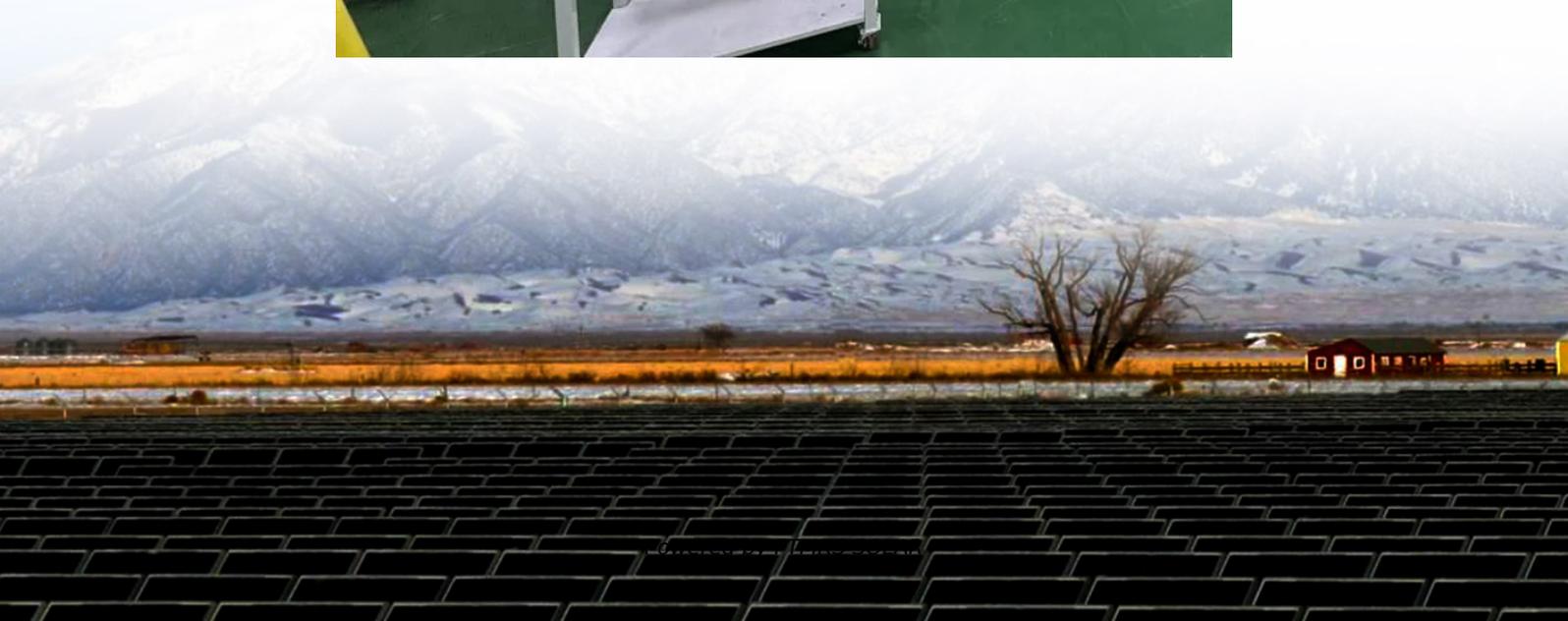


Power system transients with external energy storage





Overview

How energy storage systems affect power supply reliability?

Energy storage systems are increasingly used as part of electric power systems to solve various problems of power supply reliability. With increasing power of the energy storage systems and the share of their use in electric power systems, their influence on operation modes and transient processes becomes significant.

What are electromechanical transients?

Also, other concepts such as low-frequency oscillations (LFOs) and sub-synchronous resonances (SSRs) are important subjects, known as the power system dynamics, which can be considered as electromechanical transients. There are two common approaches in studying transients.

Why is transient stability important?

Transient stability is crucial to the reliable operation of power systems. Existing theories rely on the simplified electromechanical models, substituting the detailed electromagnetic dynamics of inductor and capacitor with their impedance representations.

Why are high current transients important?

Studying high current transients is important when sizing the system circuit breakers and preventing mechanical and thermal stresses on system apparatuses. Circuit breakers are chosen by the amount of fault current they can break and also the amount of transient recovery voltage they can tolerate after opening.



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