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Technological inheritance in the machining of titanium alloys

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Abstract

© 2017, Allerton Press, Inc.The surface quality and fatigue strength of structural titanium alloys are analyzed. Attention focuses on the work hardening, residual stress, fatigue strength, and the hydrogenation after machining in various conditions.

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Keywords

durability, fatigue strength, hardenability, residual stress, work hardening

References

[1] Grechishnikov, V.A., Petukhov, Y.E., Pivkin, P.M., et al., Prediction and measurement of the parameters of the microtopography of a surface when turning intricately shaped parts, Meas. Tech., 2015, vol. 58, no. 8, pp. 848–853.

[2] Grechishnikov, V.A., Petukhov, Yu.E., Pivkin, P.M., Isaev, A.V., Romanov, V.B., and Domnin, P.V., Lathe turning of complex-shaped parts providing desired surface microrelief, Russ. Eng. Res., 2016, vol. 36, no. 3, pp. 229–231.

[3] Kosarev, D.V., Grechishnikov, V.A., and Kosarev, V.A., Reducing the vibration when cutting internal threads by mills equipped with replaceable hard-alloy plates, Russ. Eng. Res., 2010, vol. 30, no. 9, pp. 948–950.

[4] Chernetsov, V.N., Titan i ego splavy (Titanium and Its Alloys), Leningrad: Mashinostroenie, 1966.

[5] GOST (State Standard) 2860-75: Metals. Testing for Fatigue, Moscow: Izd. Standartov, 1975.

[6] Ryaboi, A.Ya. and Bronds, L.D., Povyshenie resursa aviatsionnykh detalei iz vysokoprochnykh stalei (Improvement of Operational Capacity of Aircraft Engines of Reinforced Steels), Moscow: Mashinostroenie, 1977.

[7] Obrabotka rezaniem zharoprochnykh, vysokoprochnykh i titanovykh splavov (Cutting of Heat-Resistant, High-Strength, and Titanium Alloys), Reznikov, A., Eds., Moscow: Mashinostroenie, 1972.

[8] Petukhov, Yu.E. and Domnin, P.V., Shaping by a shaped helical surface by standard direct profile tool, Vestn. Mosk. Gos. Tekhnol. Univ., Stankin, 2011, no. 3, pp. 102–106.

[9] Grechishnikov, V.A. and Isaev, A.V., Adjustment of cutting blades along the helical flute in the contoured modular casing cutter, Vestn. Mosk. Gos. Tekhnol. Univ., Stankin, 2014, no. 2 (29), pp. 34–39.

[10] Grechishnikov, V.A., Maslov, A.R., and Pivkin, P.M., The system of turning tools for the treatment of the end grooves on CNC machines, Vestn. Mosk. Gos. Tekhnol. Univ., Stankin, 2015, no. 2 (33), pp. 23–29.

[11] Grigor'ev, S.N., Kutin, A.A., and Dolgov, V.A., Principles of digital design of machine engineering industry, Vestn. Mosk. Gos. Tekhnol. Univ., Stankin, 2014, no. 4 (31), pp. 10–15.

[12] Petukhov, Yu.E. and Vodovozov, A.A., Mathematical model of the curved cutting edge of the highly strength twisted drill, Vestn. Mosk. Gos. Tekhnol. Univ., Stankin, 2012, no. 3, pp. 28–32.

[13] Grechishnikov, V.A., Romanov, V.B., Ryabov, E.A., et al., Profile design of shaper cutter with any desired geometrical parameters, Vestn. Mosk. Gos. Tekhnol. Univ., Stankin, 2012, no. 4 (23), pp. 15–17.