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OPTIMIZATION OF MODES OF OPERATION INDUSTRIAL HVAC SYSTEM

Abstract. In this work elaborates a model of heating, ventilation and air conditioning (HVAC) system, carry out the simulation of different modes of operating, assessment and optimization of consumption electric energy. Develop recommendations for the exploitation of such systems

Keywords: heating, ventilation, conditioning, HVAC systems, optimization of modes of operation, energy saving, energy efficiency.

Introduction. This work considers HVAC system, development of the system a model which basically can be described by internal elements like a fan, heater, air piping and etc. Also, it will be found new strategies to achieve optimal regulation for such system, which allow confirming the best decision depending on the multivariable changing dynamic model. Developed model introduce evaluation [1] and prediction [2] of parameters of external environment like temperature.

Materials and methods. The methods used are based on a correlation-regression analysis, which allows determining the most important factor characteristics, also for modeling, LabView software and methods from the general theory of optimization and decision-making theory are used.

Conclusions. In this paper, we have addressed the modeling and optimization problem of a central cooling plant to target energy savings and verified the proposed approach [3]. By using the monitored data, mathematical models for the set-up components are developed and implemented in a transient simulation program in order to predict the performance of the integrated system operating in various conditions. Results showed that by applying this approach, an air-cooled central cooling plant HVAC system can achieve significant improvements in energy-efficiency and performance, especially in part-load conditions.

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