


The KSTAR logo is displayed in a bold, white, sans-serif font against a clear blue sky background.

Powering the Future

KSTAR Case Study

A photograph of a solar power plant facility. The image shows a long, low-profile building with a corrugated metal roof. In the foreground, there are several large, grey metal cabinets or enclosures, each with the KSTAR logo on top. The ground is dry and dusty, and the sky is clear blue. A white curved line graphic is overlaid on the bottom left of the image.

Ensuring Energy Resilience
in Ukraine:
KSTAR's 5MW Solar Power Solution



Client Profile

BlockMaster Ukraine is a leading EPC company focused on renewable energy, specializing in industrial construction since 1975. The company has increasingly concentrated on solar energy projects, playing a critical role in Ukraine's energy transition. In a country facing ongoing conflict, BlockMaster's solar initiatives are vital to ensuring energy security. For this project, BlockMaster chose KSTAR for its reliability in providing advanced inverter solutions designed to maintain stable power generation, even in volatile environments. KSTAR's extensive experience in grid integration and energy resilience made it the ideal partner for this mission-critical project.

Challenge:

The project faced significant obstacles due to the volatile environment caused by the ongoing conflict in Ukraine. The Nikolaev region, where the solar power system was being installed, had suffered from grid instability and unpredictable conditions. This created several technical and operational challenges:

- **Grid instability:** The fluctuating local grid required inverters that could precisely regulate frequency and voltage. The system had to manage:
 - **Frequency control** with a 0.1 Hz discreteness
 - **Voltage control** with a 1-volt discreteness
- **Logistical difficulties:** Delivering equipment safely amidst the war presented timing and security challenges, requiring rapid deployment and flexibility.
- **Operational support:** The project owners needed assurance that the system could be operated and maintained efficiently, despite the local conflict and uncertainties.



Project Name:	Ukraine Solar Power Replacement
Country:	Ukraine
Year/Month:	September 2024
Project Scale:	5 MW
Product Used:	Turnkey Container Inverter System Solution GSM5000D-MV
Application:	On-grid

Solution:

KSTAR delivered its Turnkey Container Inverter System Solution GSM5000D-MV, designed to withstand the unique operational challenges of a conflict zone. The system provided:

- Precise frequency and voltage regulation, ensuring the system remained stable despite local grid fluctuations
- Seamless on-grid integration, which was critical for maintaining power supply consistency in the region
- Robust inverter design, capable of handling operational demands even in high-risk environments



Service Support: Expertise in Operation and Maintenance

KSTAR's involvement extended far beyond the delivery of hardware. The KSTAR service team played a key role in ensuring the system's successful operation and long-term maintenance. Given the complexities of the region, KSTAR deployed expert support to assist BlockMaster in overcoming the following challenges:

- **Remote system monitoring and troubleshooting:**

KSTAR's technical team provided 24/7 remote support to monitor the performance of the system, offering immediate troubleshooting and adjustments when needed.

- **On-site expertise and maintenance:**

Despite the logistical and safety challenges posed by the war, KSTAR's service engineers visited the site to ensure smooth installation and provide hands-on training for the local team, ensuring they were well-equipped to manage the system independently.

- **Proactive maintenance schedules:**

With the unpredictable nature of the environment, KSTAR helped develop a proactive maintenance plan, ensuring the system would remain operational without interruption. Their expertise enabled the project owner to focus on energy generation, confident that the system's upkeep was being managed by industry experts.

Results:

Despite the conflict-related challenges, the project successfully delivered a stable and reliable 5 MW solar energy system to the Nikolaev region. Key outcomes included:

- **Continuous energy stability:**

The GSM5000D-MV inverters maintained reliable operation despite local grid fluctuations.

- **Uninterrupted operation:**

Thanks to KSTAR's ongoing support, the system experienced no major downtimes, contributing to energy resilience in the area.

- **Enhanced local energy security:**

Reducing dependence on less reliable energy sources during a time of crisis.

Conclusion:

In partnership with BlockMaster Ukraine, KSTAR successfully implemented a solar power system that met the urgent energy needs of a war-affected region. Through precise technical solutions and proactive service support, KSTAR ensured that the project could provide stable energy to the region, even under extraordinary circumstances. This case highlights the importance of tailored renewable energy solutions and expert service teams in addressing energy challenges in conflict zones.

