



**PORT
BOSKAMP**
SURINAME



WEGENERGY
RENEWABLE ENERGY LLC,

POWERING OUR WORLD WITH HYDROGEN

CLEAN ENERGY. ZERO EMISSIONS. ENDLESS POSSIBILITIES.

HYDROGEN PRODUCTION



ZERO EMISSION
TRUCKS

H₂ STATION
CLEAN FUEL. BETTER FUTURE.

ZERO EMISSION
BUSES

ZERO EMISSION
CARS

- HIGH EFFICIENCY
- FAST REFUELING
- LONG RANGE
- ZERO EMISSIONS

PLANES

TRAINS

SHIPS

INDUSTRY & POWER PLANTS



SUSTAINABLE



RENEWABLE



RELIABLE



SCALABLE



FUTURE-READY

HYDROGEN FUELS TODAY. POWERS TOMORROW.
ONE SOLUTION. ENDLESS APPLICATIONS.

H₂ THE ENERGY
OF TOMORROW

BUSINESSES THAT REQUIRE WEG ENERGY POWER

Powering Every Sector. Enabling Sustainable Growth.

- ⚡ Reliable Power
- ⚙️ Smart Solutions
- 🌱 Sustainable Future
- 👥 Stronger Communities

Just a sample
of who will
require power
at PBK

MINING & MINERALS



- ⚡ High-grade silica sand mining
- ⚡ Stockpile management & quality control
- ⚡ Environmentally responsible mining practices
- ⚡ Barge transport to harbour

PORT & LOGISTICS SERVICES (INCLUDING AIRPORT)



- ⚡ Deep-water harbour
- ⚡ Cargo & container logistics
- ⚡ Airport operations & ground handling
- ⚡ Fuel storage terminal
- ⚡ Marine fueling & bunkering
- ⚡ Ship repair & maintenance
- ⚡ Customs & bonded services
- ⚡ Cold chain & reefer facilities
- ⚡ Marine & cargo support services

ENERGY & POWER SOLUTIONS



- ⚡ Hydrogen power generation
- ⚡ Electrical power generation (3 MW – 30 MW)
- ⚡ Heat recovery steam system (HRSG)
- ⚡ Supercapacitor storage systems
- ⚡ Battery energy storage systems
- ⚡ Grid power export
- ⚡ EV charging stations
- ⚡ Renewable energy integration
- ⚡ Smart grid systems
- ⚡ Energy management solutions

REAL ESTATE & COMMUNITY DEVELOPMENT



- ⚡ Waterfront residential communities
- ⚡ Apartments & condominiums
- ⚡ Residential leasing
- ⚡ Mixed-use town center
- ⚡ Community parks & green spaces
- ⚡ Sidewalks & landscaped areas
- ⚡ Waterfront walking areas
- ⚡ Family recreation zones
- ⚡ Smart home infrastructure
- ⚡ High-speed internet access

HOSPITALITY & TOURISM



- ⚡ 120+ room hotel
- ⚡ Executive suites
- ⚡ Conference & event center
- ⚡ Business meeting facilities
- ⚡ Marina tourism
- ⚡ Eco-tourism operations
- ⚡ Restaurant facilities
- ⚡ Cafés & lounges
- ⚡ Waterfront dining
- ⚡ Tourist marina services
- ⚡ Resort-style amenities

FOOD & AGRICULTURE SERVICES



- ⚡ Food processing plant
- ⚡ Cold storage & logistics
- ⚡ Out-grower farming systems
- ⚡ Greenhouse farming
- ⚡ Seedling & nursery services
- ⚡ Fresh produce packaging
- ⚡ Agricultural produce markets
- ⚡ Food import/export logistics
- ⚡ Fisheries support facilities
- ⚡ Food security initiatives

INDUSTRIAL & COMMERCIAL SERVICES



- ⚡ Industrial land leasing
- ⚡ Warehouse leasing
- ⚡ Manufacturing zones
- ⚡ Strip processing facilities
- ⚡ Light & general manufacturing
- ⚡ Logistics hub
- ⚡ Freight forwarding
- ⚡ Customs brokerage
- ⚡ Bonded warehousing
- ⚡ Equipment storage yards
- ⚡ Data center operations
- ⚡ Business & trade services

PUBLIC SERVICES & SAFETY



- ⚡ Regional hospital
- ⚡ Emergency medical services
- ⚡ Ambulance services
- ⚡ Security monitoring
- ⚡ Fire protection services
- ⚡ Navy & coast guard support
- ⚡ Disaster response coordination
- ⚡ Port authority operations
- ⚡ Immigration services
- ⚡ Environmental monitoring
- ⚡ Public transportation access
- ⚡ Community administration

RECREATION & LIFESTYLE



- ⚡ Marina & waterfront lifestyle
- ⚡ Waterfront parks
- ⚡ Walking & jogging paths
- ⚡ Public gathering areas
- ⚡ Sports & recreation facilities
- ⚡ Boating & fishing activities
- ⚡ Outdoor recreation
- ⚡ Community events
- ⚡ Cultural & exhibition spaces
- ⚡ Shopping & entertainment

DATA CENTRE



- ⚡ High-density data centre campus
- ⚡ Liquid nitrogen cooling technology
- ⚡ 100% clean & reliable power
- ⚡ Advanced connectivity
- ⚡ & low latency
- ⚡ 24/7 operational resilience
- ⚡ Secure & scalable infrastructure
- ⚡ Disaster recovery-ready
- ⚡ Sustainable & energy-efficient design
- ⚡ Built for AI, HPC & future demands

PORT BOSKAMP PROJECTS



- ⚡ Deep-water multi-purpose port
- ⚡ Industrial & free trade zone
- ⚡ Logistics & distribution hub
- ⚡ Ship repair & dry dock facilities
- ⚡ Fuel storage & bunkering
- ⚡ Cold chain & storage
- ⚡ Renewable energy integration
- ⚡ Community & workforce development
- ⚡ Sustainable port operations



WEG ENERGY POWER SOLUTIONS FOR A SUSTAINABLE FUTURE

Reliable Power. Smarter Operations. Stronger Communities.



RENEWABLE
ENERGY



CLEAN & GREEN
SOLUTIONS



ENERGY STORAGE
SYSTEMS



SMART GRID & ENERGY
MANAGEMENT



EMPOWERING
SURINAME

Powering Growth. Protecting Tomorrow.

WEG ENERGY SURINAME –
Your Partner in a Sustainable Future.



SOLAR POWER MINI GRID POWER PART OF PHASE ONE

Residential Solar + Home Energy Storage + Central Mini-Grid Deployment

WEG Energy's residential energy strategy is designed around a **distributed solar generation and energy-storage network**, where each home becomes an active part of the community power system. Solar panels installed on every residence will generate electricity during daylight hours and supply the home's immediate electrical requirements, including lighting, appliances, HVAC systems, pool equipment, EV charging, and other household loads. Each home will also be equipped with a **hybrid inverter, local supercapacitor/battery storage system, and bidirectional smart meter**, allowing energy to be intelligently managed between the residence, its local storage, and the community mini-grid.

During periods when a home produces more solar electricity than it consumes, the excess energy will first be used to charge the home's local energy-storage system. Once the local storage reaches its operating capacity, additional renewable electricity can be exported through the bidirectional meter to a **centralized community mini-grid and mini-substation**. Based on the current concept, the community system incorporates approximately **3 MW of centralized supercapacitor power capacity with approximately 3–15 MWh of usable energy storage**, creating a larger shared energy reserve for the residential development. This allows renewable energy generated by many individual homes to be combined, stored, and redistributed throughout the community rather than allowing excess daytime solar production to be wasted.

The centralized mini-grid becomes the energy-management backbone for the residential development. When an individual home requires more electricity than its solar system or local storage can provide—for example during the evening, periods of heavy air-conditioning demand, or reduced solar production—the mini-grid can automatically return stored energy to that residence. Because hundreds of homes can be interconnected, the system can balance generation and consumption across the community, allowing homes producing excess energy to indirectly support homes experiencing higher demand. Smart controls, real-time monitoring, load management, and digital metering will continuously track power production, storage levels, imports, exports, and overall community demand.

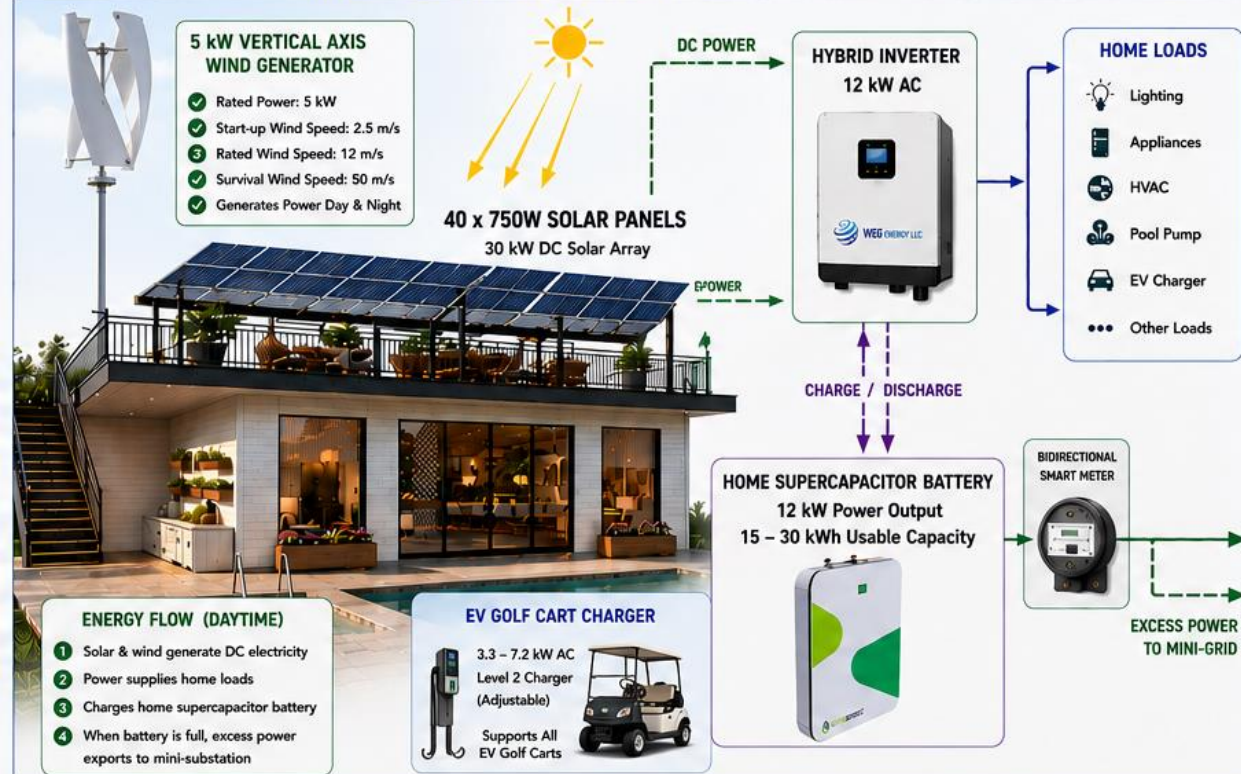
This architecture provides WEG Energy with a **scalable, resilient microgrid platform** that reduces dependence on the conventional electrical grid while improving energy security for residents. Local home storage provides fast-response power at the individual residence, while the larger centralized supercapacitor bank provides community-wide reserve capacity, grid stabilization, peak-demand management, and backup capability. As the Port Boskamp residential development expands, additional homes, solar generation, and modular energy-storage capacity can be added to the same mini-grid architecture, creating a progressively larger renewable-energy network capable of supporting residential, commercial, community, and future infrastructure requirements.



RESIDENTIAL SOLAR + SUPERCAPACITOR + MINI-GRID SYSTEM

SMART ENERGY. STORED LOCALLY. SHARED COMMUNITY-WIDE.

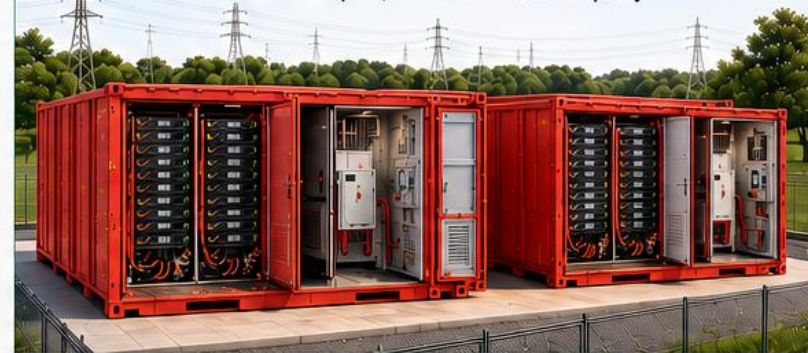
1. HOME SOLAR POWER SYSTEM



2. COMMUNITY MINI-SUBSTATION (MINI-GRID)

3 MW SUPERCAPACITOR ENERGY STORAGE SYSTEM

3 MW Power Output | 3 – 15 MWh Usable Capacity



Stores Excess Solar & Wind Energy



Provides Power When Needed



Stabilizes Mini-Grid



Supports Multiple Homes



Reduces Grid Dependency

DISTRIBUTES POWER TO HOMES

POWER TO HOMES (WHEN NEEDED) →



3. NET METERING & ENERGY FLOW

EXCESS ENERGY (DAYTIME)



ENERGY NEEDED (ANYTIME)



SYSTEM SPECIFICATIONS SUMMARY

HOME SYSTEM (PER HOME)

- Solar PV Array : 30 kW DC (40 x 750W)
- Vertical Axis Wind Turbine : 5 kW
- Hybrid Inverter : 12 kW AC
- Home Supercapacitor Unit : 12 kW Power Output
15 – 30 kWh Usable
- EV Golf Cart Charger : 3.3 – 7.2 kW AC
- AC Voltage : 120/240V or 240V (Single Phase) or 400/480V (3 Phase)
- Export / Import : Bidirectional (Smart Meter)
- Daily Production : ~250 – 300 kWh/day*
(8 Sun Hours + Wind)

MINI-GRID SUBSTATION

- Supercapacitor System : 3 MW Power Output
- Usable Energy Capacity : 3 – 15 MWh
- AC Voltage : 480V / 11kV / 13.8kV (Site Dependent)
- Connection : Mini-Grid (Bidirectional)
- Function : Store Excess Solar & Wind, Supply Homes, Stabilize Grid
- Supports : Multiple Homes / Community

KEY BENEFITS



WHY SUPERCAPACITORS?

- Ultra-fast charge & discharge
- 1,000,000+ cycle life
- High power density
- Safe, non-toxic, low maintenance
- Operates in extreme temperatures



SMART CONTROL & MONITORING



POWER FLOW LEGEND



Solar panels installed on all homes will feed power into a centralized mini-grid system with integrated energy storage, providing reliable renewable power to support the project's infrastructure and its residential, commercial, and community energy needs.



RENEWABLE
SOLAR ENERGY



3 MW SUPERCAPACITOR
STORAGE



MINI-GRID POWER
DISTRIBUTION



ENERGY SECURITY
& INDEPENDENCE



SMART CONTROL
& MONITORING



CLEAN &
SUSTAINABLE



SYSTEM OVERVIEW

This integrated system generates clean solar energy during the day, stores it in a 3 MWh supercapacitor energy storage system, and delivers reliable power to support industrial operations and surrounding loads through a smart mini-grid.

3 MW SUPERCAPACITOR ENERGY STORAGE SYSTEM

3 MW Power Output | 3 – 15 MWh Usable Capacity



Stores Excess
Solar Energy



Provides Power
When Needed



Stabilizes
Mini-Grid



Supports
Multiple Homes



Reduces Grid
Dependency

DISTRIBUTES POWER TO HOMES

POWER TO HOMES (WHEN NEEDED) →



NET METERING & ENERGY FLOW

EXCESS ENERGY (DAYTIME)



ENERGY NEEDED (ANYTIME)



KEY SYSTEM SPECIFICATIONS

HOME SYSTEM (PER HOME)

- Solar PV Array : 30 kW DC (40 x 750W)
- Hybrid Inverter : 12 kW AC
- Supercapacitor Battery : 12 kW Power Output
15 – 30 kWh Usable
- Home Supercapacitor Unit : 12 kW Power Output
15 – 30kW or 240W (Single Phase) or 400/480V (3 Phase)
- AC Voltage : Bidirectional (Smart Meter)
- Export / Import : ~200 – 215 kWh/day (8 Sun Hours)
- Daily Production : ~200 – 215 kWh/day (8 Sun Hours)

MINI-GRID SUBSTATION

- Supercapacitor System : 3 MW Power Output
- Usable Energy Capacity : 3 – 15 MWh
- AC Voltage : 480V / 11kV / 13.8kV (Site Dependent)
- Connection : Mini-Grid (Bidirectional)
- Function : Store Excess Solar, Supply Homes, Stabilize Grid
- Supports : Multiple Homes / Community

KEY BENEFITS



Clean &
Renewable



High Efficiency
(Supercapacitor)



Fast Charge
& Discharge



Grid Stability
& Reliability



Lower Energy
Costs



Energy Security
& Independence

WHY SUPERCAPACITORS?

- Ultra-fast charge & discharge
- 1,000,000+ cycle life
- High power density
- Safe, non-toxic, low maintenance
- Operates in extreme temperatures



SMART CONTROL & MONITORING



EMS Controller



Real-Time
Monitoring



Load
Management



Remote
Access



Data &
Analytics

POWER FLOW LEGEND

- DC Power
- AC Power (To Loads)
- ↔ Charge / Discharge
- Export / Import Power

80-HOME SOLAR MINI-GRID SYSTEM

PORT BOSKAMP, SURINAME | SUSTAINABLE ENERGY FOR EVERY HOME

CLEAN ENERGY
SUSTAINABLE FUTURE
TOGETHER

PER HOME SYSTEM

24 SOLAR PANELS
750W EACH



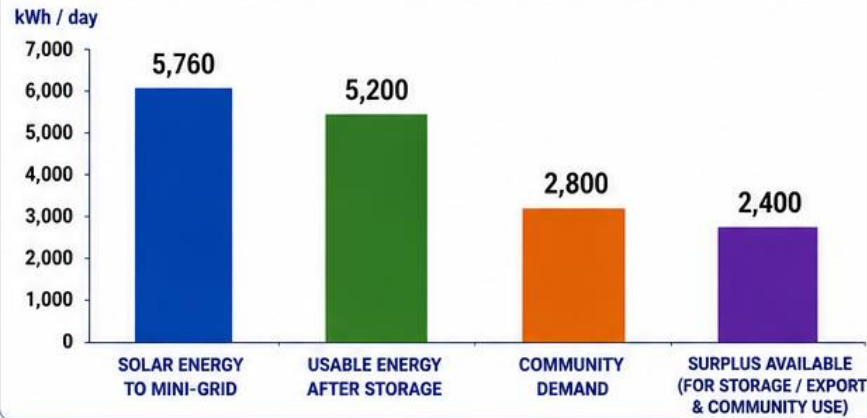
AVERAGE PRODUCTION
AFTER INVERTER LOSSES

~72 kWh/day

USABLE AFTER STORAGE

~65 kWh/day

80-HOME COMMUNITY – AVERAGE DAILY ENERGY FLOW



80-HOME SUMMARY

	TOTAL SOLAR CAPACITY (DC)	1,440 kW
	TOTAL SOLAR ENERGY TO MINI-GRID	5,760 kWh/day
	USABLE ENERGY AFTER STORAGE	5,200 kWh/day
	TOTAL COMMUNITY DEMAND	2,800 kWh/day
	SURPLUS AVAILABLE (FOR STORAGE / EXPORT & COMMUNITY USE)	2,400 kWh/day

COMMUNITY CONSUMPTION

 **80 HOMES**
AVERAGE USE
35 kWh/day
PER HOME

TOTAL COMMUNITY
DEMAND

2,800 kWh/day

80 HOMES – SOLAR POWERED



80 HOMES
18 kW SOLAR SYSTEM EACH



SURPLUS AVAILABLE
2,400 kWh/day
FOR STORAGE / EXPORT
& COMMUNITY USE

COMMUNITY MINI-GRID

TOTAL SOLAR ENERGY TO MINI-GRID

5,760 kWh/day



COMMUNITY BATTERY ENERGY STORAGE SYSTEM (BESS)



TOTAL STORAGE CAPACITY
20 MW / 20,000 kWh
USABLE ENERGY AFTER STORAGE
5,200 kWh/day

 CHARGED BY EXCESS SOLAR
DURING THE DAY

 DISCHARGED TO SUPPLY HOMES
AT NIGHT OR CLOUDY PERIODS

COMMUNITY LOADS

-  80 HOMES
-  STREET LIGHTING
-  WATER PUMPS
-  CLUBHOUSE
-  ELEVATORS
-  SWIMMING POOL
-  SECURITY & OTHER FACILITIES

FUTURE CLEAN ENERGY – WEG ENERGY LLC



HYDROGEN POWER PLANT
FUTURE EXPANSION



SUPPLEMENTARY POWER FOR 100% RELIABILITY
ZERO EMISSION ENERGY FOR PORT BOSKAMP



FUTURE OPTION:
EXPORT EXCESS ENERGY
TO NATIONAL GRID



TOTAL SOLAR CAPACITY (DC)
1,440 kW
(80 HOMES x 18 kW)



TOTAL SOLAR ENERGY
TO MINI-GRID
5,760 kWh/day
(ANNUAL AVERAGE)



USABLE ENERGY
AFTER STORAGE
5,200 kWh/day



TOTAL COMMUNITY DEMAND
2,800 kWh/day
(80 HOMES x 35 kWh)



SURPLUS AVAILABLE
FOR STORAGE / EXPORT
& COMMUNITY USE
2,400 kWh/day



SUSTAINABLE. RELIABLE.
CLEAN ENERGY FOR
GENERATIONS.



WEG ENERGY LLC
RENEWABLE ENERGY LLC.

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Port Boskamp, Suriname

POWERING A SUSTAINABLE FUTURE



WEG ENERGY
RENEWABLE ENERGY LLC,

CLEAN POWER. REAL INDEPENDENCE.

HYDROGEN TODAY, ENERGY FOREVER.

2 MW to 2.5 MW Hydrogen Power System

MODULAR. SCALABLE. SUSTAINABLE.

WEG ENERGY LLC – 2 MW to 2.5 MW
HYDROGEN POWER SYSTEM

TECHNICAL & COMMERCIAL SUMMARY

A fully integrated, containerized hydrogen-to-power solution that converts water into hydrogen, stores it, and generates clean electricity using advanced fuel cell or hybrid engine technology.



TWO POWERFUL CONFIGURATIONS



FUEL CELL SYSTEM
(Preferred)
2 MW – 2.5 MW Output
~60% Efficiency



HYBRID SYSTEM
Fuel Cells + H₂ Engine Backup
Enhanced Redundancy
& Resilience

This is our modular 1 MW to 3 MW hydrogen power generation solution. Hydrogen fuel is produced on-site in real time, eliminating the need for diesel deliveries and reducing fuel transportation costs. The system is fully scalable, allowing multiple generator units to be deployed as energy demand grows. For example, by installing four generator units, total installed generating capacity can exceed 10 MW.

KEY HIGHLIGHTS

- 2 MW – 2.5 MW**
Scalable Clean Power
- Hydrogen to Power**
Reliable, 24/7 Operation
- Modular 40ft Containerized**
Rapid Deployment
- Low Emissions**
Green & Sustainable
- Hybrid Option Available**
Maximum Reliability
- Microgrid & Grid Ready**
Flexible Applications

ALL-IN-ONE 40-FOOT CONTAINER SOLUTION

HYDROGEN PRODUCTION (ELECTROLYSIS UNIT)



H₂ ENGINE / FUEL CELL MODULE (POWER GENERATION)



SUPER-CAP BATTERY STORAGE



HYDROGEN PRODUCTION CAPACITY

Designed to meet continuous operational demand

2 MW SYSTEM
~150 kg/HOUR
of Hydrogen

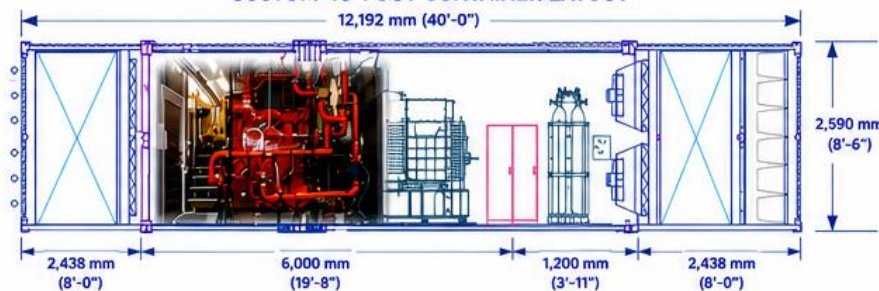


2.5 MW SYSTEM
~187.5 kg/HOUR
of Hydrogen

SYSTEM PERFORMANCE

Power Output	2 MW – 2.5 MW
Electrical Efficiency (Fuel Cell)	~60%
Hydrogen Production	50 kg per 5 Cells (30ft Container)
Hydrogen Requirement (Approx.)	2 MW: ~150 kg/hr 2.5 MW: ~187.5 kg/hr
Energy Requirement	1 kW of energy to produce 1 kg of H ₂ (including ancillary equipment)
Container Size	40 ft (12.19m) Standard ISO
Deployment	Plug & Play – Rapid Deployment
Applications	Microgrid, Remote Sites, Industrial, Resort, Military, Commercial

CUSTOM 40-FOOT CONTAINER LAYOUT



INSIDE THE WHITE CUSTOM HOUSING – H₂ ENGINE MAKING GREEN POWER

IDEAL FOR MULTIPLE APPLICATIONS



REMOTE COMMUNITIES



RESORTS & ESTATES



INDUSTRIAL SITES



MICROGRIDS



MILITARY BASES



DATA CENTERS



CLEAN ENERGY
ZERO EMISSIONS



ENERGY INDEPENDENCE
POWER WHEN YOU NEED IT



BUILT TO PERFORM
RELIABLE. SCALABLE. SUSTAINABLE.



BUILT FOR THE FUTURE
HYDROGEN POWER. REAL POWER.



WEG ENERGY
RENEWABLE ENERGY LLC,

POWERING A
GREENER TOMORROW.

PHASE ONE HYDROGEN POWER FOR CONSTRUCTION AND SITE DEVELOPMENT

WEG Energy — Phase One Hydrogen Power for Construction and Site Development

WEG Energy will begin Phase One at Port Boskamp by deploying an initial 2.6 MW, 100% green hydrogen-powered energy system to provide reliable electricity for early construction, site development, infrastructure, equipment, and temporary facilities. The system will incorporate approximately 3 MW of supercapacitor energy storage to capture excess generation, stabilize the local microgrid, manage peak loads, and provide rapid-response backup power.

WEG Energy also plans to deploy multiple silica-sand thermal energy storage systems capable of storing many megawatt-hours of energy for later use, including conversion to cooling that can be used to cool all the Apartments and Homes, thermal applications, and other useful forms of energy. As construction activity and electrical demand increase, the initial hydrogen generation system can be expanded from 2.6 MW to approximately 5.2 MW. This Phase One installation will form the foundation of WEG Energy's larger integrated clean-energy infrastructure platform, combining hydrogen power generation, advanced energy storage, renewable energy, smart-grid controls, water-treatment systems, and digital monitoring to ultimately support the residential, commercial, industrial, port, airport, data-center, hospitality, and other infrastructure requirements of the Port Boskamp development.

HYDROGEN TO GREEN ELECTRICAL POWER

GREEN ENERGY FROM – WEG ENERGY LLC



CLEAN WATER



CLEAN HYDROGEN

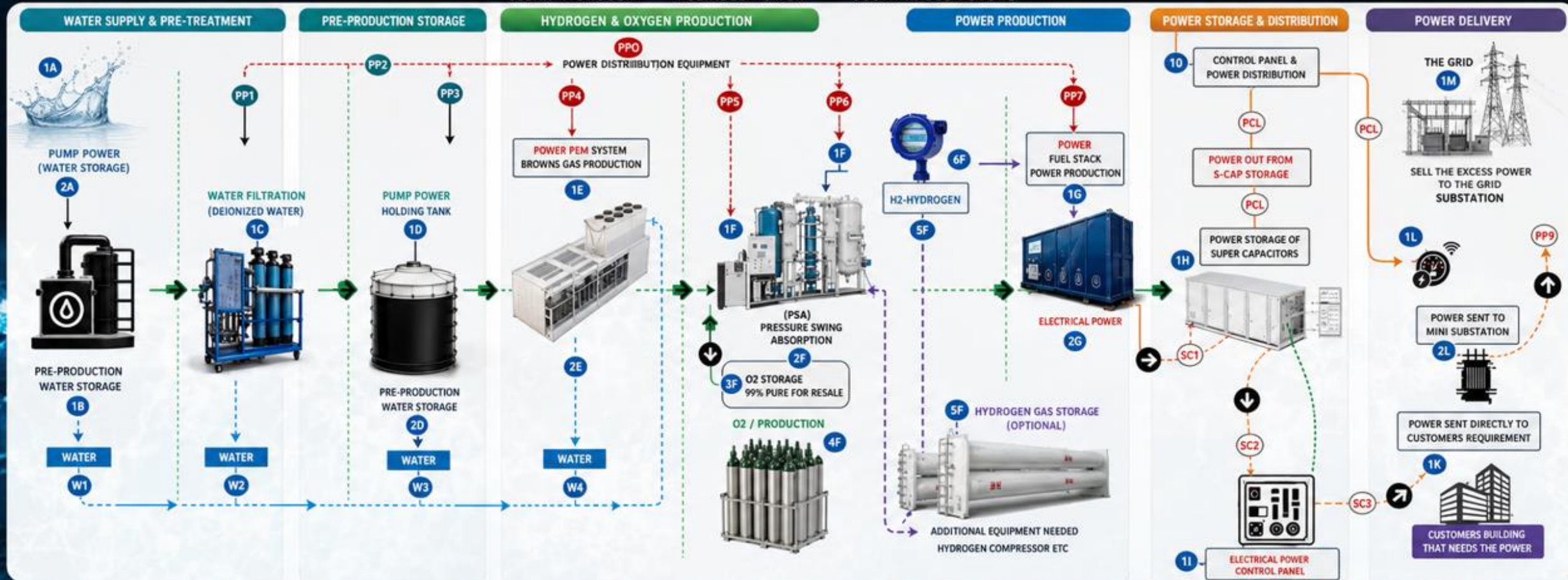


GREEN POWER



SUSTAINABLE FUTURE

CLEAN HYDROGEN • RELIABLE POWER • SUSTAINABLE FUTURE



FLOW LEGEND

- POWER FLOW (DC/AC) ---
- WATER FLOW ---
- HYDROGEN FLOW ---
- OXYGEN FLOW ---
- CONTROL / SIGNAL ---

STEP SUMMARY

- 1A Pump power from water source
- 1B Store raw water
- 1C Filter to deionized water
- 1D Holding tank for purified water

- 2A Water pumped to pre-production
- 2C Purified water to system
- 2D Stored purified water
- 2E Water to PEM system

- 1E PEM System (Brown Gas Production)
- 1F Hydrogen separated via PSA
- 2F PSA System
- 3F Oxygen storage for resale

- 4F O2 Production (99% pure)
- 5F Hydrogen gas storage (optional)
- 6F Hydrogen flow to system
- 1G Fuel Stack Power Production

- 2G Electrical Power Output
- 1H Super Capacitor Storage
- 1I Electrical Power Control Panel
- 1L Power sent to Mini Substation

- 2L Power to Mini Substation
- 1M Power to the Grid
- 1K Power to Customers

BENEFITS

- ✓ 100% Clean Hydrogen
- ✓ Zero Emissions Power Generation
- ✓ Reliable & Scalable Infrastructure
- ✓ Energy Storage for Stability
- ✓ Power to Grid or Direct to Customers
- ✓ Sustainable Future for Generations



INNOVATION



SUSTAINABILITY



RELIABILITY



PERFORMANCE

WEG ENERGY LLC — POWERING A CLEANER TOMORROW

WEG ENERGY
RENEWABLE ENERGY LLC,

1 MW THERMAL OUTPUT – 24 MWH THERMAL STORAGE 200 MT SILICA SAND BATTERY + WASTE HEAT RECOVERY SYSTEM WITH 3 MW SUPERCAPACITOR ENERGY STORAGE (BUFFER BEFORE PORT BOSKAMP)

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1. WASTE HEAT SOURCE 2 x 2.5 MW DIESEL GENERATORS

WASTE HEAT RECOVERY

EXHAUST HEAT RECOVERY
3 – 4 MW THERMAL

JACKET WATER RECOVERY
1 – 2 MW THERMAL

TOTAL AVAILABLE WASTE HEAT
4 – 6 MW THERMAL

2. CHARGING LOOP (HOT AIR) CLOSED AIR CIRCUIT

HOT AIR
650 – 800°C

3. SILICA SAND BATTERY 200 MT SILICA SAND

OPERATING TEMPERATURE
100°C – 800°C

THERMAL STORAGE
24 MWH

VOLUME	MASS
125 m ³	200 MT

4. DISCHARGE LOOP (HOT AIR TO PROCESS)

HOT AIR OUT
550 – 750°C

5. PROCESS HEAT TO SILICA PLANT

HOT AIR TO DRYER
550 – 750°C

MOIST SILICA
SAND IN

DRIED SILICA FLOUR
OUT

- Rotary / Fluidized Bed Dryer
- Silica Flour Production
- Consistent, Clean, High Temperature Heat

6. POWER RECOVERY (OPTIONAL) ORC SYSTEM



0. ELECTRICAL POWER FLOW WITH SUPERCAPACITOR STORAGE

POWER GENERATED
FROM DIESEL GENERATORS
5 MW TOTAL

SYNCHRONIZATION
SWITCHGEAR

3 MW
SUPERCAPACITOR
ENERGY STORAGE

BUFFER • STABILIZE • SUPPORT
HIGH POWER DENSITY
FAST CHARGE / DISCHARGE
MILLIONS OF CYCLES

POWER TO PORT BOSKAMP
TOTAL CONTINUOUS DEMAND
4 MW

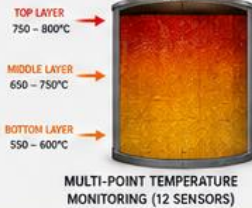
SMOOTH POWER DELIVERY
PEAK SHAVING
VOLTAGE STABILITY
BLACK START SUPPORT

KEY SPECIFICATIONS

Thermal Output (Net) 1 MW
Thermal Storage Capacity 24 MWh
Sand Mass 200 MT
Sand Volume 125 m³
Operating Temperature 100°C – 800°C
Hot Air In (Charging) 650 – 800°C
Hot Air Out (Discharging) 550 – 750°C
Airflow (Charging) 6,000 – 10,000 m³/h
Airflow (Discharging) 6,000 – 10,000 m³/h
Thermal Efficiency (System) 85 – 90% (est.)

ELECTRICAL OUTPUT (TO PORT)
4 MW CONTINUOUS
(BUFFERED BY 3 MW SUPERCAPACITOR)

THERMAL STRATIFICATION (EXAMPLE)



7. SMART CONTROL & MONITORING

PLC & SCADA SYSTEM

- Real-time Monitoring
- Automatic Control
- Alarm Management
- Data Logging
- Remote Access
- Safety Interlocks



MONITORING PARAMETERS

- Sand Temperature (12 point)
- Air Temperature (In/Out)
- Airflow Rate
- Differential Pressure
- System Pressure
- Energy Flow (Heat & Power)
- Equipment Status

8. SYSTEM SUMMARY FLOW



DESIGN NOTES

- All high temperature air, exhaust and heat exchangers made from SS316L / Inconel.
- Insulation rated for 800°C operating temperature.
- Separate charging and discharging air loops prevent contamination.
- System designed for continuous 24/7 operation.

LEGEND (AIR LOOPS)

- HOT AIR (CHARGING)
- HOT AIR (DISCHARGING)
- COOL AIR (RETURN)

TEMPERATURE RANGE

Charging Inlet : 650 – 800°C
Storage Range : 100 – 800°C
Discharge Outlet : 550 – 750°C

KEY BENEFITS



LONG DURATION
HEAT STORAGE
24 MWH



USES ABUNDANT
SILICA SAND
(LOW COST)



CAPTURES 80 – 90%
OF WASTE HEAT



LOW OPERATING
COST



RELIABLE &
MAINTENANCE
FRIENDLY



INCREASES PLANT
EFFICIENCY &
PROFITABILITY



POWER STABILITY
WITH 3 MW
SUPERCAPACITOR

ELECTRICAL POWER BUFFERED BY 3 MW SUPERCAPACITOR – ENSURES STABLE, RELIABLE POWER DELIVERY TO PORT BOSKAMP

Port Boskamp 93 MW Hydrogen Power Plant

100% 
GREEN H₂ FUEL
93MW



WEG ENERGY®

ELECTRICAL POWER-PLANT

MADE FROM WATER



CLEAN ENERGY
Zero Emissions



GREEN HYDROGEN
100% Renewable Fuel



MADE FROM WATER
Sustainable & Abundant



93MW POWER
Reliable & Efficient



A GREENER FUTURE



POWER PLANT PHASE ONE B

Starting with a simple Cycle and the expanding to a Combined cycle Power Plant

The diagram shows WEG Energy's proposed **93 MW hydrogen combined-cycle power system**, beginning with water as the primary feedstock for hydrogen production. Raw water is stored, filtered, and demineralized before entering the hydrogen production unit, where electrolysis separates the water into hydrogen and oxygen. The hydrogen is then further purified and separated, compressed, and stored before being supplied to the hydrogen-capable gas turbine. In **simple-cycle operation**, the turbine burns hydrogen and produces approximately **63 MW of electrical power**. This portion of the plant can operate independently and represents the first stage of generation. Plant controls, PLC/SCADA systems, real-time monitoring, alarms, data logging, cybersecurity, and digital-twin software are shown as part of the overall control architecture, allowing WEG Energy to monitor performance, optimize energy production, identify maintenance requirements, and manage the system continuously.

The second stage converts the plant from simple-cycle operation into a **combined-cycle power plant** by recovering the high-temperature exhaust heat that would otherwise be released from the gas turbine. That exhaust energy is directed through a **Heat Recovery Steam Generator (HRSG)**, where it is used to produce high-pressure steam. The steam then drives a steam turbine generator, producing approximately an additional **30 MW of electricity without requiring a second primary hydrogen combustion process**. The resulting plant output is approximately **63 MW from the hydrogen gas turbine plus 30 MW from heat recovery, for a total combined-cycle generating capacity of about 93 MW**. From there, the electrical output passes through the control and protection systems to the substation, where voltage is transformed to the required transmission or distribution level before power is delivered to Port Boskamp facilities or the larger electrical network. Technically, the plant is rated at **93 MW of power output**; over one hour of continuous full-load operation, it would produce approximately **93 MWh of electrical energy**.



The lower portion of the image provides a closer look at the modular architecture and the relationship between **hydrogen production, power generation, energy storage, and electrical distribution**. It shows containerized hydrogen equipment alongside a generating engine or turbine system identified as being converted to electrical power, as well as a **supercapacitor battery-storage system** that can provide rapid-response energy buffering and help stabilize the electrical output of the plant. A cutaway drawing of the custom 40-foot container illustrates how the hydrogen-production equipment can be packaged within a standardized enclosure, providing a repeatable approach for manufacturing, transportation, installation, maintenance, and future expansion. In a complete installation, the hydrogen generation modules would continuously supply fuel to the power-generation equipment, while the supercapacitor storage system would help manage transient loads, startup requirements, sudden changes in demand, and fluctuations between generation and the electrical network. The generated electricity can then pass through plant switchgear and transformers for distribution to local loads or connection to a larger utility grid. Overall, the image depicts a **modular hydrogen-to-power ecosystem** in which fuel production, hydrogen conditioning, generation, high-speed electrical storage, controls, and grid infrastructure are combined into one expandable facility—providing a pathway toward locally produced hydrogen fuel and lower-carbon electricity while reducing dependence on conventional delivered fossil fuels.



Hydrogen Power Plant

Going green power



93MW Combined-Cycle Hydrogen Power Project

You are viewing WEG Energy's 93-megawatt combined-cycle hydrogen power project.

HOW IT WORKS: 63 MW SIMPLE CYCLE + 30 MW FROM HEAT RECOVERY
= 93 MW TOTAL COMBINED CYCLE



63 MW SIMPLE CYCLE (HYDROGEN FUELED)

In simple cycle mode, the Siemens SGT-800 turbine is fueled by hydrogen to generate 63 MW of reliable, clean electrical power. This is the base output using hydrogen as the primary fuel source.



+30 MW FROM HEAT RECOVERY

The heat (exhaust) from the turbine is captured and sent through a high-efficiency heat recovery process (Heat Recovery System / HRSG). This heat is used to produce additional power through a steam turbine generator.

93 MW COMBINED CYCLE

63 MW (Simple Cycle) + 30 MW (Heat Recovery) = 93 MW Total Electrical Power

Clean. Green. Reliable. Sustainable.

We use hydrogen for the simple cycle. We then capture the heat and put it through a process that allows us to generate the additional 30 MW, giving us a total of 93 MW of electrical power, clean green energy.



How it
all
works

93 MW Net
Combined-
Cycle
Output

STEP-BY-STEP PROCESS FLOW



CONTROL SYSTEM



PLC & SCADA Control



Real-time Monitoring



Alarms & Notifications



Data Logging & Historian



Remote Access & Cyber Security

DIGITAL TWIN SOFTWARE



- ✓ Real-time 3D Visualization
- ✓ Performance Simulation
- ✓ Predictive Maintenance
- ✓ Energy Optimization
- ✓ What-if Analysis
- ✓ Digital Reporting

LEGEND – FLOW INDICATION

- H₂ Hydrogen Flow
- O₂ Oxygen Flow (Byproduct)
- Heat / Steam Flow
- Power Flow
- Water Flow
- Containerized Unit (ISO Standard)
- Electrical Connection

Hydrogen Power Plant

Going green power

90 MW Combined-Cycle Hydrogen Power Project
 You are viewing WEG Energy's 90-megawatt combined-cycle hydrogen power project. **93MW PLUS ELECTRICAL POWER FROM HYDROGEN**

Below are our modular hydrogen fuel production units, supplied by our OEM manufacturing partner. These containerized systems produce green hydrogen in real time, designed for scalable, utility-grade deployment. To the right is the Siemens SGT-800 hydrogen turbine, configured in a combined-cycle arrangement for high-efficiency power generation and continuous baseload capability.

Integrated System Overview

- Hydrogen is produced on site using modular fuel production units
- Hydrogen is compressed and stored in secure storage systems
- Hydrogen is distributed through a controlled fuel management network
- Hydrogen is fed directly to the turbine in real-time
- The turbine generates reliable, high-availability electrical power

This fully integrated system provides clean, firm power for industrial and infrastructure applications.

HYDROGEN ENGINE & GREEN H₂ FUEL MADE ONSITE IN REAL-TIME / POWER OF GREEN SUSTAINABLE FUEL ENERGY INDEPENDENCES (WEG) – WATER ENERGY GROUP – H₂ POWER BLOCK

HYDROGEN H₂

Converted to Electrical Power

Super-Cap Battery Storage

Fuel Production (based on efficiency approximately 3MW of fuel production per hour between the 2 units)

Custom 40 feet container

Hydrogen Engine Inside
 Inside our Green Container Hosting H₂ Engine Making Green Power

Hydrogen Power Plant & Green H₂ Fuel Production

The image presents an integrated **WEG Energy hydrogen power generation concept** designed around producing hydrogen fuel on-site and converting that fuel directly into electrical power. At the center of the system is a modular **90 MW combined-cycle hydrogen power project**, supported by containerized hydrogen-production equipment and associated balance-of-plant infrastructure.

According to the diagram, hydrogen is produced continuously from a water-based process, with the concept emphasizing **real-time hydrogen production rather than dependence on large volumes of transported or conventionally stored fuel**. The hydrogen-production modules are shown in standardized container-style enclosures that can be installed in parallel, allowing the facility to increase production capacity by adding additional units. The graphic indicates a fuel-production design basis of approximately **3 MW of fuel-production power per two units**, while the upper portion illustrates how multiple modules can be integrated into a much larger generating facility. Once produced and conditioned, hydrogen is supplied through the plant's fuel-delivery system to the hydrogen-capable generating equipment, where its chemical energy is converted into mechanical and ultimately electrical energy. The overall arrangement also includes processing vessels, pumps, piping, electrical equipment, transformers, and grid-interconnection infrastructure, illustrating that the concept is intended to operate as a complete power-generation facility rather than simply a stand-alone hydrogen-production system.

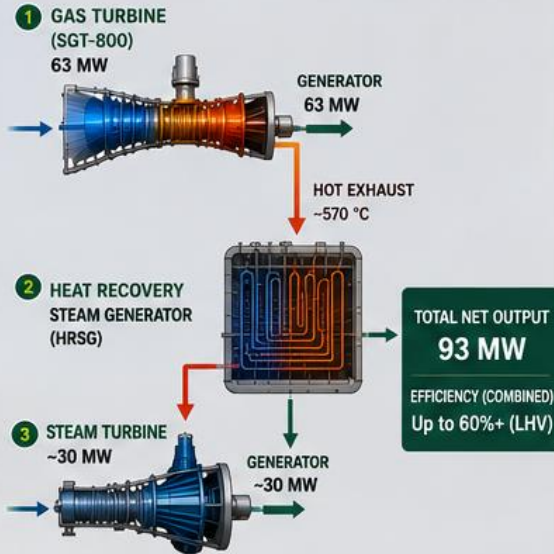
[Back to Web-site Home Page](#)

KEY SPECIFICATIONS

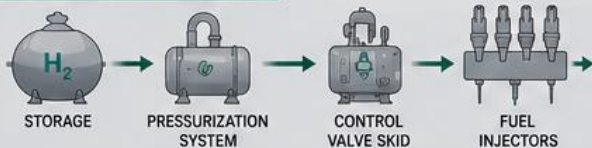
MODEL	SGT-800
FUEL	100% HYDROGEN (H ₂)
OUTPUT POWER (GAS TURBINE)	63 MW (ISO)
EFFICIENCY (SIMPLE CYCLE)	Up to 41%
FIRING TEMPERATURE	Up to 1,430 °C
EXHAUST FLOW	~ 415 kg/s
EXHAUST TEMPERATURE	~ 570 °C
SPEED	6,000 rpm
FREQUENCY	50 / 60 Hz
Zero CO ₂ , Zero SO _x , Zero NO _x (DLN 2.6) Water Vapor Only	



COMBINED CYCLE CONFIGURATION



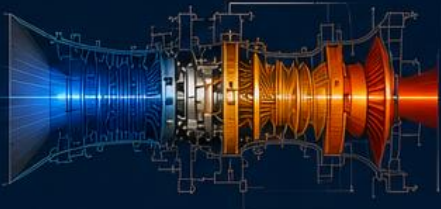
HYDROGEN FUEL SYSTEM



CONTROL & MONITORING



TURBINE IN OPERATION



- ✓ Smooth & Stable Operation
- ✓ High Combustion Efficiency
- ✓ Low Emissions
- ✓ 100% Hydrogen Capability
- ✓ Designed for Hydrogen Combustion

COMBINED CYCLE PLANT OVERVIEW



KEY BENEFITS

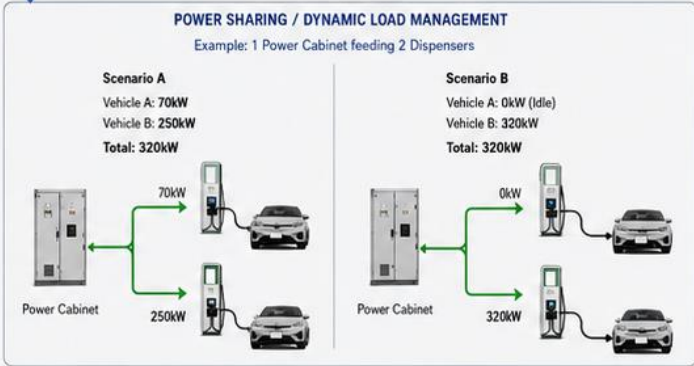
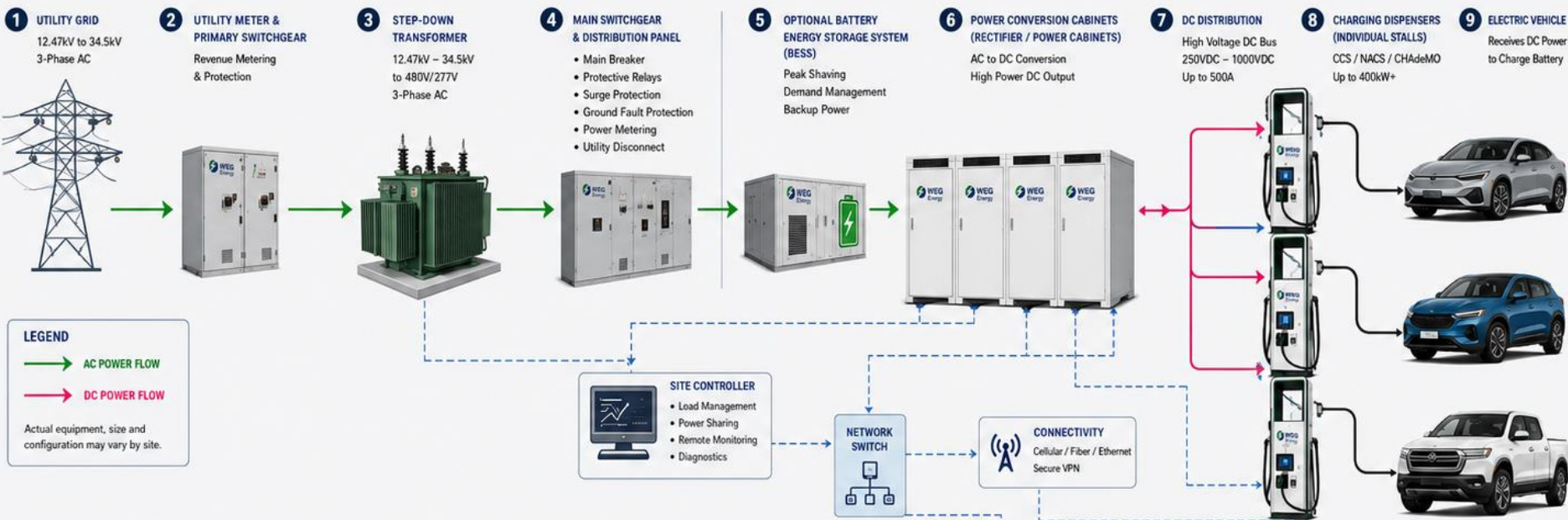
- High Efficiency Up to 60%+ (LHV)
- Low Emissions Zero CO₂, NO_x, SO_x
- 100% Hydrogen Ready Future-Proof Solution
- Compact & Modular Design Fast Installation
- Reliable & Proven Technology Siemens SGT-800 Platform

PERFORMANCE SUMMARY (COMBINED CYCLE)

Gas Turbine Power Output	63 MW
Steam Turbine Power Output	~30 MW
Total Net Power Output	93 MW
Efficiency (Combined Cycle)	Up to 60%+ (LHV)
Fuel	100% Hydrogen (H ₂)
Emissions	Water Vapor Only

WEG ENERGY DC FAST CHARGING STATION – TYPICAL ARCHITECTURE

Power Flow from Utility Grid to Electric Vehicle



TYPICAL ELECTRICAL RATINGS	
Utility Feed Voltage	12.47kV – 34.5kV 3-Phase
Transformer Secondary	480V/277V 3-Phase
Site Power Capacity	1MW – 5MW Typical
DC Output Voltage	250VDC – 1000VDC
Max DC Current	Up to 500A – 600A
Max Charger Power	150kW / 180kW / 350kW / 400kW+
Efficiency (Rectifier)	96% – 98% Typical

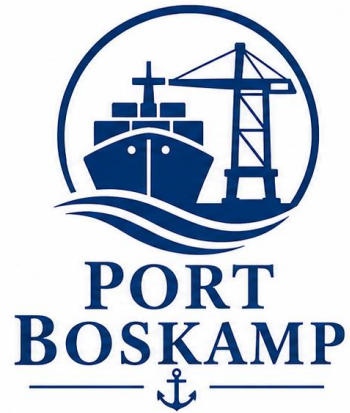
PROTECTIONS & SAFETY SYSTEMS	
⚡ Overcurrent Protection	⚡ Over/Under Voltage Protection
⚡ Ground Fault Protection	⚡ Over Temperature Protection
⚡ Surge Protection	⚡ Fire Detection (Cabinet)
⚡ Arc Fault Detection	⚡ Liquid Cooling Monitoring
⚡ Isolation Monitoring	⚡ Cable Temperature Monitoring
⚡ Emergency Stop	⚡ Remote Diagnostics & Alerts

COMMUNICATIONS & STANDARDS	
🌐 IEC 61851-1 / 2.0.1	🌐 Cellular / 4G / 5G / Fiber
🌐 ISO 15118 (Plug & Charge)	🌐 VPN / TLS Encryption
🌐 CCS (SAE J1772)	🌐 Remote Firmware Update
🌐 NACS (Tesla)	🌐 Time Synchronization (NTP)
🌐 CHAdeMO (Legacy)	🌐 Cybersecurity Protection

TYPICAL POWER FLOW SUMMARY	
1	Utility grid supplies medium voltage (12kV-34kV).
2	Step-down transformer converts to 480V 3-phase AC.
3	Power flows through switchgear and optional BESS.
4	AC power is converted to high voltage DC in power cabinets.
5	DC power is distributed to individual charging dispensers.
6	Dispensers communicate with EV and deliver optimized power.
7	System constantly balances load and monitors safety.

WEG Energy plans to deploy a **comprehensive electric-vehicle charging network throughout Port Boskamp**, with charging stations installed at residential homes as well as strategically located charging hubs across the development. The network will support **electric bicycles, golf carts, electric utility carts, passenger cars, commercial vehicles, electric buses, and specialized electric equipment** used at the airport, port, marina, and industrial areas.

Residential locations can utilize convenient Level 2 charging, while higher-traffic areas will incorporate DC fast-charging stations with intelligent load management and energy-storage support. Integrated with Port Boskamp's solar, supercapacitor storage, and mini-grid infrastructure, the charging network will help reduce fuel consumption, lower emissions, support cleaner transportation, and provide reliable electric mobility throughout the entire development.



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