
TrinaStorage

Leading the Energy Transition through Storage

trinastorage@trinasolar.com

trinasolar.com/en-glb/trina-storage

/showcase/trinastorage

/TrinaStorage

/trinaStorage



TrinaStorage


# Introducing the All-New Elementa

## Flexible, high-performance, inherently safe Utility Scale Battery System

Trina Storage Elementa is a smart, large scale modular storage solution tailored for stand-alone and [redacted] llations across key energy sectors.

### TRINA STORAGE - PROPRIETARY CELL TECHNOLOGY:

For nearly a decade, we at Trina Storage have been developing, refining and defining our own in-house battery technology specifically optimized for Grid Scale applications. We have focused on the core cell technology and design plus our advanced control mechanisms to ensure safe operation and maximize life time. Fully integrated utilising our proprietary, in-house Lithium Iron Phosphate (LiFePO4) cells and monitored by our dedicated Battery Management System (BMS), Trina Storage Elementa offers a state-of-the-art, revenue generating Grid asset which has also been optimized for lower OPEX through flexibility, smooth installation, and efficient maintenance.

### Our industry leading battery cells have been enabled by two main drivers:

01 Huge investment – close to $700 million deployed by the Trina into Research and Development since 2021, among which over $26 million into dedicated battery cell Research and Development.

02 Resourcing our manufacturing team with personnel and equipment drawn from decades of industry experience in the LFP battery space.

Our teams have been assembled through the years from the foremost battery companies and academic institutes across the globe. Our primary mission during this period has been to develop the leading battery technology in our global industry.

[redacted] ur utility scale, Trina Storage Elementa systems.

# Why Trina Storage Elementa?

Discover why the All-New Elementa is the right product for your battery storage project.

## ENHANCED LIFECYCLE

Enhanced battery lifetime with over **12,000+ cycles** is possible, thanks to its cutting-edge cell technology combined with advanced Battery Management techniques.

Trina Storage LiFePO4 battery cells have been specifically designed for Grid Storage and can be deployed to service multiple Grid services applications for maximum revenue returns.

This is unique to our industry with many players simply taking cells from another industry sector and trying to retrofit them into an application for which they are ultimately not designed for.

This represents a significant advantage for Trina Storage customers, benefiting from optimized energy and lifetime.

This ensures higher performance from each asset with enhanced lifetime cost savings and increased revenues.

## OPTIMIZED COST

Cost center optimization and globally recognized manufacturing techniques have been employed to ensure maximum efficiency and quality throughout our value chain, resulting in savings of up to 8% on CAPEX and OPEX.

Thanks to Trina Storage's in-house capabilities in battery cell manufacturing as well as Elementa's "smart system" design incorporating advanced electronics, logic control & software enable more flexible and bankable warranties for our customers as well as significantly lower TCO per MWh compared to other Tier 1 suppliers.

## VERTICAL INTEGRATION & SECURED SUPPLY CHAIN

With the Electric Vehicle (EV) industry taking up the lion's share of global lithium-ion battery supply, there has been a tendency by OEM battery manufacturers to prioritize EV demand over Stationary Storage (Wood-Mackenzie, 2022) in recent years.

In addition, recent shortages and price volatility mean that Trina Storage's Vertically Integrated strategy is crucial in securing a strong and robust supply chain to ensure maximum availability and mitigate any external risk factors. Going forward, our in-house cell manufacturing & system integration capabilities are the key to ensure total control over our battery value chain to tackle any future market volatility.

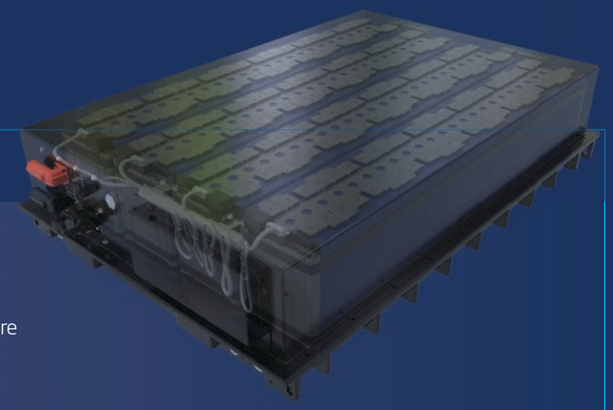
Driven by technological innovation, Trina Storage has been ramping up its in-house cell manufacturing capacity to produce safe and reliable, state-of-the-art battery cells to meet and exceed all future needs.



## ALL BATTERIES ARE NOT CREATED EQUAL

Since we have designed, developed and refined our own battery technology specifically for its intended environment instead of adapting or retro-fitting a less suitable cell, this means we can tune the capabilities to match exactly what our customer actually needs.

Improved real life performance, longer lifecycle and higher efficiency along with our dedicated thermal management strategy ensure our batteries can operate within the optimal temperature range in a given environment.



Each battery module is liquid-cooled to ensure end-to-end uniformity in heat dissipation.

This ensures a uniform temperature can be maintained throughout the battery system which is critical for maximizing lifetime and ROI.

*Liquid cooled Elementa battery moduleule.*

## ADVANCED SAFETY FEATURES

Elementa is equipped with smoke, gas and heat detection systems which continuously monitor the combustible gas concentration within the cabinet. If detected, our active ventilation system reacts by purging any dangerous gas through the exhaust.

In the unlikely event of a thermal event (internal or external) being approached, our advanced early warning processes and fire suppression systems combine with Elementa's heat, smoke and gas detectors to minimize any thermal anomalies should they occur.

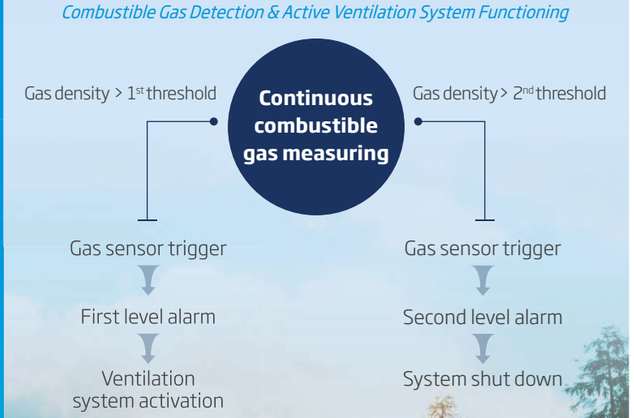
Trina Storage solutions are of course designed to meet the latest international safety standards using a multi-level safety strategy spanning from cell to system.

## Trina Storage sophisticated BMS is the key to total product safety

Trina Storage Elementa is equipped with our flexible and configurable multi-level Battery Management System which monitors all key parameters such as Voltage, Current, and Temperature but also monitors for safety items such as short circuit and isolation failures. The BMS reacts quickly to any parameter which drifts outside of pre-programmed limits and takes appropriate action to protect the battery system and your investment. Interventions if necessary, can be as basic as instructing the PCS to alter its throughput but can be as complex as required, including issuing warnings, alarms and executing isolation or redundancy procedures.

The plant controller can be configured for redundant operation with the ability to shut down any suspect areas of the battery system whilst allowing the rest of the system to remain in operation without interruption. The suspect area can then be scheduled for investigation during planned maintenance to prevent downtime.

*Combustible Gas Detection & Active Ventilation System Functioning*






## RAPID DEPLOYMENT ON-SITE

Trina Storage Elementa reduces installation time by up to 30% which is made possible by the deployment of "above ground" busbars which negate the need for complex cabling, infrastructure, and associated costs.

Elementa is equipped with standard ISO corners, and its modular design ensures good maneuverability for efficient handling during transportation and commissioning on-site.

*Pre-designed busbar connections*

## Flexible, Bankable Warranties and Services

Trina Storage offers flexible and bankable packages to match customer needs in terms of services and warranties. Customized packages between long term trusted partners are covered in our Services Agreements packages and are the outcome of (i) an optimum design, (ii) clear understanding of requirements and (iii) expert project execution.

This includes but is not limited to system warranty & performance warranty (capacity and availability coverage with flexible usage parameters) and 3-tier service packages. Trina Storage Elementa ensures bankability, and clients can count on Trina Storage to accompany them throughout their project journey.

# Product Specifications


| | |
|---|---|
| **Battery Cell** | 280 Ah LiFePO4 Prismatic battery cells |
| **Electrical Configuration** | 6 racks of 8 battery modules |
| **Nominal capacity** | ~2.2 MWh |
| **Typical Operational Duration** | 2-4 hour system |
| **Max Operating Voltage (DC)** | ~1,500 V |
| **Auxiliary Power- Max input power consumption (0.5P / 0.25P)** | ~29 kW/22kW |
| **Operating Ambient Temperature** | -30~50°C |
| **Cooling Mode** | Liquid cooling, 50% ethylene glycol aqueous solution |
| **Weight** | 22450±100kg 49493±220lb |
| **Altitude** | ≤ 2000m |
| **IP Level** | IPX5 (excl. the chiller compartment) |

**IP Level refers to the cabinet excluding the chiller compartment.*

| | |
|---|---|
| **Colour** | RAL 9016 |
| **Coating** | C4-H |

**Fire Safety**

Fire panel with heat and smoke sensors

Automatic aerosol-based fire suppression system

Gas sensors and active ventilation system

Fire resistant enclosure

**Communication Protocols**

Modbus TCP/IP

**Certifications**

**Battery Safety**
UL 1973, UL 9540A, NFPA855, IEC 62619, IEC 63056

**Transportation**
UN38.3, UN3536, UN3480

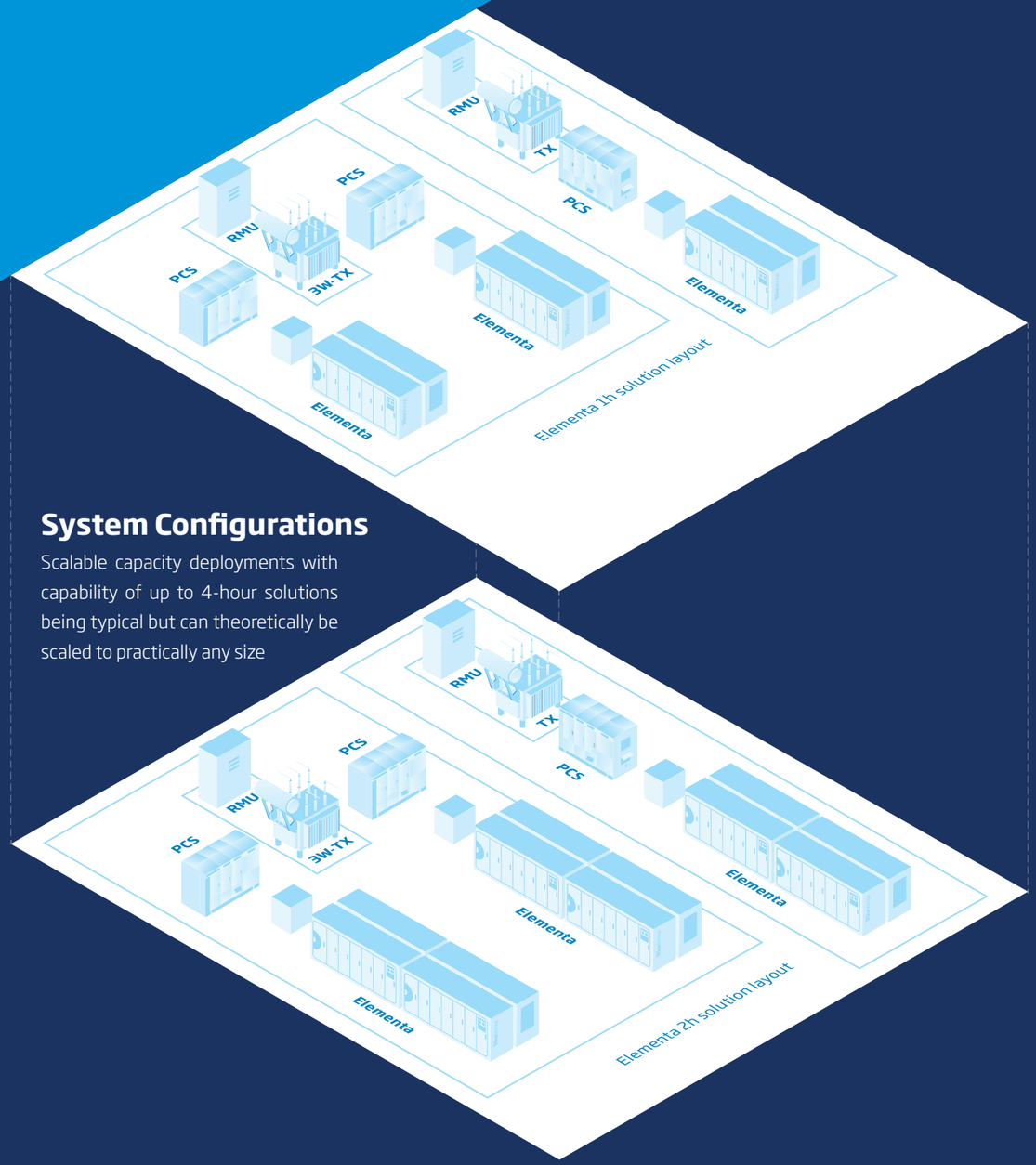
**EMC**
EN / IEC 61000-6-2, EN / IEC 61000-6-4



# The Next Generation of Battery Storage Solutions

Trina Storage Elementa - a modular LiFePO4 battery cabinet features simple plug-in connectivity and can be flexibly scaled-up according to project needs and applications.

Elementa further enhances our flexible solution platform and can be deployed to Utility Scale Solar+ Storage as well as standalone projects across practically any key market.




## System Configurations

Scalable capacity deployments with capability of up to 4-hour solutions being typical but can theoretically be scaled to practically any size

*** Configurations are for displaying conceptual approaches only, details and final site layout design might be subject to changes depending on project specifications.*