

Cable Solutions for Storage Infrastructure

Connection Solutions for BESS (Battery Energy Storage Solution)



- Excellent resistance to extreme cold and heat thanks to electron beam cross-linking
- Water resistance up to AD8 and long service life
- Suitable for direct burial (depending on the cable type)
- Engineered for harsh environmental conditions
- Guidance on installation planning and conductor cross-section selection
- In-house compound development and manufacturing
- Various certifications including EN, IEC and TÜV

Battery energy storage systems are a key component for grid stability and security of supply. They store electricity from various sources, balance peak loads and provide energy when it is needed. Whether large scale front of the meter installations or behind the meter solutions for EV charging infrastructure and data centres, high performance cables are the backbone of every installation. Our cable solutions reliably and efficiently connect batteries, DC and AC converters, as well as transformers. For DC applications, they also offer clear cost advantages, as they can be directly buried. For an energy infrastructure that delivers today and is built for tomorrow.

Application-oriented planning of battery storage connections

Every energy storage system is as unique as its location. That is why we do not simply supply cables, but provide a well-founded, project-specific design tailored to power requirements, installation method and environmental conditions. Already in the planning phase, we analyse installation spacing, thermal interactions and soil parameters. Through detailed calculations and thermal studies, we ensure that continuous current carrying capacity is reliably maintained under real operating conditions.

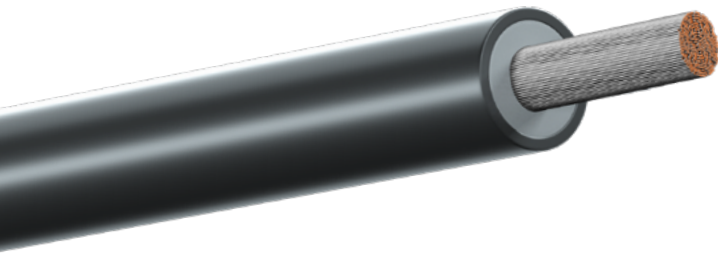
A practical example: For the connection between the DC battery storage system and the PCS substation, a **SOLARpower** Alu ATA XS $10 \times 2 \times 1 \times 300 \text{ mm}^2$ cable was specified, directly buried at a depth of 0.6 m. Based on a specific soil resistivity of 1.2 K \cdot m/W and a soil temperature of 20 °C, the optimal arrangement of the circuits was calculated. Vertical and horizontal spacing were defined to ensure that the maximum operating temperature of 46 °C remains within safe and efficient limits.

The result is not a standard solution, but a technically validated and economically optimised cable design, precisely tailored to each project. This ensures planning reliability from the outset and an infrastructure that performs over the long term.

Key features of Studer cable solutions for AC and DC applications

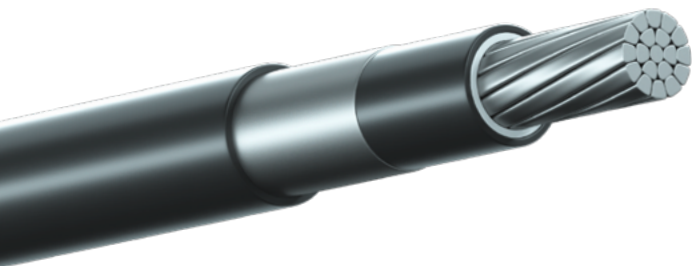
BETAflam® Solar 125 WR 1500

- Connection between PV modules and combiner boxes or inverters in floating photovoltaic (FPV) systems
- Highly robust design, ideally suited for high alpine applications (e.g. on reservoirs or fixed installations on dam structures)
- Flexible connectivity for EV charging stations and battery storage systems
- Suitable for indoor and outdoor use, with the option for direct burial
- First solar cable with TÜV certification in accordance with the new 2PFG 2750 09/20 standard «Requirements for cables with enhanced water resistance for installation in photovoltaic systems»
- Halogen-free and flame-retardant, CPR: D_{ca}-s2,d2,a1

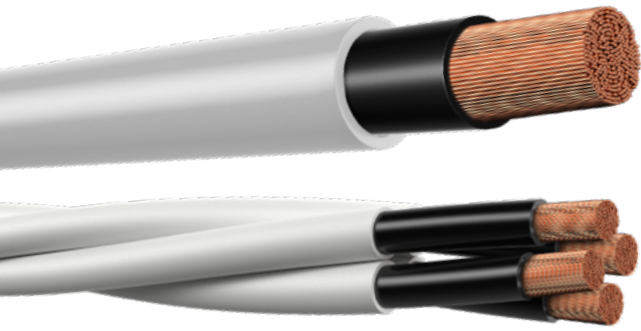


SOLARpower® Alu-ATA XS

- Connection between combiner boxes and inverters
- Large scale battery storage systems (containerised) and inverters
- DC connection for railway infrastructure with direct current supply
- Suitable for direct burial
- Rodent and termite protection
- Long service life thanks to radial water tightness
- Also suitable for fixed installation under water
- Easy processing and installation
- Certification: TÜV Rheinland, in accordance with 2 PFG 2642 11.17



Key features of Studer cable solutions for AC and DC applications



BETAflam® TRAFO-FLEX

- Flexible low-voltage connection between transformer and inverter or battery storage systems with AC output
- CPR class D_{ca}-s1,d2,a1
- Halogen-free and flame-retardant
- Compact stranded wire design, suitable for standard and DIN cable lugs
- Cross-linked EPR insulation
- Excellent EMC performance thanks to a unique stranded design with short lay lengths



Application examples



Large fast-charging stations

Multiple fast-charging stations with capacities of up to 350 kW, combined with additional BESS as backup, place high demands on the infrastructure. Highly fluctuating load profiles significantly complicate the design of cable systems and installation concepts.

We develop a precise cable system solution tailored to your specific application and installation.



Solar farms

Solar farms place high demands on energy infrastructure: increasing power levels, limited space, thermal stresses and complex installation conditions. Standard solutions quickly reach their limits.

With in-depth expertise in cable system engineering, we develop project-specific solutions that optimally combine efficiency, safety and economic viability.



Grid stability and efficiency for data centres

Battery energy storage systems enable intelligent control of energy flows: they stabilise the grid, balance peak loads and take advantage of price fluctuations. Cheap electricity is stored, while expensive electricity is used efficiently.

This is a key advantage, especially for data centres. A stable, uninterrupted power supply is essential for their operation. At the same time, they depend on cost-efficient energy supply due to their significant power demand.

The design of cable systems plays a crucial role in this context. We provide comprehensive advice and develop an optimal, project-specific infrastructure tailored to your needs.