

840 – Variable shunt reactors control scheme for interconnected offshore facilities

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Abstract: A control scheme and power management system is proposed for the reactive power management of offshore facilities that combines lengthy submarine cables and variable shunt reactors (VSR). The subject control scheme introduces a new set of operational constraints derived from investigated resonant frequency and transient switching scenarios when operating VSR. These additional constraints are combined with the conventional steady-state load flow constraints to resolve the given objective function and voltage regulation. The proposed control scheme was integrated into the PSCAD/EMTDC model of a planned O&G project in the Arabian Gulf. This project consists of interconnected offshore platforms at 230kV voltage level, with more than 500km of submarine cable and total of 1480Mvar of distributed VSR capacity. Simulation results reflect effectiveness of the method by reducing power quality and switching transient concerns in addition of having improved control of voltage and lower cable power losses.