# MASWES Power Plant Overview

Renewable energy is increasingly needed to combat climate change and promote sustainable technological progress. MASWES™ (Mobile Autonomous Solar-Wind Electrical Station) is one promising technology in this area that is intended to provide reliable and long-lasting power in remote regions or during emergencies. Let's take a look at MASWES™'s features and benefits, as well as some numerical specifications.

Self-contained renewable energy systems MASWES™ generate and store power using solar panels, wind turbines, and batteries with inverters. The system works autonomously, even without a grid connection or fuel source. The system can generate up to 39 kW of power from solar panels and up to 20 kW from wind turbines. Both energy sources can be used simultaneously to fill batteries or directly power devices.

Could you ever imagine a full-fledged alternative energy power station meticulously packed into an ISO container? Probably not. And that is why this project is worth your attention. ISO containers can be transported by sea, road, railway, and even air. The MASWES™'s station design allows one to be fully packed in a single ISO container and transported to any destination worldwide without limits. Besides, a 40ft (12 meters) standard ISO container is an object whose transportation is easy to negotiate with any logistics company. Once delivered to the destination on board a container truck with a tilt or side-loader, the whole station is assembled by two crewmembers the same day. Let’s unpack the offshore container and see what’s inside. We’ll see two horizontal-axis 14/14 meters height wind turbines and 165 square meters of photovoltaic modules - the two energy sources that will work simultaneously and produce up to 59 kW of power altogether.

The container will also have a compartment for storing solar panels and wind turbines, rechargeable batteries with inverters, three anti-vandal charging points for equipment with standard connectors, hydraulic mechanisms and/or electric motors, screw piles, an air conditioner, a built-in computer for system monitoring, a gas fire extinguishing system, security and fire alarms, video surveillance, and finally a lightning protection system. Speaking in a non-engineering language - you will get a pocket power plant that is as easy to assemble as the Lego constructor.

MASWES™ Key Features

- Easy transportability - one of the top features and a giant leap towards the profitability of this station and the ease of installing it wherever an owner wants;
- Silent Operation - Unlike other sources of power, wind, and especially solar power stations produce almost no noise. Such an option would be of high potential for hotel businesses to power entire arrays of houses and residences;
- Autonomy - MASWES™ is designed to function without the need for a grid connection or a fuel supply. The system produces and stores its own renewable electricity. Integration of both solar panels and wind turbines optimizes power production and provides flexibility when there is no wind or sunlight. Optimal weather conditions allow them to generate up to 420 kWh of electricity per day;
- Operational convenience allows nonprofessionals to use it easily;
- Cost-Effectiveness - savvy green energy stations like MASWES™ are a good investment in the long run and justify investments quite fast;
- Low maintenance cost - when compared to fossil fuel energy and atomic energy, green energy does not require regular maintenance investments;
- Reliability - sun and wind just never fully disappear. At least one always powers the station to

charge the batteries. During a long-lasting outage, this energy is fully renewable and free.
- Surveillance system allows for maintaining property safety and security.

MASWES™ technology work and performance.

As the power station that transforms wind and solar energy, MASWES™ 's unique design allows it to do so effectively. The maximum ratio between equipment, space used, and energy output is achieved thanks to the ISO container basis, which, when unfolded, has three different operational levels. The lowest is a foundation with screw piles drilled into the ground to stabilize the system even under severe weather conditions. The middle level works as a compartment for the electrical equipment. The third upper level consists of the mounted wind turbines and the solar panels.

The station's positioning is integral to guaranteeing the highest energy output. The high-potential location should be situated in an area well illuminated by the sun during the whole light day and where wind turbines would be exposed to wind all day long. The solar panels should be tilted toward the sun for maximum output. 165 $m^2$ of bifacial photovoltaic modules and sun reflectors allow for collecting even those sun rays that, under different conditions, would be lost. Rechargeable batteries allow for storing generated energy and using it on demand.

Advantages of Eco-Friendly MASWES™ Energy

People in the twenty-first century are already aware of the benefits of green energy. This energy does not contribute to climate change and alleviates concerns about the general depletion of finite fossil fuels. Green energy that is affordable also fits in with global efforts aimed at creating a cleaner and greener future. So, what are the advantages of solar and wind energy, and why is it more environmentally friendly than conventional energy sources?

Eco-Friendly - Green energy is harmless to the environment and doesn't produce CO2 emissions, aka greenhouse gases, which contribute to global warming and climate change. MASWES™ energy, on the contrary, causes no emissions, lowering the carbon impact of energy production.

Cost-Effective - Renewable energy tech costs drop yearly, making this renewable energy field even more profitable. Green energy is now more accessible than ever before, thanks to cost reductions and technological advancements. Besides, the operational costs of green energy power stations are much lower than those of conventional energy sources, making it a more lucrative long-term solution.

Unlimited Potential - Renewable energy sources are endless and don't deplete, contrary to traditional energy sources such as coal, oil, and gas, which are finite resources that industries will ultimately consume. Green energy is a consistent one that builds legacies for future generations.

Creation of Jobs - The transition to green energy will result in numerous employment opportunities. Millions of people are already employed in the renewable energy field worldwide, which is expected to grow as the industry expands.

Energy Self-Sufficiency - One of the most desired advantages of green energy is self-sufficiency, which reduces reliance on imported fuels. It improves energy security and protects businesses from revenue loss when conventional energy resources run out, and transportation becomes too difficult or costly.

As the world shifts toward more sustainable and ecologically friendly energy sources, it is clear that renewable energy is the way of the future. With the growing demand for clean energy, it is critical to investigate new technologies that can aid in green energy generation. The MASWES™ modular station provides a one-of-a-kind solution to this issue.

Global energy demands are shifting toward more environmentally favorable and sustainable renewable energy sources. It is critical to investigate new green energy methods. The MASWES™

modular stations provide a unique solution to this issue because they are compact, practical, and portable, as well as relatively simple to install. The station's modular design also allows it to be easily extended or upgraded to meet the increasing demand for energy use. MASWES™, as one of only a few successful initiatives of its kind, is a true game changer in the green energy production realities.