СОЦІАЛЬНО-ГУМАНІТАРНІ АСПЕКТИ РОЗВИТКУ СУЧАСНОГО СУСПІЛЬСТВА

МАТЕРІАЛИ ВСЕУКРАЇНСЬКОЇ НАУКОВОЇ КОНФЕРЕНЦІЇ ВИКЛАДАЧІВ, АСПІРАНТІВ, СПІВРОБІТНИКІВ ТА СТУДЕНТІВ

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different languages for tourists. They help to orientate in cities with week touristic infrastructure and no understandable pointers. In short it means you can forget about getting lost in foreign countries. Millions of applications exist, tens of millions projects are developing right now.

A natural question arises why AR isn't everywhere? Limited possibilities of computing technic were main reason. It prevented spreading of this technology for a long time. But that time has passed. We have already invented things like Google Glass or Microsoft HoloLens. They are not perfect and have several drawbacks as all first steps are expected to have ones. But no doubts the foundation for progress was laid.

Augmented reality is coming. It definitely will change your way of life as smartphones did. The choices we make, and the challenges we face are up to us. Our world will never be the same but we make our best creating its future.

1. http://www.forbes.com/sites/alanmcglade/2015/02/08/augmented-reality-without-the-glasses/
2. http://www.reuters.com/article/2011/12/07/idUS95324+07-Dec-2011+BW20111207

INTERNAL MODEL CONTROL

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Synthesis of automatic control system aims to do the calculation, which is the ultimate goal of finding a rational system structure and establish the optimal values of the parameters of its individual parts.

In energy automatic control system is used to restore normal operation after emergency situations or for maintaining certain defined parameters of the system.

Automatic Control Systems (ACS) in its composition require regulators. The main problem in setting the ACS is the choice of parameters of regulators, and the impact of these parameters on quality control. Today there are many methods for selecting these parameters (methods of Ziegler-Nichols, lambda setting)

To select the parameters of the regulator the method of internal model was used. For the study was selected PI regulator that requires two parameters for its configuration. The main feature of the method of internal

model is that the setting for the PI regulator requires only one parameter to select - the desired bandwidth of a given system.

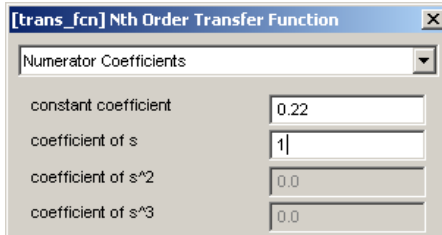After receiving expressions for the parameters of the regulator, they were calculated:

$$L = 10^{-4} \text{ Gn}, \; R + r_{on} = 10^{-4} \text{ Om}, \; t_r = 10^{-2} \text{ s}.$$

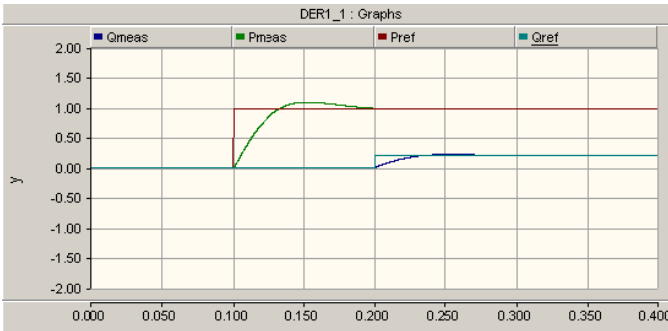$$\alpha = \frac{\ln 9}{t_r} = \frac{2,2}{10^{-2}} = 220$$

$$K_p = \alpha \cdot L = 220 \cdot 10^{-4} = 0,22$$

$$K_i = \frac{1}{T_i} = \frac{R + r_{on}}{L} = \frac{10^{-4}}{10^{-4}} = 1$$

Actually the evaluation of the quality control PI - controllers was rated in PSCAD program
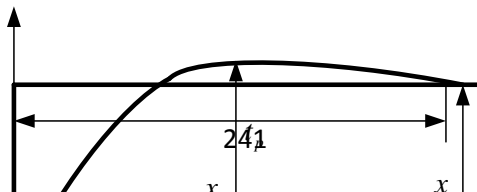

Pic 1. Setting PI regulator among PSCAD

Pic 2. The reaction of the system to perturbations in PSCAD

The next step - evaluation of the transition process:

To describe the transition process we will use three parameters. The value of maximum overshoot. For our result:

$$\sigma_{max} = \frac{x_m - x_\infty}{x_\infty} \cdot 100\% = \frac{1.12 - 1}{1} \cdot 100\% = 12\%.$$

− duration t_p of regulation . For our result:

$$t_p = 0.19 \text{ c}.$$

− number N_p of oscillations of the controlled variable over time transient. For our result:

$$N_p = 1.$$

Conclusion:

− this method has significant advantages over the known methods of setting PI regulators on quality indicators transients in the system and methods of setting regulator.

− the method is recommended to be used in systems with variable modes, and which put forward stringent requirements for performance and minimize deregulation.

POWER OF BRAIN

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Imagine turning on the music and writing a book just through a thought or disabled people who can feel, control their limbs or even communicate with others. We live in the digital age, so there is no surprise that last technology achievements allow us to make science fiction reality.

Brain computer interface (BCI) is one of the most important technological breakthroughs for the last years. It is a tool that sets a direct pathway between the brain and the computer. Its work is based on the reading some specific signals of the brain activity and their transference to