

Sergiusz Ciskowski, Tadeusz Mikulczyński, Zdzisław Samsonowicz, Rafał Więclawek: **Analytic Method Grafpol TM of Synthesising Sequential Control Systems** • Automatyka/Automatics 2014, Vol. 18, No. 2

This paper presents the Grafpol TM method and principles of synthesising sequential control algorithms by this method, as well as examples of applying this method for modelling processes and programming PLC controllers.

Keywords: Grafpol method, PLC controller, sequential control system

Bartosz Kania, Tomasz Dziwiński, Waldemar Bauer, Marta Zagórska, Jerzy Baranowski: **A Comparison between Integer Order and Non-integer Order Controllers Applied to a Water Levelling System** • Automatyka/Automatics 2014, Vol. 18, No. 2

The purpose of this paper is to compare responses of two systems with two types of controllers: integer order PI controller and non-integer order PI^λ controller (FOPI). Comparison is made on the grounds of time domain responses of waters level in tank. In order to design both of the controllers, numerical model is established and described. Synthesis method with use of simulated annealing optimisation method is developed for each controller. In order to do a correct comparison, the two control systems have the same designing parameters. Matlab/Simulink environment and numerical model are used to do the computing. Numerically designed controllers are verified experimentally with tank system. The obtained results show that using non-integer order PI^λ controller instead of a "traditional" PI controller in simple integrating systems is useless.

Keywords: non-integer order systems, PID, optimization, tank system