CAVITATON EROSION OF METAL SUBSTRATES IN TECHNOLOGY OF AQUEOUS SUSPENSION

O.M. Vakhrusheva om_vahrusheva@vyatsu.ru
K.S. Baev kirbaev@yandex.ru

Federal State Budgetary Educational Institution of Higher Education Vyatka State University (FSBEI HE VyatSU), Kirov, Russian Federation

Abstract

The study examines the prospects of industrial applications of cavitation disintegration of silver and copper substrates for water treatment of swimming pools. We determined the indices affecting the process efficiency. The article shows the results of studying the different metals wear quantity. The paper also provides the experimental evaluation of silver and copper particles size, the particles being formed in cavitation treatment process in the hydrodynamic flow unit of the original design under the same hydrodynamic conditions and exposure duration. We visualized the metal substrates surface erosion and present the data of field studies

Keywords

Aqueous suspension, cavitation erosion, field studies, metal substrate, the size of the particles

References

[1] Knapp R.T., Daily J.W., Hammitt F.G. Cavitation. New York, McGraw-Hill, 1970. 578 p. (Russ. ed.: Kavitatsiya. Moscow, Mir Publ., 1974. 687 p.)

[2] Belyaev A.N., Flegentov I.V., Lysov D.S. Ustanovka dlya ochistki i obezzarazhivaniya vody v plavatel'nykh basseynakh [Water purification plant for swimming-pools]. Pat. No. 160082 RF. Publ. 27.06.2005, 11 p. (in Russ.).

[3] Belyaev A.N., Flegentov I.V. Sposob obezzarazhivaniya vody sinergeticheskim vozdeystviem [Water decontaminating method using synergistic effect]. Pat. No. 2445272 RF. Publ. 20.03.2012, 6 p. (in Russ.).

[4] Kozyrev S.P. Gidroabrazivnyy iznos metallov pri kavitatsii [Hydroabrasive metal wear in cavitation process]. Moscow, Mashinostroenie Publ., 1971. 240 p. (in Russ.).

[5] Akchurin R.Yu. Razrabotka metoda i issledovanie osnovnykh zakonomernostey kavitatsionnogo iznashivaniya pri obtekanii sistemy vozbuditeley. Dis. … kand. tekhn. nauk [Developing method and principal laws research of flowing round the exciters system. Kand. tech. sci. diss.]. Moscow, 1984. 229 p. (in Russ.).

[6] Belyaev A.N. Intensifikatsiya protsessa obezzarazhivaniya vody gidrodinamicheskoy kavitatsiey. Dis… kand. tekhn. nauk [Intensification of water decontaminating process using hydrodynamic cavitation. Kand. tech. sci. diss.]. Kirov, 2000. 130 p. (in Russ.).

Vakhrusheva O.M. — Cand. Sc. (Bio.), Assoc. Professor of Department of Industrial Safety and Engineering Systems, Federal State Budgetary Educational Institution of Higher Education Vyatka State University (FSBEI HE VyatSU), Kirov, Russian Federation.

Baev K.S. — Assist. Professor of Department of Industrial Safety and Engineering Systems, Federal State Budgetary Educational Institution of Higher Education Vyatka State University (FSBEI HE VyatSU), Kirov, Russian Federation.

Scientific advisors — E.V. Kuts, Cand. Sc. (Eng.), Assoc. Professor of Department of Industrial Safety and Engineering Systems, Federal State Budgetary Educational Institution of Higher Education Vyatka State University (FSBEI HE VyatSU), Kirov, Russian Federation; A.N. Belyaev, Head of the Department of Industrial Safety and Engineering Systems, Federal State Budgetary Educational Institution of Higher Education Vyatka State University (FSBEI HE VyatSU), Kirov, Russian Federation.