Summaries

Paweł Skruch: **A Thermal Model of the Building for the Design of Temperature Control Algorithms** • Automatyka/Automatics 2014, Vol. 18, No. 1

This paper presents an efficient and effective method for modeling the temperature dynamics in buildings. The method relies on the simultaneous application of heat transfer and engineering thermodynamics principles. The model takes into consideration dissipated thermal power from the room (heat loses by conduction and ventilation) and applied thermal power to the room (radiator, solar, and internal heat gains). The model parameters can be determined uniquely from the geometry of the building and thermal properties of construction materials. The model can be used to research and validate the algorithms for thermal control in the building. An exemplary building structure is used to verify the theoretical analysis and mathematical formulation. The example includes creating the model, calculating the parameters, designing the temperature control algorithm, and making the simulations.

Keywords: *modeling, simulation, building, temperature dynamics, heat transfer*

Maciej Różewicz: **Shape Optimization of a Flywheel** • Automatyka/Automatics 2014, Vol. 18, No. 1

The article presents the problem of the use of flywheels as an energy storage. More specifically focused on the issue of the optimal shape for isotropic materials and shapes, for which you can analytically determine the internal stress. The optimality criterion takes into account parameters such as moment of inertia (stored energy) and energy density. Efforts were made to choose a compromise between these two conflicting values, and therefore have been used multi-criteria optimization methods.

Keywords: *flywheel, optimization methods, energy storage*