

2nd International Conference and Exhibition on **Industrial Engineering**

November 16-18, 2015 Dubai, UAE

Study of surface state after annealing of a steel 42CrMo₄ part machined by turning with a ceramic tool and a carbide tool

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This article exposed the results of an experimental study on the machining of steel annealing 42CRMO₄ with Brinell hardness HB 174, with two cutters: White zirconia ceramic (Al₂O₃ and ZrO₂) and the carbide (made of tungsten carbide WC). The test series is devoted to the study of the influence of cutting conditions on the main criteria of the roughness of machined surfaces (Ra, Rz and Rt). For this, we have made plain factorial trials and based on multifactorial method of experimental design, the variable parameters: Cutting speed, feed per revolution and the depth of cut were designed. Modeling results helped in leading mathematical models like Gilbert (Taylor model generalized). Machining of the steel pure ceramic gave very good surface states with high cutting speeds.

Biography

Razika Aouad doing PhD with domain in recherche machining and mechanical fabrication at the Mentouri Brothers University, Constantine, Algeria.

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