Unveiling MASWES™-1/10: A Milestone in Autonomous Renewable Energy Solutions

In June 2024, the renewable energy sector witnessed a significant milestone - the testing of MASWES™-1/10, the smallest station in terms of power and form factor from the MASWES™ line. This prototype power plant was tested on the shop floor, marking a key step in the development of mobile autonomous solar-wind electrical stations. As the world moves towards sustainable energy solutions, the successful launch and testing of MASWES™-1/10 holds promising implications for the future of energy generation and distribution.

Technical Marvel: Specifications and Capabilities

MASWES™-1/10 is designed to operate both connected to the central grid for import or export of energy and purely autonomously, thanks to its advanced battery system. Here are some of the key technical characteristics of this innovative power plant:

- **Rated Power:** 20.5 kW
- **Battery Capacity:** 41 kWh
- **Solar Panel Area:** 62 m²
- **Height of Wind Turbine Towers:** 7 m and 12.1 m
- **Required Site Area:** 200 m²
- **Electric Vehicle Charging:** Capable of simultaneously charging up to two electric vehicles, either electric cars or agriculture tractors.
- **Weight:** Up to 6.7 tons

These features make MASWES™-1/10 a versatile and powerful solution for various energy needs, capable of functioning independently or as part of a larger grid network.

The Testing Environment: Challenges and Achievements

The assembly shop, located in a settlement surrounded by mountains and hills in a river valley, provided a unique environment for testing. The area, encircled by trees, experienced windless conditions for most of the testing period, presenting a significant challenge for evaluating the wind turbines. Despite this, the testing focused on the autonomous operation of the station, without connection to the central grid.

During the tests, the team worked on debugging the interactions between various components of the station, such as the battery, inverters, and the solar field. This fixing was crucial to ensure the seamless operation of MASWES™-1/10 in real-world conditions.

A Historic Milestone: First Autonomous Charging of an Electric Vehicle

One of the most significant achievements during the testing phase was the successful charging of a conventional electric car from the autonomous hybrid charging and generating station - MASWES™-1/10. This event, which took place on Monday evening, June 10, 2024, is believed to be the first of its kind in the world. The ability to charge an electric vehicle autonomously highlights the potential of MASWES™-1/10 to support the growing demand for renewable energy solutions.

Demonstrating Versatility and Reliability

The testing also included the simultaneous operation of various devices to demonstrate the station's versatility and reliability. The team successfully launched a 3 kW coffee machine with 220V and a 2 kW oil station with 380V. This demonstrated the station's capability to power its own installation and dismantling in autonomous mode, even in the absence of infrastructure and when one of the generation components is not operational due to improper weather conditions.

The final tests culminated in the successful simultaneous charging of two electric vehicles, each requiring approximately 7 kW. This achievement was particularly notable as it occurred under almost constant calm conditions, relying solely on the solar-generated energy.

Proving the Power Generation Autonomy

The autonomous operation of MASWES™-1/10 during the tests proved its ability to function independently of a centralized power grid. In scenarios where there is a lack of sun or wind, the station's batteries can supply the necessary power to consumers. Conversely, when there is no electricity consumption, the batteries quickly recharge to their full capacity. This dynamic capability ensures that MASWES™-1/10 can provide a stable and reliable power supply, even in remote or off-grid locations.

Future Testing and Potential

While the initial tests were highly successful, they also highlighted the need for further evaluation of the station's wind turbines capabilities. The windless conditions during the testing period limited the ability to fully assess the power generation potential of the wind turbines. Future tests will focus on this aspect to ensure that MASWES™-1/10 can harness both solar and wind energy effectively.

Summary

The premiere launch and testing of MASWES™-1/10 marks a significant step forward in the development of autonomous renewable energy solutions. This innovative power plant demonstrated its ability to operate independently, providing reliable and sustainable energy in challenging conditions. As further testing and development continue, MASWES™-1/10 holds the promise of transforming how we generate and distribute energy, paving the way for a greener and more sustainable future.

The successful testing of MASWES™-1/10 is not just a technical achievement, but a testament to the potential of renewable energy solutions to meet the growing energy demands of our world. As we continue to innovate and improve these technologies, the future of energy looks brighter than ever.

MASWES™. To make the world electricity generation greener, cheaper, and decentralized.