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瞬时畸变指数IDC、IDR最大值的预估与实验

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PREDICTION AND EXPERIMENTS OF MAXIMUM INSTANTANEOUS DISTORTION INDEX OF IDC AND IDR

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摘要

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摘要 提出了一种预估流场畸变指数IDC、IDR瞬时最大值的方法。推导了周向畸变指数IDC、径向畸变指数IDR的时均值与均方根值。还由实验测得了实际的最大瞬时畸变值。经过与预估值相比较给出了预估的精度。

关键词: 瞬时最大畸变 IDC和IDR 压力畸变预估

Abstract: In this paper a method of predicting the maximum distortion IDC and IDR of the the outlet flow field of the intake is presented. As in the instantaneous IDC, the minimum value of the total pressure distributed along a ring is involved; it is not so easy to predict the maximum distortion in a certain duration directly. To overcome this difficulty it is proposed to find the maximum IDC at a location within a duration with the assumption of normal distribution of APD of distortion at first and then to compare the IDC's of different locations obtained to find the maximum IDC of the whole flow field. The predicted maximum IDC and IDR are compared with experimental results with satisfaction. Meanwhile, the formulas for calculating the time average and R.M.S. values of IDC and IDR are derived.

Keywords: instantaneous maximum distortion IDC and IDR prediction of maximum pressure distortion

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