

Statistical Monitoring of Decrease of Surface Eccentricity and Hole of Barrel Tubes from High Strength Steels under the Production Conditions

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This work investigates issues of BTA drilling of deep holes with slenderness ratio $L: D = 45 \div 60$ of high strength steels with a tensile strength of $R_m = 1350 \div 1600$ MPa. Methodology for testing of surface when turning and boring deep holes after drilling accordingly, heat treatment, straightening annealing and stress relief, was based on the statistical monitoring of eccentricity surface deviation from the theoretical axis of the bore axis for instruments with changeable carbide cutting inserts with CVD/PVD coatings under operating conditions with the number of 30 pieces. Measurement results of eccentricity of surfaces for locating strips before and after machining (as in turning and drilling for more cuts) are statistically processed in tables and graphs, as well as the obtained and acquired results. Article presents the optimized parameters of BTA drilling. Originally used tools for drilling were upgraded by using carbide inserts of type 14.171.55-00/0400 or /0250 by Krupp WIDIA. Influences of factors are discussed, and the monitoring of factors that produce holes of desired eccentricity is presented.

Keywords: Barrel Tube, BTA System, Deep Hole Drilling, Surface Eccentricity, Statistical Monitoring

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