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Sommario/riassunto	An economic development model analyzes the adoption of alternative strategy capable of leveraging the economy, based essentially on RES. The combination of wind turbine, PV installation with new technology battery energy storage, DSM network and RES forecasting algorithms maximizes RES integration in isolated islands. An innovative model of power system (PS) imbalances is presented, which aims to capture various features of the stochastic behavior of imbalances and to reduce in average reserve requirements and PS risk. Deep learning techniques for medium-term wind speed and solar irradiance forecasting are presented, using for first time a specific cloud index. Scalability-replicability of the FLEXITRANSTORE technology innovations integrates hardware-software solutions in all areas of the transmission system and the wholesale markets, promoting increased RES. A deep learning and GIS approach are combined for the optimal positioning of wave energy converters. An innovative methodology to hybridize battery-based energy storage using supercapacitors for smoother power profile, a new control scheme and battery degradation mechanism and their economic viability are presented. An innovative module-level photovoltaic (PV) architecture in parallel configuration is introduced maximizing power extraction under partial shading. A new method for detecting demagnetization faults in axial flux permanent magnet

synchronous wind generators is presented. The stochastic operating temperature (OT) optimization integrated with Markov Chain simulation ascertains a more accurate OT for guiding the coal gasification practice.