

Simulation of Behaviour Dynamics and Optimization of the Energy System

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Abstract : System-dynamic simulating modelling is one of the most appropriate and successful scientific methods of the complex, non-linear, natural, technical and organizational systems. In the recent practice its methodology proved to be efficient in solving the problems of control, behavior, sensitivity and flexibility of the system dynamics behavior having a high degree of complexity, all these by computing simulation i.e. “under laboratory conditions” what means without any danger for observed realities. This essay deals with the research of the gas turbine dynamic process as well as the operating pump units and transformation of gas energy into hydraulic energy has been simulated. In addition, system mathematical model has been also researched (gas turbine- centrifugal pumps - pipeline pressure system - storage vessel).

Keywords : system dynamics, modelling, centrifugal pump, turbine, gases, continuous and discrete simulation, heuristic optimisation

Conference Title : ICAFMEE 2022 : International Conference on Applied Fluid Mechanics, Energy and Environment

Conference Location : Bangkok, Thailand

Conference Dates : November 29-30, 2022