

# KSTAR Case Study

**UKRAINE**

Milking the Sun: A Ukrainian Farm's  
Transition to Uninterruptible Power

with KSTAR BluePluse Energy Storage Solutions



## Background

In regions with unstable power grids, businesses relying on critical equipment face significant operational risks. For a milk farm in the Chernihivskiy region of Ukraine, uninterrupted power is essential to maintain refrigeration, milking machines, pumps, and other vital systems. To address this challenge, the farm partnered with KSTAR to implement a robust energy storage solution, ensuring reliable backup power and operational continuity.

## Client Profile

The farm, located in Ukraine's Chernihivskiy region, operates around the clock to maintain milk production and livestock care. Its critical systems include industrial refrigerators, milking machines, water pumps, and feed processing equipment—all of which demand a stable power supply. Prior to KSTAR's intervention, the farm faced three major.

## Challenges

First, unreliable grid power led to unexpected shutdowns, risking milk spoilage and disrupting milking schedules. Second, the simultaneous operation of high-power equipment created demand peaks that strained the existing electrical infrastructure. Finally, an initial attempt at installing an energy storage system encountered technical setbacks, including software malfunctions and improper hardware configuration, which reduced system efficiency.

# Project Challenges and Technical Solutions

## System Synchronization and Scalability

A critical technical challenge involved coordinating multiple energy storage components to function as a unified system. The solution required seamless integration between 200kW of inverter capacity (provided by 4 KAC50DP units) and 394kWh of battery storage (from two BC197DE cabinets). This power-to-capacity ratio was carefully designed to meet both the farm's instantaneous power demands and its extended backup requirements.

### The EMS performed three crucial functions:

first, it synchronized the four inverters to work in parallel, ensuring stable 200kW output capacity; second, it optimally managed the charge / discharge cycles of the 394kWh battery bank; and third, it enabled future expansion by maintaining communication protocols for additional units.

## Implementation: A Phased Approach

The project was executed in two key phases to minimize downtime and ensure a smooth transition.

### Phase 1: Initial Deployment and Troubleshooting

The first phase involved installing two 100kW/197kWh battery cabinets, carried out by KSTAR's local partner, MYENERGO. However, post-installation testing revealed software misconfigurations and unbalanced battery cells, which reduced efficiency. KSTAR's engineers promptly addressed these issues by updating the firmware and recalibrating the battery management system (BMS) to optimize charge and discharge cycles.

<b>Project Name :</b>	Dairy Farm in Tarasa Shevchenka
<b>Country :</b>	Ukraine
<b>Year:</b>	2025
<b>Project Scale:</b>	200kW / 394kWh
<b>Product Used:</b>	4 × KAC50DP inverters 2 × BC197DE battery cabinets 1 × STS250D unit
<b>Configuration:</b>	Parallel ESS with centralized EMS
<b>Application:</b>	Self-consumption with backup power



## Phase 2: System Expansion and Optimization

As the farm's energy needs grew, KSTAR integrated an additional STS250D unit to increase capacity and redundancy. This expansion was completed without disrupting farm operations, thanks to careful planning and real-time system reconfiguration. The final setup included four KAC50DP inverters for power conversion, two BC197DE battery cabinets for energy storage, and the STS250D unit for load balancing—creating a resilient and scalable energy solution.

**Remote Monitoring & Predictive Maintenance:** Advanced cloud-based monitoring allows real-time tracking of energy flow, system health, and performance optimization, enabling proactive issue resolution to prevent downtime.

## Results and Operational Impact

The implementation of KSTAR's energy storage system delivered immediate and measurable benefits. The farm achieved zero downtime in critical operations, eliminating milk spoilage and equipment damage caused by power fluctuations. Additionally, by maximizing self-consumption of stored energy, the farm reduced its reliance on the grid, cutting energy costs by 30%. The system's modular design also allows for future expansion, ensuring the farm can scale its energy capacity as operations grow.

## Customer Testimonial

*"With KSTAR solutions, we reduced grid consumption and even cut bills for reactive power thanks to advanced compensation features. Automated diesel generator control further minimized fuel use and runtime during outages. The result: uninterrupted production and reliable energy supply — all without increasing operating costs."*

— Farm Manager

## Conclusion

This case study highlights KSTAR's expertise in delivering tailored energy storage solutions for agricultural applications. By addressing installation challenges, optimizing system performance, and ensuring scalability, KSTAR provided the farm with a future-proof power backup solution that enhances both reliability and cost efficiency.

For businesses seeking resilient energy solutions, KSTAR offers cutting-edge technology backed by expert support.

