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EPISODE 71

C&I PV Energy Storage Solutions

>> Installation
>> Operation
>> Maintenance

C&I PV Energy Storage Solutions

>> Background

With the transformation of the global energy structure and the rapid development of renewable energy, clean energy + storage has become a key technology — gradually emerging as a primary solution for balancing energy supply and demand and improving overall energy efficiency.

As one of the most important application scenarios for energy storage, commercial and industrial (C&I) storage projects aim to provide stable and efficient power solutions for business users. This edition of Solis Seminar introduces the features and advantages of Solis' C&I energy storage solutions, providing reference for industry professionals.

>> Industry Trends and Core Pain Points

As countries and regions around the world accelerate their energy transitions, demand for C&I PV energy storage is surging. However, the industry still faces several challenges:

1. **High abandonment rates and limited income:**

Traditional PV systems often suffer from load fluctuations, leading to abandonment rates of over 30%. The space for peak-valley tariff arbitrage is typically less than 40%.

2. **Operation and maintenance challenges:**

Manual inspection is inefficient, battery degradation is rapid (annual decay rate ~6.8%), and fault response times are long.

3. **System compatibility and cost:**

C&I energy storage systems have high upfront investment costs, and later maintenance can be difficult and expensive.

4. **Safety and reliability:**

Traditional systems feature many separate modules and extensive wiring. This leads to large equipment footprints, low protection ratings, and safety risks.

>> Limitations of Traditional Solutions

Traditional C&I energy storage systems typically face the following constraints:

1. **Volume and functional limitations:**

Each function requires a separate electronic module, leading to complex designs and large equipment footprints. Systems often support only a single use case, lack compatibility with multi-brand batteries, and offer poor scalability.

2. **High maintenance costs:**

Many legacy systems place all different devices in a single cabinet, resulting in complex internal wiring. In most cases, repairs require full system RMA or on-site servicing. Dual heat sources necessitate liquid cooling, which brings added maintenance challenges (typically every 2–5 years). Liquid cooling systems are prone to leaks, which can eventually lead to system failure.

3. **Efficiency bottlenecks:**

Air-cooled systems typically support up to 20kW per cabinet. Liquid cooling improves density but significantly increases costs. Overall system efficiency often struggles to exceed 90%.

4. **Slow market responsiveness:**

Long development cycles, complex certifications, and limited adaptability make it difficult to meet rapidly changing market demands.

Solis C&I Energy Storage Solution: Core Features

Solis offers a new generation of C&I PV + Storage solutions that address the above challenges. With high integration, flexibility, reliability, and low maintenance, Solis inverters are designed for the real-world needs of C&I customers.

>> 1. Highly Integrated Functions & Upgraded Reliability

With 4-in-1 integration, one device combines:

Battery Smart Charging/Discharging (PCS)	PV Generation (PV Inverter)	On Grid/Off Grid Switching and Genset switching (STS)	Smart Energy Management System (EMS)

The modular "one device, one system" design is multi-brand battery compatible, reduces protocol issues, and improves system efficiency to over 90%.
Solis also replaces traditional liquid cooling with natural and intelligent air cooling, lowering system complexity and eliminating the risk of liquid leakage. Maintenance costs are reduced by up to 40%. Each component is independently replaceable if a fault is detected — especially the hybrid control system, which can be installed and serviced separately. These design choices further reduce maintenance needs and enhance long-term system reliability.

>> 2. Flexible Expansion Across Multiple Scenarios

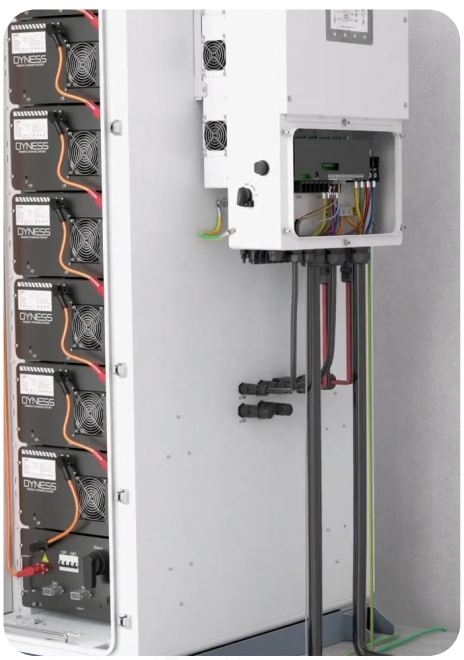
Standalone capacity options range from 30kW to 125kW, with support for up to 10 systems in parallel, making it ideal for applications such as:

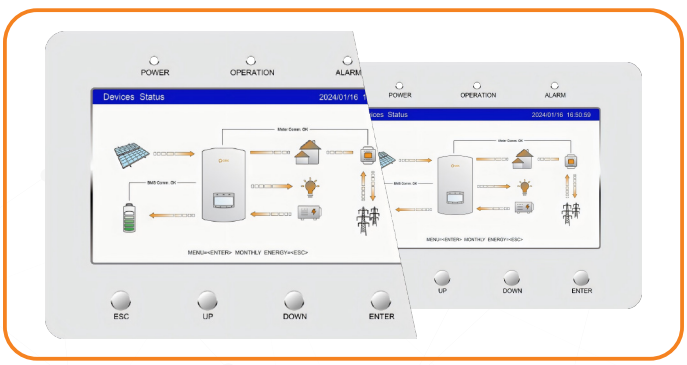
- **Factories**
- **Hospitals**
- **Islands**
- **Communities**

Wall-mounted and externally mounted designs simplify installation, reduce deployment time by 50%, and make the most of irregular land layouts.
Solis' hybrid control systems and battery cabinets also support independent certification. Key market grid and interconnection standards are already met, accelerating time to market for system integrators and developers.

>> 3. Easy Maintenance

The inverter's external battery cabinet design increases system flexibility. There's no need to open the main cabinet for configuration or service — the inverter can be debugged and maintained externally, significantly reducing the complexity of O&M.





50%
7-inch large screen, increasing the viewing area by

APP & LCD
Dual Operation interface

3 min
Fast startup configuration guide

Industrial level
ZETTLER Brand

Reliablity
Same as inverter lifetime

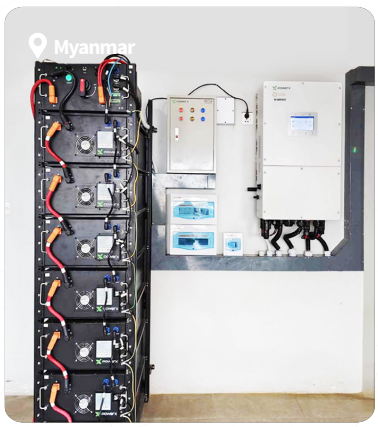
>> 4. Full Lifecycle Reliability

Solis inverters feature independent cooling systems with direct ventilation and IP66-rated enclosures, ensuring long-term durability. Their strong electrical characteristics provide consistent and reliable power delivery — even under challenging environmental conditions.

>> 5. AI-Powered Energy Management

- Solis' C&I storage solutions include an intelligent AI energy manager, capable of dynamically optimising power usage based on tariff changes. This improves system efficiency and can increase revenue by up to 30%.
- Additionally, Solis' dynamic load matching technology reduces abandoned energy rates from 35% to just 8%.
- Support for Virtual Power Plant (VPP) integration also enables participation in third-party electricity trading platforms, providing an additional source of income.

>> Cases



Conclusion:

>> C&I energy storage is redefining the energy model for businesses — shifting from passive consumption to active energy control. Solis is at the forefront of this shift, delivering cost-effective, reliable, and easy-to-deploy solutions.
Through innovation and experience, Solis continues to support commercial and industrial users with the tools they need to succeed in a dynamic energy market.