## Study of swaging process in a spherical array and exhaust by spherical punch at manufacturing the bottom part of high pressure cylinders

© V.V. Stupnikov, S.A. Evsyukov

Bauman Moscow State Technical University, Moscow, 105005, Russia

The article presents the results of investigation of the swaging process in a spherical array and exhaust by spherical punch at manufacturing the bottom part of high pressure cylinders. We have built diagrams of deformation in different parts at swaging and exhaust by spherical punch. Polythickness value is established for two technological ways of manufacture. Comparison of the experimental data and the results of theoretical study showed satisfactory convergence. Comparison of the experimental data and the one obtained in the ANSYS LS-DYNA proved correctness of the chosen models to study the wall thickness.

Keywords: exhaust, swaging, strain diagram, polythickness.

## REFERENCES

- [1] Melnikov E.L. *Kholodnaya shtampovka dnishch* [Cold pressing of bottoms]. Moscow, Mashinostroenie Publ., 1986, 193 p.
- [2] Popov I.P. Izvestiya vuzov. Mashinostroenie Proceedings of Higher Educational Institutions. Machine Building, 1980, no. 5, pp. 99–103.
- [3] Popov E.A., Kovalev V.G., Shubin I.N. *Tekhnologiya i avtomatizatsiya listovoy shtampovki* [Technology and automation of sheet stamping]. Moscow, BMSTU Publ., 2000, 480 p.

**Stupnikov V.V.**, an engineer at Bauman Moscow State Technical University. Research interests include metal forming, sheet stamping, mathematical modeling. e-mail: prius@mail.ru

**Evsyukov S.A.,** Dr. Sci. (Eng.), Professor of Engineering, Bauman Moscow State Technical University.