

Virtual Instrument for Study of Single-phase AC Unknown Load

Gheorghe Eugen Subțirelu^{*}, Mircea Dobriceanu^{*} and Petre Pistol^{**}

^{*} University of Craiova/Faculty of Electrical Engineering/Department of Electromechanical, Environmental and Industrial Informatics, Craiova, Romania, esubtirelu@em.ucv.ro, mdobriceanu@em.ucv.ro

^{**} I.C.M.E.T. Craiova, Romania, petrepistol@icmet.ro

Abstract— In this paper, using Lab VIEW graphical programming environment is realized a virtual instrument (VI) which is used at the study of single-phase AC unknown load. In this study the circuit of unknown load is analyzed in case of sinusoidal permanent regime. The voltage and current of the load are the main input parameters used in this study. They are represented as phasors in the complex plane. Also the phase angle (in degrees) between voltage and current is very important for this study. These parameters are obtained by simulation and their values can be set and modified manually with numerical controls. The impedance of unknown load is displayed in complex form, where the real (resistance) and the imaginary (reactance) components are shown. The virtual instrument has two graphs. One graph shows the voltage and current waveforms in relative (per-unit) values, while another graph displays the phasors obtained from the voltage and the current functions. The real and the imaginary components of the voltage phasor and the current phasor are also displayed in this graph. With our virtual instrument one interprets the nature of the unknown parameters of the load (pure resistive R, capacitive C, inductive L, resistiv-capacitiv RC, resistiv-inductiv RL).