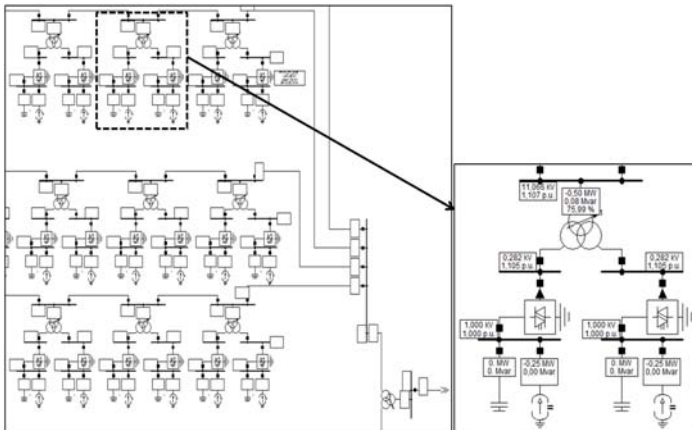


1.16. COMPUTER MODELS OF SOLAR POWER PLANTS (SPP)

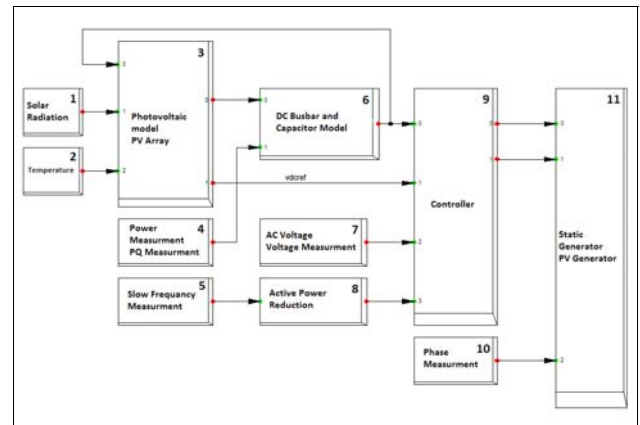
Computer models of SPP are designed for calculating steady-state modes, stability, short-circuit currents, transient processes and harmonic analysis.

To calculate steady-state modes, an equivalent model of SPP is developed, which is represented by a single node with the settings determined by an operating mode of its inverter control system. Depending on the operating mode of inverters and their control system, it is proposed to use three options for adjusting equivalent model of SPP. In case where it is necessary to investigate operating modes of the SPP network and its separate units, it is recommended to use more detailed models (Pic.1).

After behavior comparison and verification of the detailed and equivalent models of SPP in dynamic modes for various typical disturbances, the models of solar power plants were supplemented by improved models of SPP regulators (Pic.2).



Pic. 1. A part of the detailed SPP model



Pic. 2. A typical model of the SPP regulator in PowerFactory software

The use of the developed computer models of SPP will significantly accelerate a development of computational models of electrical networks, their static and dynamic stability.