JTURBO

LH_2 and LNG Storage Solutions for Data Centers

Self-Powered Energy & Cooling Solution for Data Centers

A next-generation, sustainable system providing power and cooling for data centers. It leverages hydrogen (H_2) or natural gas (NG) as fuel, ensuring reliability, efficiency, and independence from traditional grid constraints.

Core Energy & Cooling System

- Fuel Options: Operates on hydrogen or natural gas.

Buffer Storage:

- *JTurbo's cost effective LH_2 (Liquid Hydrogen)* and *LNG (Liquefied Natural Gas)* provide energy storage
- Ensures stable operations despite intermittent Renewable Energy & Pipeline capacity

Power Generation:

- Fuel cells & gas turbines produce clean, reliable electricity.

Cooling Integration:

Supports chilled water loops and HVAC systems.

- Improves PUE (Power Usage Effectiveness) and reduces cooling load.

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Water & Heat Management

- Closed-loop water recycling to Electrolyzers.
- Reduces freshwater demand while maintaining hydrogen production.
- Heat recovery contributes to cooling efficiency and system optimization

Operational Features

- Grid-Isolated Capability: Operates independently; grid only used as backup.
- Peak Energy Management: Excess energy can be sold back to the grid at premium rates.
- Sustainability: 100% renewable-ready, net-zero compatible.
- Resilience: Built-in blackout protection and energy security.

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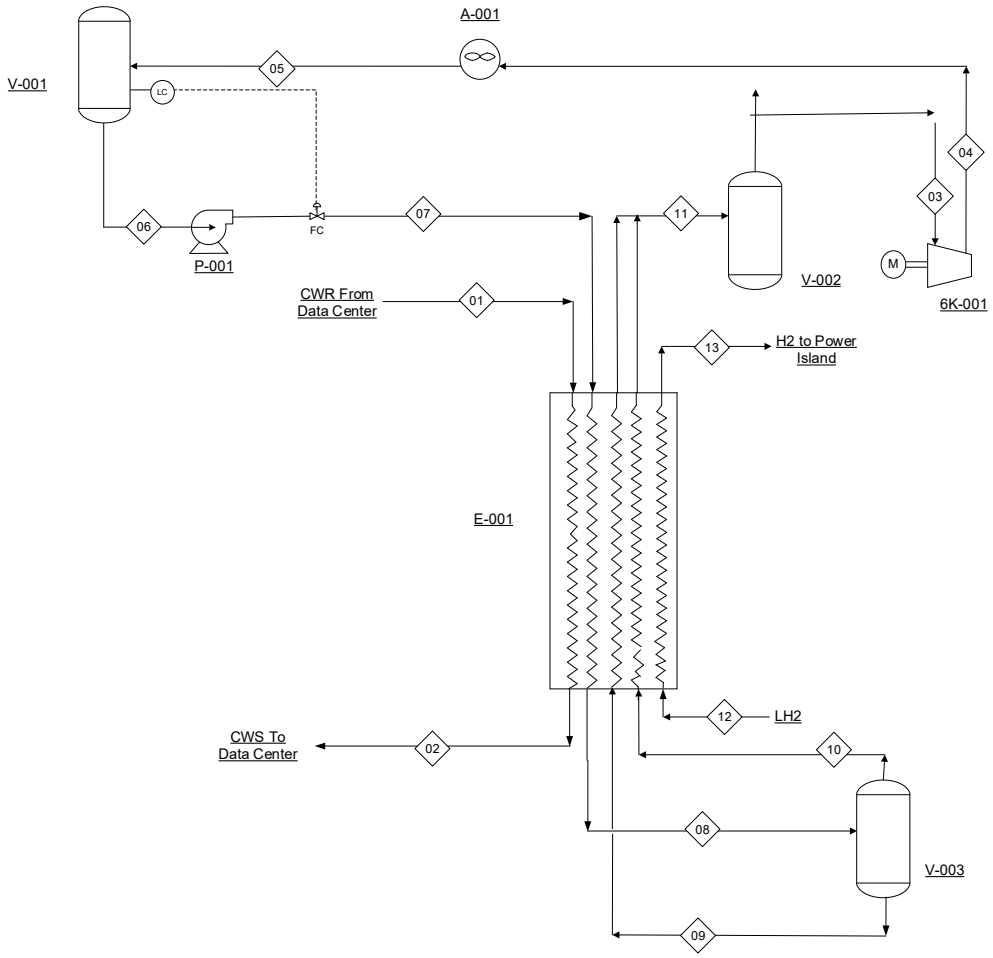
Benefits

- CAPEX Savings: Reduced need for large-scale cooling infrastructure.
- OPEX Savings: Lower energy consumption., Minimal freshwater use., Reduced dependence on grid electricity.
- Reliability & Sustainability: Continuous uptime during peak demand, Supports net-zero and ESG targets.

This positioning makes the solution attractive to hyperscale Data Centers, colocation providers, and enterprise facilities that want resilient, efficient, and sustainable infrastructure.

Data Center Cooling System

- Data centers generate massive heat loads, Efficient cooling is crucial for uptime and performance
- LH_2 and LNG provide low-temperature sources, Integration with advanced cooling Technologies



Sustainability and Efficiency Benefits

- Reduced reliance on grid electricity → lowers operational costs and increases resilience.
- Lower greenhouse gas emissions:
  - LH_2 (Liquid Hydrogen): enables zero-carbon power generation.
  - LNG (Liquefied Natural Gas): serves as transitional fuel, accelerating the adoption of LH_2
- Operational efficiency: optimized cooling loops, reduced water demand, and improved PUE.
- Enhanced resilience: ensures continuous uptime & stability during peak demand

Future Outlook and Conclusion

- Hydrogen economy's role: foundational for next-generation, sustainable data center ecosystems.
- Synergy of LH_2 + LNG: provides flexible, reliable energy buffering that balances long-term hydrogen adoption with near-term resilience.
- Scalability & adaptability: solution is modular & deployable across global data infrastructure
- Carbon-neutral pathway: paves the way for net-zero operations while enhancing efficiency.
- Proven innovation: designed and validated by utility experts with deep domain knowledge.