

# Determination of Contact Forces During Rubbing Considering Blade Dynamics

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## **ABSTRACT**

The main emphasis of the paper to be presented are experimental investigations of blade rubbing. Therefore, a test rig was devised to measure the appearing contact forces during the rubbing process. The objective is the determination of a contact force law in the normal (radial) and the tangential direction. In order to measure the normal and the tangential force quartz force sensors installed at the casing are used. Additionally, the contact forces are determined from a dynamic model of the rubbing blade in combination with strain measurements at the blade. For that reason the strains in axial and lateral direction are measured at an appropriate location using strain gauges and telemetry. To recover the original time histories of the contact forces the method of inverse filtering is applied to reduce the disfiguring influence of the dynamics of the test rig.

**Keywords:** blade rubbing, experimental investigations, contact forces, blade dynamics, strain measurement