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SYNTHESIS OF PREDICTIVE REGULATOR FOR WIND POWER PLANT

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The one of the effective control method of a wind power plant is a generator rotation speed variation control.

The maximal capacity of a possible when system is in optimal mode, rather in restrained some optimal rotation speed. This speed value must vary proportionally to wind velocity. An electromechanical system show persistence at wind speed continuous variation. The dynamic moment has a great impact to capacity during in a transition process. The problem of determining variation law of a dynamic moment depending on wind parameters is arising. For optimal control of wind power system with variable speed, it's appropriate to use the values wind velocity prediction was indicated in the paper [1].

The article purpose is a synthesis of predictive regulator for electromechanical wind power system.

Research of wind parameters effect at option an optimal assign dynamic moment data by varying. The solution of the problem was carried out using mathematical model in relative unit [2]. In the obtain results a dependence of an optimal assign dynamic moment on an average wind speed.

The control algorithm of electromechanical wind power system with variable speed realized on based on the dependence.

The modeling results presented comparative graphically of power in output a system (fig.1: 1 - an ideal inertia-free system; 2 - a PID rotation speed control; 3 - a predictive control algorithm).

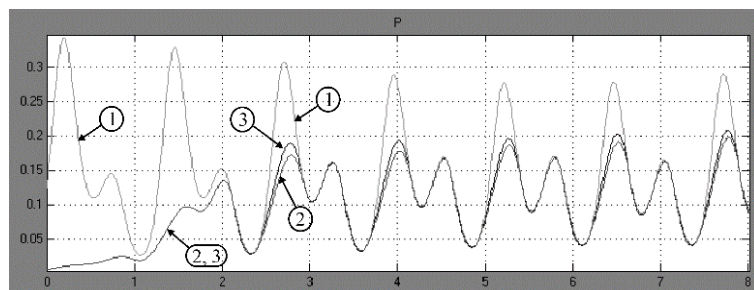


Fig.1 Dependence graph of a capacity to a dynamic moment

The graph showed that the proposed control strategy electromechanical wind power system is effective in the context of an electric energy capacity of a win power plant.

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