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Analysis of mechanical and physical properties of metal cutting tools processed by low pressure RF plasmas[1] VIKTOR ZHELTUKHIN, Retired, ALBERT KHUBATKHUZIN[2], Kazan National Research Technological University — Physical and mechanical characteristics of metal cutting tools treated by capacitive coupled RF plasma are investigated. Topography, roughness, hardness, wear resistance, modulus of elasticity, elastic recovery coefficient and the thickness of the modified layer in a single instrument was studied. Gas saturation (carbonizing) of surface layers of metals and alloys at a depth of 1 micron during to 40 minutes processing was obtained, resulting in an increase of strength properties, durability and lifetime of the products. Research of wear resistance was carried out by experiments on field trials of "Northwest trunk pipelines". Results are showed that lifetime increases in the range from 140 up to 230%. The complex approach to the study of surfaces with the use of methods to measure.

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