TRYSTAR®

ENERGY CONVERSION & STORAGE INFRASTRUCTURE

SOLUTION BRIEF



Transform Energy Infrastructure into Strategic Advantage

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Convert Smarter. Store Strategically. Power What's Next.

Overview:

Modern power systems must coordinate utility service, distributed generation, backup power, energy storage and increasingly complex loads. The challenge is not only storing energy. It is converting, protecting, managing, and delivering that energy efficiently across the entire system.

Trystar focuses on the power conversion, distribution, monitoring and servicing the infrastructure surrounding energy storage, agnostic to the storage method. We bridge energy sources and stored energy to load such as commercial, industrial, residential, and data centers.

The Energy Challenge:

- High utility demand charges created by peak energy use.
- Varying power quality depending on where and how it was generated.
- Complex integration across utility, generator, renewable, storage and load assets.
- Limited flexibility to store energy when available and deploy it when needed.
- Different voltage and power requirements across commercial, industrial, residential and specialized loads.

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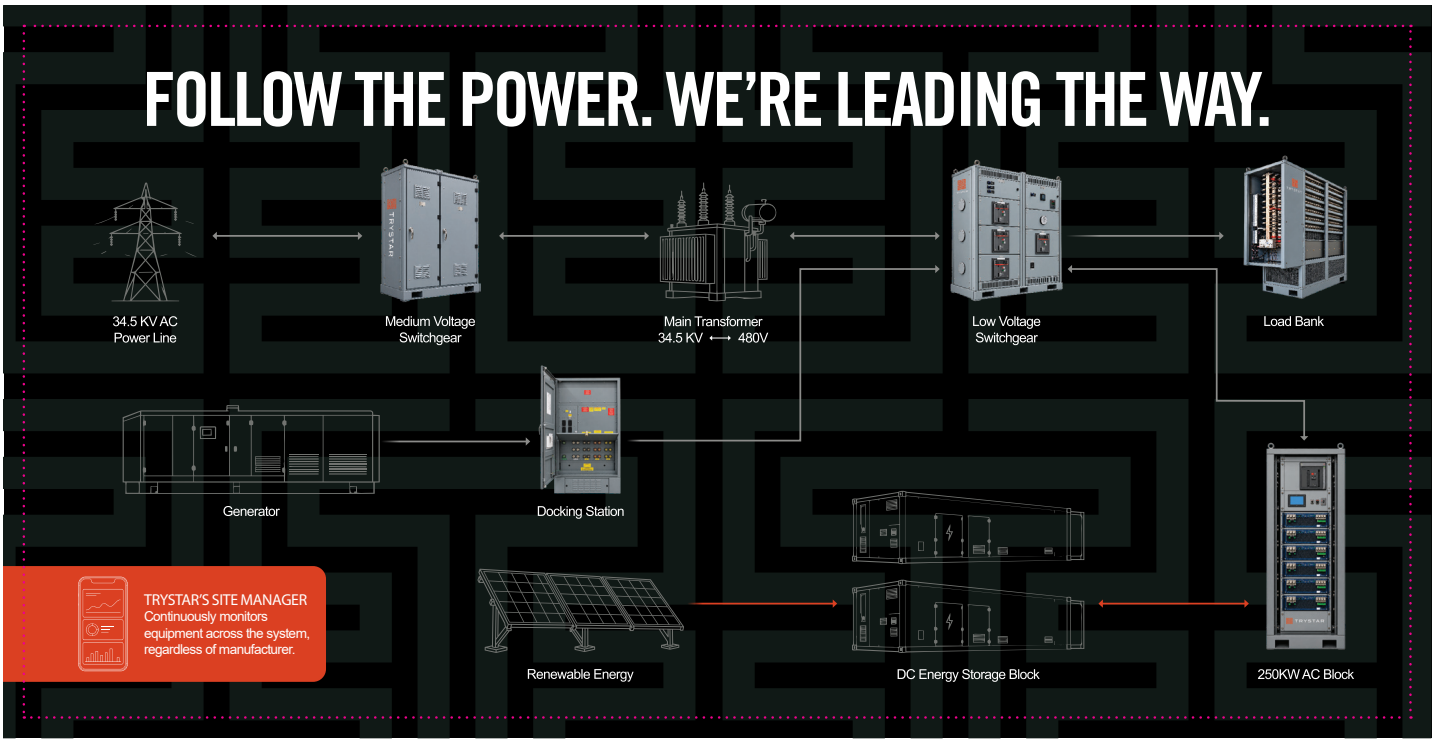
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Energy Flow Across the Infrastructure:

The architecture below shows one concept for moving power from utility and generator sources through switchgear, transformers, storage, and conversion equipment supporting up to 1500VDC bus. The cabinet is one portion of this larger ecosystem.

How the Architecture Works:



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Trystar's Energy Conversion Approach:

STAGE	ROLE IN THE SYSTEM
Generation	Utility service, generators, and renewable sources generate power for the site.
Conversion & Distribution	Switchgear, transformers, UPS equipment and conversion systems condition and route power.
Storage	Store energy and return to the system when operationally or financially advantageous.
Delivery to loads	Converted power is protected and distributed to commercial, industrial, residential or high-density DC loads.

Trystar's role is to support the equipment and architecture needed to convert electrical waveforms, adjust voltage or power levels, distribute energy, and connect storage to the load. The solution may combine Trystar products with purchased or partner technologies, depending on the final application and product strategy.

Core Capabilities:

Bidirectional Power Conversion	Support energy moving into and out of storage while converting between AC and DC.
Voltage Step up / down	Step voltage or power up or down to align sources, storage systems and end-use requirements.
Protection & Distribution	Use switchgear and protection components to route energy safely across the architecture.
Storage-System Integration	Connect conversion equipment with battery energy storage systems without positioning Trystar as the battery manufacturer.
Monitoring & Control	Coordinate system status, protection and operating data across major conversion and distribution elements.
Service	End-to-end field and technical support that keeps critical energy infrastructure operating safely, reliably, and efficiently throughout its lifecycle.

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Applications:

- Commercial buildings:
  Time-shift energy and manage peak demand to help address utility demand charges.
- Industrial facilities:
  Coordinate high-load equipment, facility distribution, backup generation and storage.
- Renewable energy:
  Capture energy from sources such as solar, store, and deliver it later to the load.
- Residential systems:
  Support 120/240V split-phase applications through appropriate inverter and conversion equipment.
- Data centers:
  Maintain DC across more of the power path and support direct delivery to high-density computing loads where the architecture permits.

Operational Impact:

- Greater flexibility to time-shift energy.
- Improved integration of generation, storage and all the facilities load.
- Support for demand-charge management strategies.
- Scalable power-delivery options across multiple end-use environments.
- Grid forming to add resiliency to the site in case there is power failure from utility or renewables.
- When used within DC architecture it reduces unnecessary AC/DC conversion stages.
- Seamless transfer between grid-forming and grid-following.

Designed as Part of a Complete Ecosystem

Trystar's conversion, protection, distribution and control capabilities complement generation assets, battery energy storage systems, UPS equipment and end-use loads. The result is a coordinated infrastructure approach that helps energy move from source to storage and from storage to the load.

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