

Importance and Methods of Residual Stress Profile Measurement

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The contribution is dedicated to surface integrity assessment of components from the point of view of residual stress profile after machining and finishing technologies. Residual stresses play the key role for dynamic life and service reliability of the part, especially rotating aircraft airfoils made of titanium and nickel base alloys. Except a brief summary of measurement methods practical experience with application of Beam deflection method combined with electrolytic etching is published. Specific measurement results for real aircraft Ti6Al4V airfoils and Ti6Al4V plates following its manufacturing technology are the subject of experimental part.

Keywords: measurement of residual stress profile; beam deflection method; electrolytic etching; titanium airfoils, thumbling; laserpeening

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