

## INFLUENCE OF DEFORMATIONS ON AERODYNAMIC CHARACTERISTICS OF ROTOR BLADE AIRFOIL

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The paper presents results of a research concerning the comparison of aerodynamic performance between the designed (theoretical) and manufactured rotor blade. The main goal of the research is study the influence of the geometry deformations emerged in the production process of the rotor blade. Numerical simulations are being developed in order to analyse the influence of these deformations. The research regards two dimensional numerical analysis of the rotor blade airfoil in the steady state conditions and three dimensional analysis of the rotor blade with the use of VBM model.

Deformations of the initial rotor blade geometry, induced by the production process, may significantly change its aerodynamic performance. These deformations may occur mainly as a result of an inaccuracy of the manufacturing process method or by putting some additional devices into the blade structure. One example of the inaccuracy includes some changes of the airfoil curvature as an effect of the mould removal (Fig.1). Additional devices such as trimmer or an anti-ice installation could result in the appearance of gaps and shifts (Fig.2), enlargement of the airfoil chord and modification of the trailing edge (Fig.3). These types of the geometry deformations are being examined in order to analyse numerical results of the airfoil aerodynamic performance.

