# INTEGRATIVE ANALYSIS OF THE OPERATIONAL IMPACT OF A MV STORAGE SYSTEM IN BACK-UP AND ANCILLARY SERVICES MODES: MICROGRID AND ISLANDED SIMULATION

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## ABSTRACT

*The multifunctionality of Energy Storage Systems (ESS) has being viewed as a powerful resource for a stable and reliable grid operation in an environment of high DER penetration at all voltage levels. The Portuguese DSO, EDP Distribuição, established a multi-sourced partnership with Siemens and the University of Évora, to implement, test and execute a pioneer Energy Storage project. A medium-voltage (15kV) storage facility has been installed at Évora University and is today capable of working in both grid-connected and microgrid mode, providing various types of services to the grid such as frequency and voltage control. This paper aims to present the know-how acquired by EDP Distribuição in operating and exploring the ESS in both grid-connected and islanding modes as well as to evaluate the quality of service provided to clients and distribution secondary substations in stationary and transient periods.*