

Concept, Design and Implementation of Power System Component Simulator Based on Thyristor Controlled Transformer and Power Converter

Authors : B. Kędra, R. Małkowski

Abstract : This paper presents information on Power System Component Simulator – a device designed for LINTE² laboratory owned by Gdansk University of Technology in Poland. In this paper, we first provide an introductory information on the Power System Component Simulator and its capabilities. Then, the concept of the unit is presented. Requirements for the unit are described as well as proposed and introduced functions are listed. Implementation details are given. Hardware structure is presented and described. Information about used communication interface, data maintenance and storage solution, as well as used Simulink real-time features are presented. List and description of all measurements is provided. Potential of laboratory setup modifications is evaluated. Lastly, the results of experiments performed using Power System Component Simulator are presented. This includes simulation of under frequency load shedding, frequency and voltage dependent characteristics of groups of load units, time characteristics of group of different load units in a chosen area.

Keywords : power converter, Simulink Real-Time, Matlab, load, tap controller

Conference Title : ICPEE 2016 : International Conference on Power and Energy Engineering

Conference Location : Rome, Italy

Conference Dates : September 15-16, 2016