

100 MWh

AREA = 34.385.26 M²



Project Phases:

Site Survey

STS will develop a site survey and pre-engineering effort to validate our proposal on project site. Civil & Electrical considerations are key for project execution.

Project Specifications

Based on the site survey we develop the Project Specifications to comply with local & national standards on civil and electrical works and installations.

Construction

The new site construction will use local approved contractors to comply with local standards & develop the preparation infrastructure to receive GES Units on time.

Contract

Out contract will state all the required works, engineering effort & equipment features that comprise your project needs and energy requirements to be delivered on site.

GES Modular Energy Reasons to Invest:

GES Reasons to Compete Worldwide:

- Best LCOE Available.
- AC synchronous alternators certified by UL, CE, CSA, etc.
- Disruptive Technology.
- Clean Energy with harmless effects to the Environment.
- Industrial control and remote system monitoring & operation.
- Modulating Capacity for Peak Demand Requirements.
- Modular system housing for long term projects.
- 10 Year full GES system warranty.
- Relocatable System to any type of Environment.

GES

GES Capabilities:

System monitoring

- GES is constantly monitored & diagnosed to prevent failures.
- GES is operated remotely, to avoid overloads & hijacking.
- GES monitors all system variables to ensure a reliable Operation and Maintenance.

Equipment Design:

- GES was designed to operate continuously ensuring proper power delivery.
- GES uses an Energy Management System to ensure proper peak demand coverage.

Project Management:

- GES Systems are designed, constructed & delivered with a dedicated Project Management Plan to ensure the expected results are met complying with the Quality & Timely Project Delivery on Site.

Contractors:

Our GES Turn Key makes sure that all contractors, engineers & managers work for the same Mission & Project Goals Delivery.
Our Goal is to exceed your expectations on Energy & Water Delivery on Time & Quality.

GES Technology Implementation requires a dedicated site Survey, Feasibility Study & Pre-Engineering Works.
Such Diligence will confirm or add the required activities, Civil, Electrical & Infrastructure Works necessary for the proper project deployment.

We love to develop well planned projects that deliver & exceed client´s expectations.

Consider our company as your best partner to develop clean energy projects for a better Future Worldwide.

MUNICIPAL DISRUPTIVE TECHNOLOGY

Hospital

Mini grid

School

Street lights/
Traffic Signals