

P4 ENLATEC^{AG}

MEETING ENERGY DEMANDS WITH CUTTING-EDGE CONSTRUCTION
TECHNOLOGY IN A SMART GRID INFRASTRUCTURE



P4 ENLATEC^{AG}

ABOUT ENLATEC

CHALLENGES

EMPOWERING COMMUNITIES 24/7 ENERGY

SOLAR SYSTEM

OUR COOPERATION PARTNERS

GRID STABILITY

STORAGE

CHARGER

TRIANGLE UNDERMOUNTING SYSTEM

MARKETS

WASTE TO ENERGY

WOOD GASIFICATION SYSTEM/ PYROLYSIS





CHALLENGE:

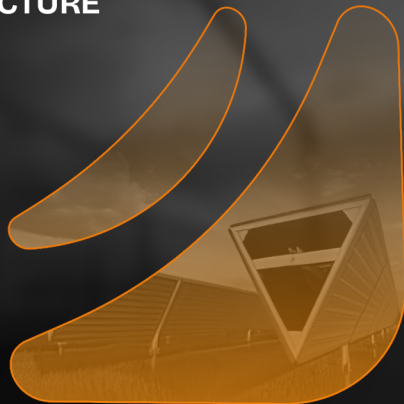
MEETING ENERGY DEMANDS WITH CUTTING-EDGE CONSTRUCTION TECHNOLOGY IN A SMART GRID INFRASTRUCTURE

We drive economic growth through eco-conscious innovation. Our breakthrough lies in our special undermounting construction. The power plants we built are strategically aligned and integrated into a Smart Grid, enabling a local energy community to generate its own power while connecting the private network with the distribution grid.

The mounting system allows for double watt-peak performance on a substructure, preserving usable agricultural land without causing sealing of the agricultural areas with the added advantage of base load capability for a stable energy grid.

95% reduction in land usage compared to conventional solar installations due to the Agrisolar concept

- ✓ Load capability for a stable energy grid
- ✓ Optimal utilization in agriculture (sustainability chain).
- ✓ Special PV coating systems achieve an increased efficiency of 31%.
- ✓ Framework enables the utilization of a significantly broader light spectrum (dawn and dusk).
- ✓



ENSURING ROUND-THE-CLOCK SOLAR POWER AVAILABILITY



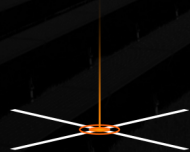
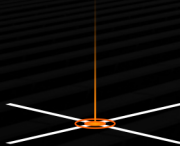
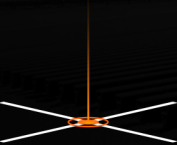
Solar power demand is growing rapidly.



Conventional solar parks face challenges with grid stability.



Revenue losses due to peak-related grid issues.



CHALLENGES WITH PEAK VALUE CALCULATIONS:

- ! High Variability: Peaks are subject to unpredictable weather changes and seasonal variations.
- ! Historical Data Dependence: Predicting peaks relies on historical data, not always accurate for the future.
- ! Location Sensitivity: Peak production varies by installation site and local conditions.
- ! Grid Stability: Fluctuations challenge grid reliability.
- ! Complex Modeling: Precise predictions require complex modeling, introducing uncertainty. Risk: Relying solely on peaks poses energy supply risks, demanding more reliable planning.

P4 LIGHTPOWER ECOSYSTEM EXAMPLE



Asset function and performance 20,000 households for 8 hours equivalent to an average household daytime performance 12 hours = 100% nighttime performance 12 hours = 30% (extrapolated data)



During periods of abundant and cost-effective electricity supply, we purchase power from the grid to recharge our systems.



Utilizing various sources such as gas turbines, biomass, and hydropower, our systems contribute surplus electricity to the grid, capitalizing on elevated global market prices.



Additionally, the residual heat can be utilized to operate a district heating network.



UPS buffering 5 MW approximately 20% of the required capacity



Advantages: 100% availability electricity price guarantee for 10 Years self-sufficient/low maintenance gas costs and turbine amortization in 3 Years



Ice storage with heat pump heating and cooling for individual buildings or residential complexes



ENHANCING ENERGY RELIABILITY

KEY POINTS:



Leveraging cutting-edge precision printing technology.



Capturing the full light spectrum for optimal efficiency.



Eliminating losses during charging and transformation.



Ensuring grid stability through continuous performance.



Calculating energy production based on annual capacity rather than peak.



P4 architecture and technology for:
-Solar field
-Storage
-Charger
-Grit

ADVANCING SOLAR ENERGY PRODUCTION

We determine how many kilowatt-hours (kWh) we can reliably inject into the grid over a specific period, covering days, months, and the entire year. This calculation ensures a consistent and accurate energy contribution.

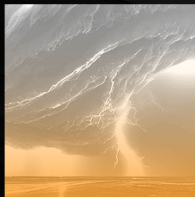
MAXIMIZING EFFICENCY

WHY NON-PEAK CALCULATION IS SUPERIOR:



Enhanced Reliability

Yearly capacity calculations provide more dependable energy projections.



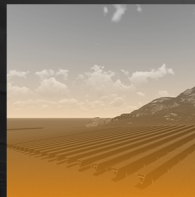
Reduced Weather Risk

Minimizes the impact of unpredictable weather patterns on energy generation.



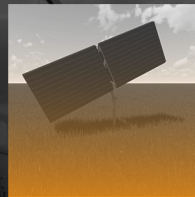
Precise Planning

Annual capacity focuses on long-term energy supply accuracy.



Grid Optimization

Aligns energy production effectively with grid demands, improving stability.



Peak Risk Mitigation

Reduces vulnerability to peak-related supply fluctuations.

WHY CHOOSE US

SOLVING ENERGY MARKET COMPLEXITIES



▶ **ELIMINATING LOSSES:**
Adaptable power plants for varying load conditions

▶ **MARKET CHALLENGE:**
Adapting to liberalized energy markets

▶ **SCALABLE SOLUTIONS:**
Accommodating growing energy requirements

▶ **EU MARKET COMPLEXITY:**
Navigating EU regulations effectively

▶ **SMART GRITT SYSTEMS:**
Balancing fluctuating energy demands cost-effectively

▶ **COST-EFFICIENT BASELOAD:**
Reliable and predictable power generation

▶ **LONG-TERM VIABILITY:**
Sustainable, efficient, cost-effective energy solutions



OUR COOPERATION PARTNERS

Grohe Green Technology

- ✓ 95% reduction in land usage compared to conventional solar installations due to the Agrisolar concept
- ✓ Load capability for a stable energy grid
- ✓ Optimal utilization in agriculture (sustainability chain).
- ✓ Special PV coating systems achieve an increased efficiency of 31%.
- ✓ Framework enables the utilization of a significantly broader light spectrum (dawn and dusk).

Homlok

- ✓ Many years of construction experience on site
- ✓ Experts in structural engineering
- ✓ Technology for waste incineration plants

Our shared demands:

- ✓ Environmental protection and conservation
- ✓ Neutral and negative emission technology
- ✓ Sustainable electricity, heat production, and storage
- ✓ Planning certainty
- ✓ Research and development
- ✓ Support for regional environmental projects

Grohe Green Technology



Homlok

STABILITY AND NETWORK SECURITY



ELIMINATING LOSES

Our system boasts zero losses during charging or transformation processes, ensuring a highly efficient and reliable energy supply.

GRID STABILIZATION

We counteract grid fluctuations and peaks, contributing to overall network stability. Our flexible approach allows us to accommodate a certain degree of variation, promoting grid reliability.

CONTINUOUS PERFORMANCE GUARANTEE

We're unique in offering an unwavering performance guarantee, promising uninterrupted energy supply even during challenging conditions.



CUTTING-EDGE STORAGE SOLUTIONS

ENERGY STORAGE

In our business model, we prioritize energy storage to ensure uninterrupted power supply. We store excess energy during daylight hours, typically 25% to 30% of daily output, for use during periods of low or no sunlight.



CONTAINERIZED BATTERY PACKS

Our innovative approach involves mounting battery packs in standard containers. This approach offers high flexibility and scalability while simplifying the approval process. Mobile installations are also available for rapid deployment and cost-effective operation.

EFFICIENT CHARGING SYSTEMS



» CHARGING PROCESS

To meet energy demands, we continuously charge our storage systems. Energy input into our system is primarily via gas generators, although it can also be sourced from the grid based on factors like time, price, and availability.

» GENERATOR SPECIFICATIONS

Our gas generators boast an impressive capacity of 4 MW per unit. Each generator fits into a standard container, with electricity being transferred into the battery packs at low voltage.



INNOVATIVE ENERGY STORAGE

CUTTING-EDGE ENERGY STORAGE SOLUTIONS



01

TECHNOLOGY OVERVIEW

Innovative Nano-Pastes: Our solar/light power plants incorporate advanced nano-pastes with multi-functional coatings, produced using a modified screen printing process, boosting solar panel efficiency.

02

WHY NO PEAK CALCULATION

Industry Challenges: Traditional solar setups, reliant on peak calculations, risk significant revenue losses (up to 15%) due to unpredictable grid instability.

03

TECHNOLOGY OVERVIEW

Annual Grid Capacity: We base our calculations on the grid operator's annual capacity, ensuring consistent grid supply year-round.

Precise Timing: We determine safe injection intervals for kWh into the grid, ensuring reliability on daily, monthly, and yearly scales.

04

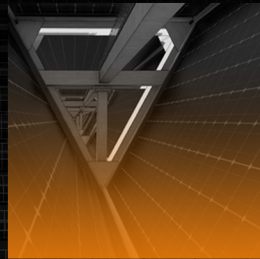
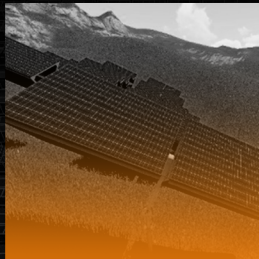
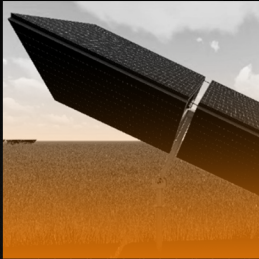
TECHNICAL STRUCTURE OF OUR PLANTS

Optimized Design: Our solar parks and equipment are engineered for direct grid feed, guaranteeing stability and eliminating overloads.

OUR CONSTRUCTION



The P4 MFR 2023-1 multifunctional rack developed by P4 is ready for the future. The multifunctional rack supports solar modules, Nano Light Power Modules, collect water, provide shade, protect against hail, and can be oriented and tilted in all directions. This allows us to build from the plains over hilly terrain into the mountains. With this arrangement, we generate electricity in the smallest of spaces and protect the environment.



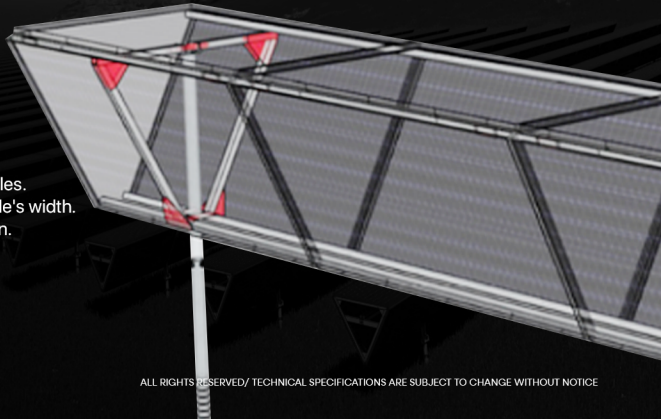
MOUNTING SYSTEM



- ✓ Double Watt Peak performance on substructure, preserving agricultural land.
- ✓ Our design: 2,800 m² vs. conventional 13,000 m² for
- ✓ 1 MW, enabling extra agricultural use.
- ✓ Adjustable tilt angles (up to 30 degrees) for mountainous or hilly terrain.
- ✓ 75% cable savings due to space efficiency, minimizing costs and eliminating the need for underground string cables.

FRAME

- ✓ Universal compatibility with standard-sized solar modules.
- ✓ Unique triangular frame: roof module and two inclined side modules.
- ✓ Custom manufacturing adjusts dimensions, optimizing the triangle's width.
- ✓ Integrated rotation and tilt axes for precise alignment in any terrain.





» FINANCIAL OUTLOOK

Our financial projections indicate strong revenue growth driven by the expanding project portfolio, with an estimated annual revenue increase of 20-30% over the next five years.

With cost management and strategic investment, we anticipate achieving a steady profit margin of 15-20% within the first three years of operation, positioning us for long-term financial stability and success.

**6-7 Years
ROI***

Approximately for 6-7 years for a baseload-capable power plant (Subject to approvals)

*depending on the country and project

**4.8 GW
at €4.3B***

Total project capacity currently at 4.8 gigawatts with a total volume of 4.3 billion euros

*depending on the country

**15-20%
PROFIT MARGIN**

**20-30%
ANNUAL REVENUE**

OUR MARKETS



- » Maximizing direct grid feed for stability"
- » Our approach: "Optimized capacity-based sizing"
- » Locations: "Projects across Europe: Albania, Kosovo, France, Croatia, Hungary, Montenegro, Poland"
- » Unique features: "Continuous performance guarantee"
- » Ongoing expansion efforts into neighbouring countries



SOLAR MODULES



Solar modules with specialized coatings for dirt repellency and Lotus effect.



Collaboration limited to A-rated or Tier-1 suppliers, ensuring top quality and financial stability.



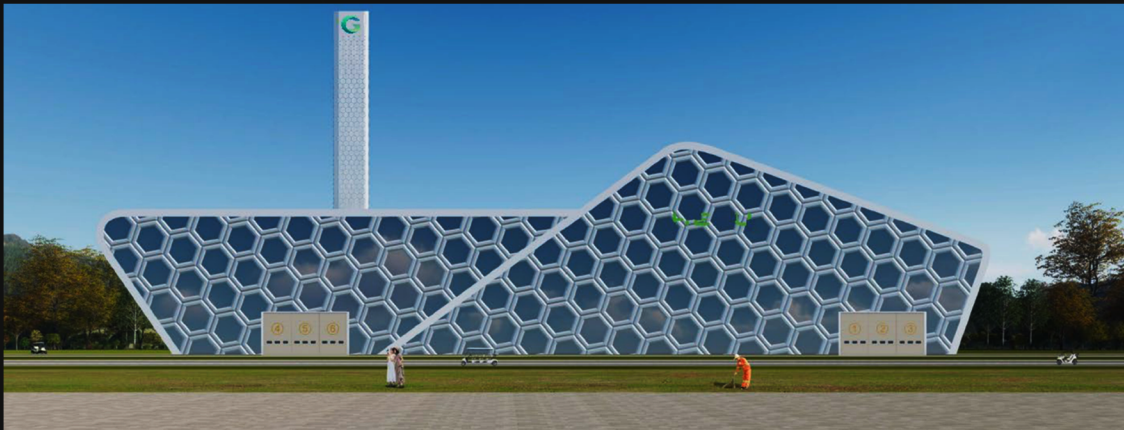
Consistent use of glass-glass modules for a 30-year warranty and Munich RE insurance.



Latest, highly efficient coating technologies for optimal current and future performance.

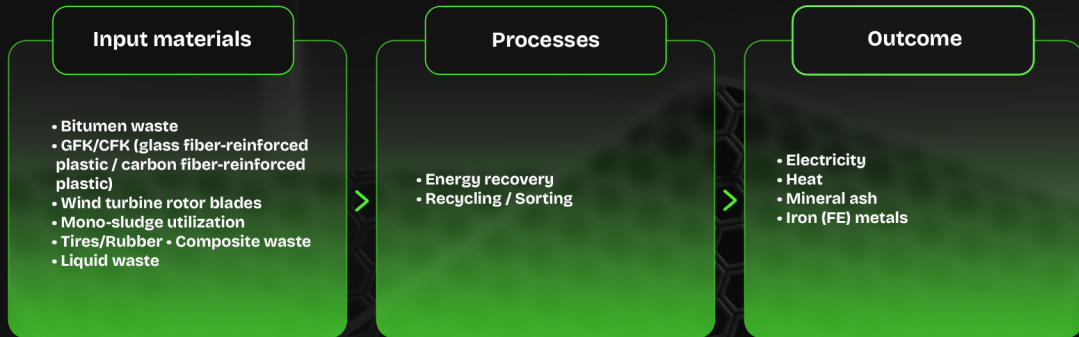
WASTE TO ENERGY

GREEN G - WASTE TO ENERGY



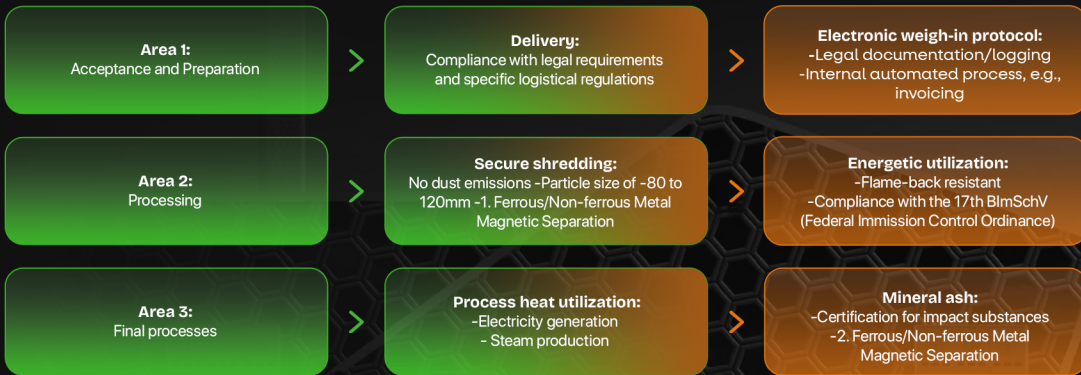
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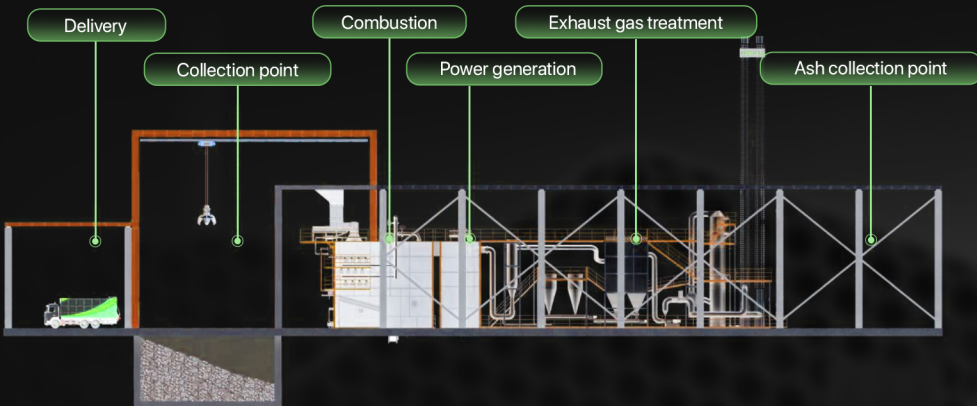


UTILIZATION PROCESS - END PRODUCTS

Utilization process - Compliance with the 17th BImSchV (Federal Immission Control Ordinance)



SCHEMATIC REPRESENTATION



AFRICA

Unique Decentralized Units

SUSTAINABLE DEVELOPMENT & BIOMASS: A GREEN TRANSITION IN AFRICA



Crucial for societal prosperity, economic growth, and climate change mitigation.



Shift from fossil fuels to renewable resources is essential.







Biomass: Potential replacement for fossil fuels in heat, power, and chemical feedstocks.

AGRICULTURAL WASTE BIOMASS AND IMPACT

Key Points

- Promising bioresource: Agricultural waste.
- Reasons: Reasonable cost,
Abundant availability,
Easy collection,
Short-distance transportation.
- Over 990 million tons of agri-waste generated annually.
- Lignocellulosic residues preferred for energy production due to renewable nature.
- Environmental impact: Addresses strict legislation, combats climate change, meets global needs.
- Conclusion: Biomass, especially agri-waste, aligns with environmental goals and addresses climate change concerns.

Importance for Africa:

-  Local Economic Development.
-  Energy Access Improvement.
-  Reduced Reliance on Imported Fuels.
-  Climate Resilience and Adaptability to Local Conditions



distribution of
agri-waste sources

WOOD GASIFICATION SYSTEM: GENERAL OVERVIEW

Applications

- » Agriculture and forestry enterprises
- » Industrial areas
- » Hotel and restaurant enterprises
- » District heating grid operators for multiple buildings
- » Residential areas
- » Public buildings
- » Sports and swimming facilities

Operational Features

- » High consistent wood gas quality from inferior wood chips due to multi-stage gasification.
- » No wet scrubbing required for gas cleaning.
- » High availability: Over 8,000 hours per year.



WOOD GASIFICATION SYSTEM: GENERAL OVERVIEW

Design and Operation

- » Maintenance-friendly design
- » Fully automatic operation

Fuel Flexibility

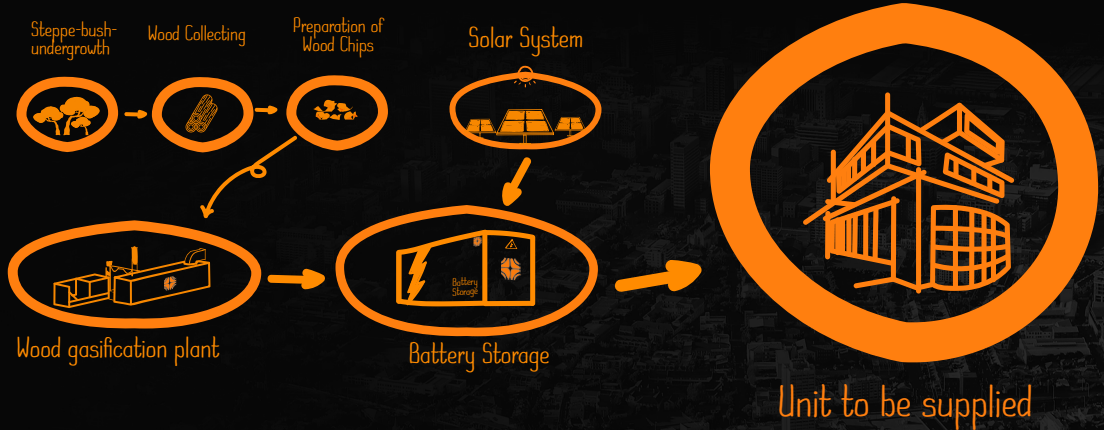
- » High consistent wood gas quality from inferior wood chips due to multi-stage gasification
- » No wet scrubbing required for gas cleaning
- » High availability: Over 8,000 hours per year

Ash Management

- » Ash post-combustion in the reactor results in ash containing only 0.5-1.5%
- » Automatic discharge of ash grate
- » Automatic removal of contaminants like stones or metals within permitted chip size



TECHNICAL PROCESS OVERVIEW

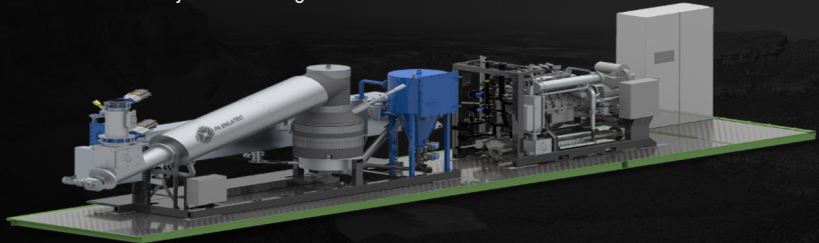


BENEFITS AND OVERVIEW OF WOOD-TO-GASIFICATION-CHP IN AFRICA

Wood-to-Gasification-CHP: Powering Africa Sustainably

Key Points

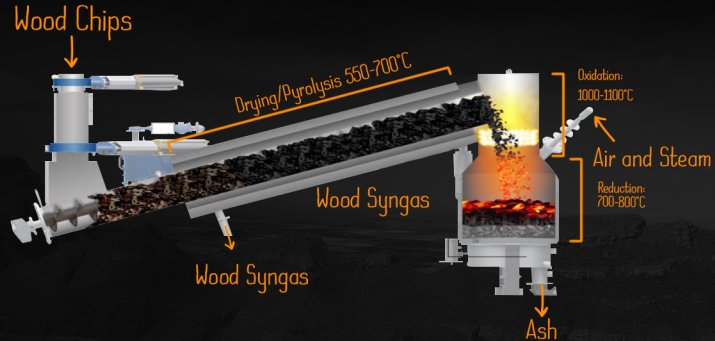
- » Converts wood into gas for electricity and heat generation.
- » Reduces Africa's dependence on fossil fuels, enhancing energy security.
Abundant wood resources support local economies and job creation.
- » Mitigates climate change by reducing greenhouse gas emissions.
- » Feasible and cost-effective solution demonstrated by successful global implementations.



WOOD GASIFICATION PROCESS AND TECHNOLOGY

Key Points

- » Wood gasification transforms biomass into producer gas for power generation.
- » Renewed interest in Africa for rural electrification and improved energy access.
- » Challenges and opportunities in sustainable biomass supply for gasification.
- » Technology features multi-stage gasification for tar-free gas production.
- » Allows for combined heat and power (CHP) generation, ensuring low emissions and high reliability



PYROLYSIS AND ADVANTAGES OF WOOD-FIRED POWER PLANT

Key Points

- » Pyrolysis gas undergoes oxidation at 1050°C, preventing tar compounds in the product gas.
- » Reduction stage ensures discharge of foreign matter like stones or nails.
- » Constant temperature control minimizes glass ash formation for high operational reliability.
- » Allows use in internal combustion engines without complex purification.
- » Low maintenance – required every 14 days, with weekly fuel bunker charging.
- » Adjustable size, operates without personnel, and uses local wood, reducing costs.



RENEWABLE ENERGY INTEGRATION: A HOLISTIC APPROACH

Solar Energy:

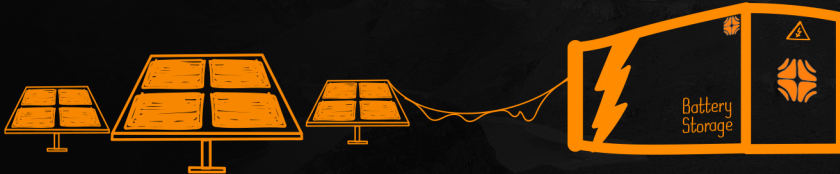
Harness sunlight for clean and sustainable power.
Photovoltaic panels on-site for on-demand electricity.
Reduced reliance on conventional grid sources.

Battery Storage:

Store excess energy for uninterrupted supply.
Enhance system reliability and flexibility.
Optimize energy usage, especially during non-solar hours.

Generator:

Backup power source for continuous operation.
Ensures reliability in case of prolonged low sunlight or high energy demand.
Strategic integration for a well-balanced energy mix.



SYSTEM SYNERGY IN ACTION

Optimal Energy Mix:

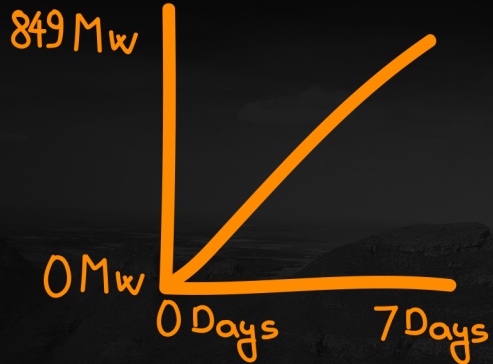
- Seamless integration of solar, battery, and generator.
- Balanced energy production and consumption.
- Adaptability to varying energy demands.

Energy Independence

- Reduced reliance on external power sources.
- Sustainable and eco-friendly energy generation.
- Enhanced operational autonomy

Cost Efficiency:

- Maximize utilization of solar energy.
- Reduced energy bills through efficient storage and backup.
- Long-term cost savings with minimal environmental impact.





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Thank you for considering our innovative solution for
enhanced solar power reliability.