

Energy Storage Reaches New Heights:

ROYPOW's Hybrid ESS Delivers Reliable Power at **4,200m** in Tibet





Executive Summary

The Challenge

China Railway 12th Bureau needed to power a major infrastructure project at 4,200 meters in Tibet—an environment with no grid access, extreme cold, and where traditional diesel generators were crippled by high fuel costs and unreliable performance.

The Solution

ROYPOW deployed its PowerFusion X250KT DG Hybrid ESS, an intelligent system that seamlessly integrates with diesel generators to optimize fuel consumption and ensure power stability.

www.roypow.com

The Results

The solution delivered immediate and dramatic value:



30-50% Reduction in Fuel Consumption, saving ~190 gallons of diesel per day.



Rapid, Plug-and-Play Deployment in one of the world's most challenging environments.



100% Power Reliability for critical construction and site facilities.



Reduced Maintenance and extended generator lifespan.



1. The Challenge: **Powering a Critical Project at the Roof of the World**

Remote, high-altitude regions pose universal energy challenges: lack of grid access, harsh climates, and over-reliance on inefficient diesel generators. For China Railway 12th Bureau's Tibet project—spanning stone crushing, concrete mixing, and worker accommodations—stable power was non-negotiable.



Key Pain Points

Excessive Fuel Costs:

Unoptimized diesel consumption reached ~633 gallons daily.

Operational Instability:

Subzero temperatures disrupted generator performance.

Environmental Impact:

Noise and emissions violated sustainability goals.

Maintenance Burden:

Frequent equipment wear increased downtime and costs.

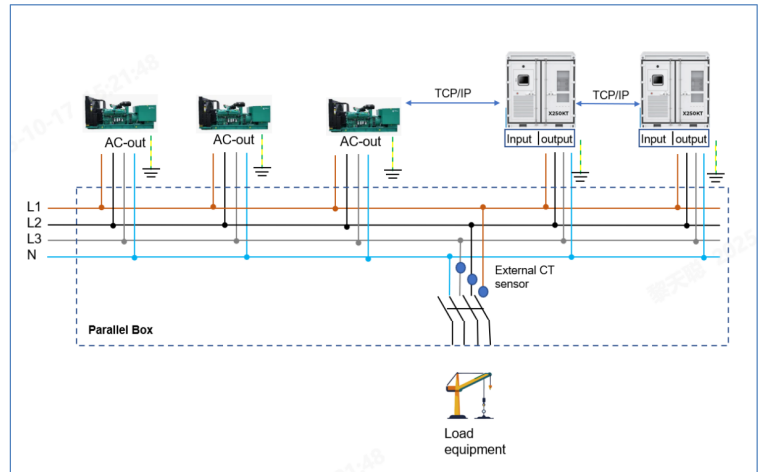
2. The ROYPOW Solution: An Intelligent Hybrid System Built for Extremes

Why ROYPOW Was Selected

ROYPOW's DG Hybrid ESS combines advanced battery storage with intelligent energy management, tailored for extreme environments. Global support capabilities ensured timely deployment and operational continuity.

System Configuration:

3 × 500kW Diesel Generators
3 × Diesel Generator Hybrid ESS X250KT
Power Convergence Cabinet (Green)



Note:

The CT sensor is externally installed in the junction cabinet, as real-time monitoring of the load current status is required.



Core Technology & Innovations

Smart EMS: Via TCP/IP communication, the system autonomously controls generator start/stop and optimizes load distribution.

Peak Shaving: The X250KT provides instant power compensation during high-demand events, eliminating the need for oversized generators.

Regenerative Braking: Captures and stores energy from crane load-lowering, converting wasted momentum into battery charge.

High-Altitude Engineering: Reinforced insulation, elevated electrical clearances, and ruggedized components ensure reliability in thin air and freezing temperatures.

Deployment Timeline:

Ordered in March 2025, fully deployed and operational by mid-August 2025.

3. Measurable Results:

Unlocking Fuel Savings and Operational Reliability

**Fuel Efficiency:**

30-50% reduction in diesel consumption (~190 gallons saved daily).

**Enhanced Reliability:**

Seamless power for construction and living facilities, zero downtime.

**Maintenance Savings:**

Reduced generator cycling extended equipment lifespan.

**Environmental Benefits:**

Lower emissions and noise pollution improved worksite conditions.



Customer Testimonial

"ROYPOW's hybrid energy storage system has transformed our power management at this challenging high-altitude site. The fuel savings and reliability have exceeded our expectations."

— Project Manager, China Railway 12th Bureau

4. Get Your Customized Energy Solution Today!

**Download Resources:**

Scan the QR code for product brochures and technical specifications.

Contact Our Experts:

Email sales@roypow.com for a free consultation.

Submit an Inquiry:

Visit [Diesel Generator X250KT](#) to start optimizing your energy management.



ROYPOW's Competitive Advantages

Global Support Network:

Local subsidiaries and technical teams ensure rapid response.

Full-Stack R&D:

In-house control over PCS inverters, battery packs, and DC-side systems guarantees seamless integration.

Cloud Monitoring:

Real-time insights and customizable features for proactive energy management.

Let ROYPOW Power Your Next Project—Anywhere, in Any Condition.