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油膜轴承动态特性参数及转子不平衡的现场识别

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FIELD IDENTIFICATION OF THE DYNAMIC CHARACTERISTIC PARAMETERS OF JOURNAL BEARINGS AND THE UNBALANCES OF ROTORS

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摘要

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摘要 应用有限元方法建立了柔性转子-轴承系统的动力学模型, 提出了在不施加人工激励的前提下识别油膜轴承动态特性参数和转子不平衡的一种时-频域混合法。这种方法可以对每个轴承进行单独识别, 亦可进行统一识别, 真正实现了“现场”和“在线”, 而且不破坏油膜的正常工作状态。最后给出了合理的现场识别实验结果。

关键词: 转子-轴承系统 液浮轴承 动态特性 参数识别

Abstract: The dynamical models of flexible rotor bearing systems are constructed using FEM. A time frequency domain hybrid method of identifying the dynamic characteristic parameters of journal bearings and the unbalances of the rotor on field condition and without artificial excitations is proposed. Using this method, the dynamic characteristic parameters of each bearing can be identified separately or altogether. Apart from realizing 'on the spot' and 'on line' identification, the proposed method almost has no influence on the rotor bearing system. Finally, reasonable experimental results are introduced.

Keywords: rotor-bearing systems liquid bearings dynamic characteristics parameter identification

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