

Linear and Non-Linear Voltage-to-Frequency Multi-Zone Control of Synchronously Modulated Power Electronic Inverters

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Abstract. The publication presents a brief analysis of the results of a study of power electronic converters of parameters of electrical energy based on voltage source inverters (VSIs) and neutral-point-clamped inverters (NPCIs) with scalar control modes realizable by algorithms of synchronous multi-zone pulsewidth modulation (SMZ PWM) that can provide both linear and required nonlinear dependences between the output voltage and fundamental frequency of inverters (*Voltage/Frequency (V/F)*). Simulation results showed a behavior of variable speed drives based on inverters regulated in accordance with schemes of SMZ PWM. Thus, correspondingly modified techniques of SMZ PWM applied for adjustment of inverters of variable-voltage variable-frequency drives with both linear and non-linear V/F scalar control, assure continuous synchronization and symmetry of the phase and line voltages in power conversion installations over the entire control range.