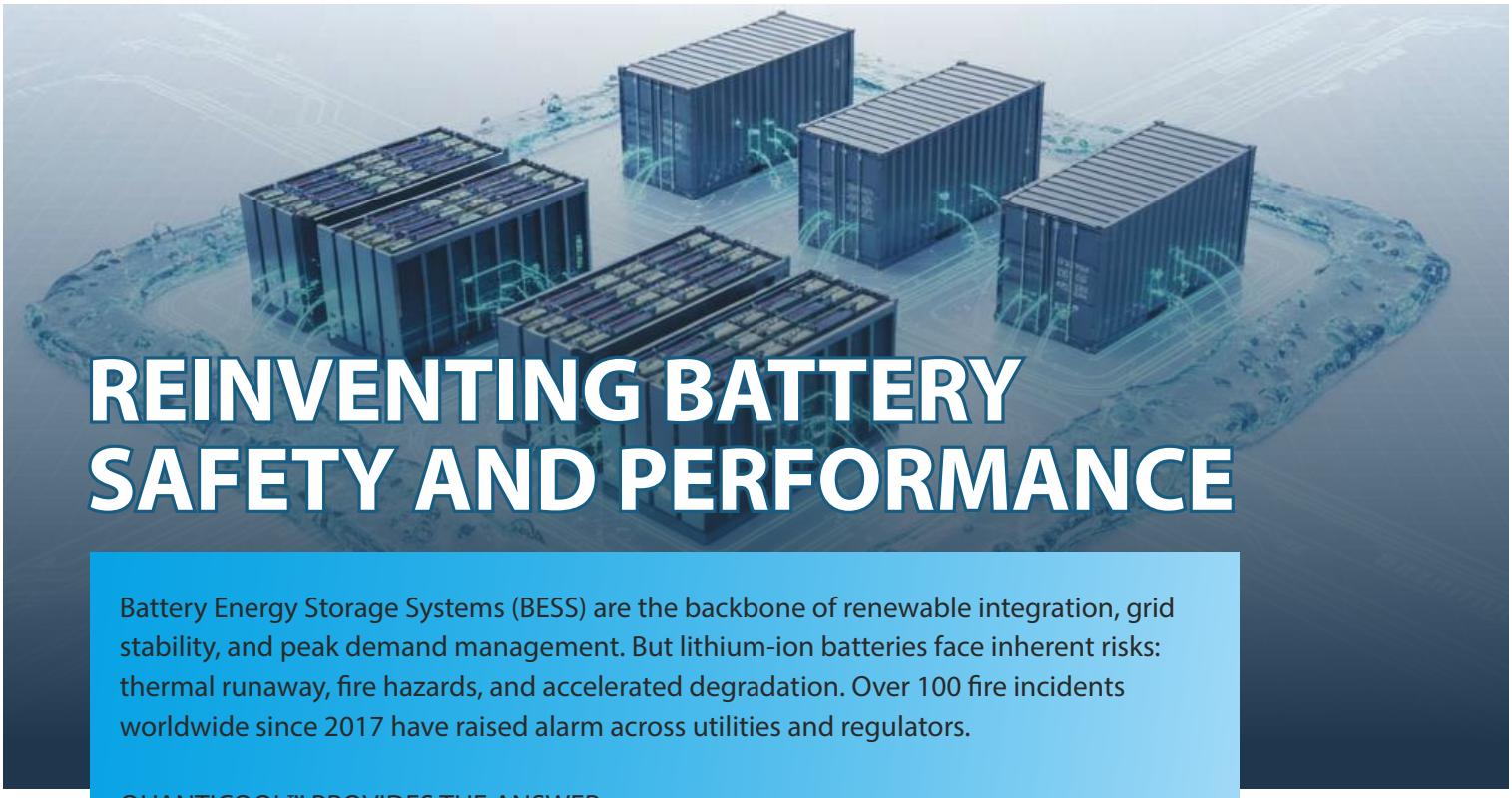
QuantiCool

SINGLE-PHASE IMMERSION COOLANT FOR BESS

SAVITA
bonds build businesses

QuantiCool



REINVENTING BATTERY SAFETY AND PERFORMANCE

Battery Energy Storage Systems (BESS) are the backbone of renewable integration, grid stability, and peak demand management. But lithium-ion batteries face inherent risks: thermal runaway, fire hazards, and accelerated degradation. Over 100 fire incidents worldwide since 2017 have raised alarm across utilities and regulators.

QUANTICOOL™ PROVIDES THE ANSWER

A synthetic ester-based dielectric fluid, QuantiCool™ immerses cells and modules directly, offering real-time cooling, fire suppression and extended battery life.

SAFETY FIRST

- Suppresses ignition and extinguishes flames.
- Stops thermal runaway propagation across cells.
- Dielectric, non-volatile, halogen-free.

BATTERY LIFE EXTENSION

- Ensures uniform ΔT within 3°C, preventing hotspots.
- Extends operational life up to 2X compared to air-or liquid-cooled systems.
- Stable performance even under high cycling and deep discharge.

SYSTEM EFFICIENCY

- Cuts HVAC/cooling energy, improving round-trip efficiency.
- Low viscosity for minimal pumping power.
- Enables compact pack design with higher energy density.

SUSTAINABILITY BUILT-IN

- Readily biodegradable, non-toxic fluid.
- ODP = 0, GWP < 1.
- Supports ESG and compliance for safe grid deployment.

TECHNICAL HIGHLIGHTS (TYPICAL DATA)

Item	Unit	Method	QuantiCool
Color		ASTM D1500	L 0.5
Density @15°C	kg/m^3	ASTM D4052	856
Kinematic Viscosity @40°C	mm^2/s	ASTM D445	5.1
Pour Point	°C	ASTM D97	-33
Dielectric Breakdown Voltage	kV	IEC 60156	78
D.C. Resistivity @90°C	TΩm-min	ASTM D1169	12 GΩ.m
Thermal Conductivity @40°C	W/m·K	ASTM D7896	0.148
Specific Heat	J/g·K	ASTM E1269	2.018
Sulfur Content	ppm	ASTM D4294	Nil
Flash Point	°C	ASTM D92	172
Auto-ignition Point	°C	ASTM E659	333
Fire Point	°C	ASTM D92	198
Interfacial Tension @ 25°C	mN/m	ASTM D971	15.9
Neutralisation Value	mg KOH/g (maximum)	IEC 62021-1	0.012

COMPATIBILITY, APPLICATIONS & FUTURE-READINESS

Proven Material Compatibility

Tested extensively with BESS-relevant components:

Category	Materials Tested
Seals & O-Rings	Nitrile Butadiene Rubber (NBR), Hydrogenated Nitrile Butadiene Rubber (HNBR), Fluorocarbon (FKM/Viton), Polytetrafluoroethylene (PTFE), Polyurethane (PU), Ethylene Propylene Diene Monomer (EPDM), Silicone Rubber
Battery Housing	Polypropylene (PP), Polyamide (Nylon/PA), Polycarbonate (PC), Acrylonitrile Butadiene Styrene (ABS), Aluminum Alloys, Polyvinyl Chloride (PVC)
Electrical Insulation	Polyimide Films, Polyether Ether Ketone (PEEK), Polyethylene Terephthalate (PET) Films, Ceramic Insulators, Epoxy Resins (FR4)
Cable/Wire Materials	Polyurethane (PUR) Cable Sheathing, Cross-linked Polyolefin (XLPE), Polytetrafluoroethylene (PTFE) Wire Insulation, Thermoplastic Elastomer (TPE)
Thermal Interface	Graphite Thermal Interface Materials, Phase Change Materials (PCM), Silicone Thermal Interface Pads
Metal Components	Copper, Aluminum, Stainless Steel, Phosphor Bronze, Silver-Plated Contacts

*PVC-Marginal, may harden or lose plasticizer under extended exposure, Silicone Rubber – Not recommended for long-term use

QuantiCool

FUTURE-READY TECHNOLOGY

Immersion cooling is emerging as the gold standard for BESS safety:

- Eliminates thermal runaway propagation risks.
- Improves system reliability and uptime.
- Enables denser, safer, greener energy storage.

QuantiCool™ - Cooling the Future of Energy Storage with Safety, Reliability & Sustainability.

APPLICATIONS

Grid-scale BESS - renewable integration, frequency regulation, peak shaving.

Utility & Commercial Storage - backup, load shifting, demand response.

Industrial & Safety-Critical - telecom, hospitals and data hubs.

Microgrids & Off-grid Systems - remote and renewable-reliant locations.

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