

Influence of Waterjet Peening and Smoothing on the Material Surface and Properties of Stainless Steel 304

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ABSTRACT

The present study investigates a combined effect of waterjet peening and smoothing on the surface of austenitic stainless steel 304. An analysis of surface finish and the change in hardness were evaluated. The waterjet treatment on the surface was conducted in steps with multiple passes. Initially, the surface was treated with a higher energy and later with a lower energy of the water droplets. The surfaces treated with multiple steps of decreasing energy produced a smoother surface with lower peak heights and a slightly higher increase in the hardness than the surface treated with only a single step. The hardening layer was also maintained during the later step treatment. The combined action of surface hardening and smoothing using multiple steps in waterjet treatment is useful in increasing the hardness and reducing the roughness of the surface.

KEYWORDS: Waterjet peening; Waterjet smoothing; Multiple step treatment; Surface finish; Hardness

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