EVALUATION OF SYSTEM TIME RESPONSES FOR PID CONTROLLER UNDER SATURATION

Damir Vrančić, Youbin Peng*, and Stanko Strmčnik

J. Stefan Institute
Jamova 39, SI-1001 Ljubljana, Slovenia
e-mail: damir.vrancic@ijs.si
home page: http://www-e2.ijs.si/People/Damir.Vrancic.html

**Free University of Brussels*
F. D. Roosevelt 50, CP. 165, B-1050 Brussels, Belgium
e-mail: peng@labauto.ulb.ac.be

Abstract: This paper describes a way of avoiding the integral windup for the generalised PID controller. It is indicated that there exists only one anti-windup compensator which totally reduces the windup effect. It is also shown that the system response, after the process leaves the saturation, strongly depends on some of the PID controller parameters, especially on the integral time constant. Derivations, definitions and results are illustrated by simulations.

Keywords: PID control, limiters, constraints, saturation control, anti-windup