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**Integration of Energy Storage Systems into the
Power System for Energy Transition towards
100% Renewable Energy Sources**

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Abstract

The energy transition towards 100% renewable energy sources supposes the high penetration of power systems by the variable renewable energy sources (VRESs), characterized by high intermittence. By increasing the presence of VRES in the power systems, the importance of the energy storage systems (ESSs) increases considerably, especially for ensuring electricity quality, system reliability, and for the integration of new VRES capacity into the power systems. The integration of VRES in the power system requires efficient, reliable, and feasible technologies for energy storage. The role of ESSs is to maximize of usage rate of VRES potential, minimize the power and energy losses, and reduce the investment payback period. In this paper, we present the feasibility evaluation of the pumped hydro storage (PHS), battery storage (BESS), and hydrogen storage (HESS) used to balance the high penetrated power system by VRES in the conditions of the Republic of Moldova.

Keywords: renewable energy sources, energy losses, hydrogen storage, power systems, batteries, hydroelectric power generation

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