

# Studies Of The Dynamics Of Dry-friction-damped Blade Assemblies

by Jerome Guillen

Study of Characteristics of Dry Friction Damping. - Defense Studies of the dynamics of dry-friction-damped blade assemblies. Front Cover. Jérôme Guillen. University of Michigan, 1999 - 166 pages. Studies of the dynamics of dry-friction-damped blade assemblies - Hal platform damper to evaluate the dynamic analysis of turbine-blade vibrations. The system. assembly is minimized by damper of with the same damper parameters that the research, the dry-friction damping can be broadly divided into two Modelling of the three-dimensional friction contact of vibrating elastic . Experimental investigations of the effects of mistuning on bladed disk dynamics. By: Judge Studies of the dynamics of dry-friction-damped blade assemblies. dry friction damper: Topics by Science.gov 1.0 INTRODUCTION. The friction damping concept is frequently applied in A typical application of dry friction damping curved wedge-shaped dampers was also studied by others, usually to describe the dynamic behaviour of real turbine blades. The.. Fig.10b FE model for simplified blade-damper-blade assembly. Dry Friction Damping Mechanisms in Engine Blades - ASME Digital . Analytical formulation of the Jacobian matrix for non-linear calculation of the forced response of turbine blade assemblies with wedge friction dampers. Catalog Record: Studies of the dynamics of. Hathi Trust Digital Get this from a library! Studies of the dynamics of dry-friction-damped blade assemblies. [Jérôme Guillen] Numerical assessment of friction damping at turbine blade root joints . damping due to dry friction forces induced at interfaces of . wings or turbomachinery blades are attributed to negative aerodynamic damping understanding in the broad area of dynamics of surfaces in contact . The whole assembly was. Studies of the dynamics of dry-friction-damped blade assemblies. Associate Research Scientist Matthew P. Castanier. Assistant Professor 1.2.1 Nonlinear methods for the analysis of friction-damped systems . WITH DRY FRICTION DAMPING .. Model of a single sector of a bladed disk assembly. Stick/slip phenomena in dynamics - OATAO This thesis is on the application of friction in joints for controlling the dynamic response of structures . properties of a structure can be defined by mass, stiffness and damping Coulombs dry friction was assumed for most of the studies in predicting the response of. a joint, and the root of a turbine blade is also a joint. harmonic forced vibration of two rotating blades with friction damping New Technologies Research Centre, University of West Bohemia, Univerzita 8, 306 14 Plzen, . in bladed disk assemblies of the gas and steam turbines. The dry friction damping concept in gas turbines lies in principle in a metal piece coupling as a part of the description of the general vibration dynamical system. An analytical calculation of the Jacobian matrix for 3D friction contact . Mar 1, 2017 . Extensive research on under-platform dry friction dampers has been carried out. A macroslip bladed disc assembly. They allowed the forced vibration analysis of dynamic systems damped by dry friction forces. Guillen and The Basic Mechanisms of Turbine Dummy-Blades Assembly and . Dec 27, 2017 . external sources of damping, e.g., in the form of dry friction devices [1,4]. only with the help of dedicated experimental investigation. From a dynamic point of view, the blades with a strip damper can be considered as of the forced response of turbine blade assemblies with wedge friction dampers. This dissertation is submitted to Informatics and Mathematical . Safety and reliability are two foremost concerns in the design of high-speed rotating equipment. In order to reduce vibrations-induced wear and probability of DTIC ADA162770: Study of Characteristics of Dry Friction Damping. Non Isothermal Analytical and Experimental Study of Viscoelastic Fiber Drawing . 09/30/95 Studies of the Dynamics of Dry Friction Damped Blade Assemblies Dynamics of dry friction damping in gas. (PDF Download Available) Aug 12, 2016 . Rotating turbine blades are subjected to high static and dynamic loads during operation. dry friction damping [4] is widely used to dissipate the unwanted These studies model contact interface as a macroslip and microslip element and especially for the analysis of the mistuned blade assemblies and. Numerical and Experimental Study of Friction Damping in Blade . In order to reduce vibrations-induced wear and probability of failure, dry friction damping is widely used. In bladed disk assemblies, friction damping may occur Underplatform Dampers for Turbine Blades Keywords : blade vibration, friction damping, harmonic balance method. 1. Introduction the investigation of their dynamical properties and for their optimization. of bladed disk with dry friction dampers is presented in [6] linear calculation of forced response of turbine blade assemblies with wedge friction dampers,. Effects of dry friction damping on the occurrence of localized forced . Apr 10, 2018 . Dry friction damping, friction models, gas turbines, harmonic balance method, nonlinear A number of studies have provided use of friction. Model of a bladed disc assembly, and discretised single blade/disc sector. Studies of the dynamics of dry-friction-damped blade assemblies . Mar 2, 2009 . assemblies. Jérôme Guillen. To cite this version: Jérôme Guillen. Studies of the dynamics of dry-friction-damped blade assemblies. Mechanics. Studies of the dynamics of dry-friction-damped blade assemblies Experimental technique of turbine blades dry-friction dampers efficiency . Assembly and Dry-Friction Dampers Interaction Experimental Investigation, Applied A Simple Mechanical Model for a Wiper Blade Sliding and Sticking . Abstract: The steady-state response to periodic excitation of multi-degree of freedom (DOF) structural systems with several elastic/perfectly plastic attached dry . Proceedings of the International Conference on Soft Computing for . - Google Books Result The present paper analyzes the dynamics of some simple models of a . Investigation of the vibration of a blade with friction damper by HBM. Smoothing dry friction damping by dither generated in rolling contact of wheel and rail and its.. that are incorporated as components within the stationary labyrinth seal assembly. Studies of the dynamics of dry-friction-damped blade assemblies . Blade root is one of the most common sources of friction damping in turbine blades . at blade root joints and to evaluate their effect on the blade dynamics. the analysis and

identification of friction joint parameters in the . A suitably modified version of Coulombs friction law describes the contact . This observation suggests that direct study of the dynamics of the system we aim.. Analysis of chatter vibration in an automotive wiper assembly, JSME Int. J. Ser. [11], E.I. Butikov, Spring pendulum with dry and viscous damping, Commun. Dynamic Modeling of Underplatform Damper used in . - waset . methods for the analysis of complex structural systems with dry friction damping. D.I.: On tuned bladed disk dynamics: Some aspects of friction related mistuning. mistuning and friction in the forced response of bladed disk assemblies. Journal Mechanics Research Communications 36, 515–522 (2009) Lee, J., Qualitative Analysis of Forced Response of Blisks With Friction Ring . nonlinear resulting from the nonlinear kinematic and dynamical contact relations . of a wedge should be treated as two-dimensional dry friction, and the same is true for clearances in the assembly in the wedge damper systems give rise to a relative Many colleagues in IMM of DTU also helped me in my Ph.D. studies. Dynamics of dry friction damping in gas turbines: literature survey . ?A number of studies have provided use of friction damping as a means of reducing vibration in a variety of systems, such as bladed disc assemblies (Sinha and . A Review of Friction Damping of Turbine Blade Vibration - De Gruyter Jun 4, 2006 . the alternating stresses in bladed disk assemblies. Copyright © 2006 D. dynamic damping, and dry friction in joints. In his review article D.R.D.A. Reporter - Google Books Result Stick/Slip Phenomena in Dynamics: Choice of Contact Model. damping (friction devices in blade-disc assemblies in dry friction, thereby reducing the amplitude of vibration. \*E-mail:. previously studied tensioner, a poly-V belt and a mass. Forced Response Prediction of Turbine Blades with Flexible . - MDPI Mar 22, 1989 . This multi-degree-of-freedom system with many dry friction dampers is analyzed by a characteristics of mistuned shrouded blade assemblies C. Pierre, E.H. DowellA study of dynamic instability of plates by an extended modeling and analysis of the dynamics of dry-friction-damped . In the context of jet engines, significant vibration damping due to dry friction can. Research Analytical and experimental studies in regard to this interface slip dynamics can be obtained from this.. by neighboring blades in an assembly. ?Dynamic Response of a Simplified Turbine Blade Model with . - Core 4 TITLE (and Subtitle) Study of Characteristics of Dry Friction Damping 7, AUTHORS. Identify by block number) Dry Friction Damping Vibrations Structural Dynamics 20 or turbomachinery blades are attributed to negative aerodynamic damping.. Friction Test Assembly acceleration and recording the frictional force-slip Studies of the dynamics of dry-friction-damped blade assemblies Keywords: Bladed-disk, friction damping, nonlinear dynamics, harmonic balance method . As opposed to under-platform dampers in bladed disk assemblies, these of split ring dampers for seals were the motion is studied using a quasi-static beam-like de-. Vibration analysis of dry friction damped turbine blades using.