REFERENCES

1. Аринин, И.М. Техническая эксплуатация автомобилей / И.М. Аринина. – Ростов н/Д : Феникс, 2004. – 125 с.
2. Никитин, Ю.Н. Оценка жидкостного трения в сопряжении цилиндр – поршневое кольцо – поршень / Ю.Н. Никитин, Л.Х. Арустамов // Двигателестроение. – 1987. – № 7. – С. 51–53.
3. Денисов, А.С. Отладка программного обеспечения микроконтроллера прибора для диагностирования двигателей внутреннего сгорания с использованием программного комплекса PROTEUS / А.С. Денисов, И.Ю. Куверин // Вестник Саратовского государственного технического университета. – 2013. – № 71. – С. 86–90.
4. Элементы системы автоматизированного проектирования ДВС: алгоритмы прикладных программ / Р.М. Петриченко [и др.] ; под общ. ред. Р.М. Петриченко. – Л. : Машиностроение, 1990. – С. 239 – 240.
5. Дьяченко В.Г. Теория двигателей внутреннего сгорания. Учебник / В.Г. Дьяченко; перевод с украинского языка. – Харьков, ХНАДУ, 2009. – 140 с.

UDK 621.787

IMPROVING PERFORMANCE OF SHAFT SURFACE PLASTIC DEFORMATION

INA HRANKINA, VLADIMIR IVANOV
Polotsk State University, Belarus

In this work one of ways of a naplavka is considered at restoration of shaft by superficial plastic deformation, on completion of work the result about influence of superficial plastic deformation on endurance and intensity of wear of a cranked shaft was summed up.

The main causes that explain the need for repair of machines, are fraying and fatigue destruction of parts operating in conditions of exposure periodic loads. Typical load detail, requiring increased wear resistance and fatigue strength are the crankshafts of internal combustion engines. If there is a loss of efficiency, there is a need for crankshafts of their recovery, as they are steel-intensive and expensive parts, replacement of new products economically impractical. To restore the crankshafts are widely used various ways of surfacing. Hard-facing of wear resistant surfacing materials allows you to restore the geometry and coating with high wear resistance, fatigue strength of remanufactured shafts are reduced by 25-30%.

Negative effect of welding on the fatigue strength of these parts can be significantly reduced by applying the technology of repair of surface hardening plastic processing methods-surface plastic deformation (SPD) [1].

The aim of this work is to improve the performance properties of shafts of the restored building-introduction to technology repairs SPD.

As a material for manufacturing samples used worn crankshafts, constructed of steel 45 with a given chemical composition for obtaining the required technological strength, but prone to hardening structures and, as a result, cracks [2]. Fatigue tests were carried out on the car the UKI-10 m on samples manufactured in accordance with GOST 25.502-79. The tests were conducted to complete destruction of the samples. Wear rate was determined according to the scheme "disc-pad" (paper liners bearings AO20-1) by car friction SMC-2 by defining mass intensity of wear, in kg · cm-2 for 1000 m friction GOST 17364. As your welding material used wire 1.6 N-08X13.

Using wire 1.6 N-08X13 to prevent the formation of cracks due to minimize the transition zone.

Hardness of coatings obtained by welding wire Mw-08X13-HRC 30-33. One of the indicators of the properties of deposited metal is the firmness with which sometimes equate durability, but when evaluating durability must be taken into account and the structure of coatings: matrix hardness, presence of carbides and their dimensions, consolidation of carbides in matrix. Microstructure of coatings obtained by welding wire 08X13 is a solid solution with chromium carbides. Alloys of similar structure, with low carbon content has the ability to significantly increases the hardness, toughness and wear resistance as a result of testing (with plastic deformation with a considerable degree of deformation). As a result of the SPD in the surface layer of deposited coating is formed texture with high concentration of lattice defects that inhibit the sliding plane, making it difficult for their further spread. Just after the TTD cover arise internal residual compressive stress, which block the disclosure of the fatigue cracks, turning them into a wide range of stresses in unspreadable.

Introduction to the technology of repair when welding wire shafts 1.6 N-08X13 operation of surface plastic deformation increases the fatigue limit of the recovered shafts on 25-30%, and the wear rate is reduced by 15-20%.

REFERENCES

1. Pshibilski, V.V. Technology of superficial plastic treatment / V.V. Pshibilski. – M.: Metallurgy, 1991. – 479 p.
2. Livshitz, L.S. Physical metallurgy of welding and heat treatment of the weld-fabricated connections / L.S Livshi, A.H. Hakimov – the 2nd publ., reused and added. – M.: Engineer, 1989. – 336 p.