Mathematical model of regulated gas-liquid oscillation damper

© I.G. Blagoveschenskiy, E.B. Gartig

Bauman Moscow State Technical University, Moscow, 105005, Russia

Passive gas-liquid oscillation dampers are often used to change the settings and dynamic properties of a hydrodynamic stand. If changing the degree of influence on the dynamic properties of the system is necessary, the possibility of damper regulation should be ensured such as a change in the gas volume or mass of the moving elements. To account for these changes simplified mathematical model of the gas-liquid oscillation damper, as a lumped parameter system, is proposed.

Keywords: mathematical model, hydrodynamic stand, gas-liquid oscillation damper.

REFERENCES

- [1] Sanchugov V.I., Ilukhin V.N. *Osnovnye vidy ispytaniy gidrooborudovaniya* [The Main Types of Hydraulic Equipment Tests]. Samaria, SGAU Publ, 2008, 40 p.
- [2] Berestovitsky E.G, Gladilin Y.A., Kruchkov A.N., Fedorov A.E., Shakhmatov E.V. Vestnik Samarskogo gosugarstvennogo aerokosmicheskogo yniversiteta im. S.P. Koroleva Bulletin of the Korolev Samara State Aerospace University, 2012, no. 2, pp. 149–154.
- [3] Sanchugov V.I., Shorin V.P. *Izvestiya Samarskogo nauchnogo tsentra Rossiyskoy akademii nauk Proceedings of the Samara Scientific Center of the Russian Academy of Sciences*, 1999, no. 1, pp. 141–146.
- [4] Shkapov P.M., Blagoveschenskaya M.M. Vestnic MGTU im. N.E. Baumana. Seria Estestvennye nauki Herald of the Bauman Moscow State Technical University. Series: Natural Sciences, 2012, no. 3, pp. 109–114.
- [5] Shkapov P.M., Blagoveschenskaya M.M. Vestnic MGTU im. N.E. Baumana. Seria Estestvennye nauki Herald of the Bauman Moscow State Technical University. Series: Natural Sciences, 2012, no. 4, pp.103–111.
- [6] Shkapov P.M., Blagoveshchenskiy I.G., Gartig E.B., Doroshenko S.A. *Inzhenernyi zhurnal: nauka i innovatsii Engineering Journal: Science and Innovations*, 2013, no. 2(24). Available at: http://engjournal.ru/catalog/eng/teormech/1137.html
- [7] Glikman B.F. Matematicheskoe modelirovanie pnevmogidravlicheskikh sistem [Mathematical Modeling Pneumohydraulic Systems]. Moscow, Nauka Publ., 1986, 368 p.

Blagoveshchenskiy I.G. (b. 1945) graduated from the Moscow Technological Institute of Food Industry in 1967. Dr. Sci. (Eng.), professor of the Department of "Theoretical Mechanics" named after professor N.E. Zhukovsky at Bauman Moscow State Technical University, member of the International Informatization Academy, member of the Presidium of the Scientific and Methodological Council on theoretical mechanics at the Ministry of Education and Science of the Russian Federation. Author of more than 100 publications in the field of dynamics of mechanical and hydromechanical systems, mathematical modeling and system analysis of processes of machining hard and loose materials. e-mail: fn3@bmstu.ru

