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May 20, 2002

Dr A Y Zhivotov
Yuzhnoye State Design Office
3. Krivorozhskaya st
Dniepropetrovsk
49008
Ukraine

Dear Dr Zhivotov,

Re: Paper No.216
Paper Title New Theory of Rotor Dynamics

Review of the above paper for the IFToMM Sixth International Conference on Rotor Dynamics, to be held in Sydney, Australia, from September 30 to October 3, 2002, has been completed.

Based on these reviews, I am pleased to confirm that the paper has been accepted for poster presentation at the Conference. In the preparation of your poster and your one-page abstract, which will be published in the Conference Proceedings, please adhere strictly to the instructions on the Conference website http://www.mech.unsw.edu.au/mech/IFToMM/Conference.html. The abstract should be sent directly to the Conference Secretariat, together with registration fee (if not already sent), by no later than **June 15 2002**, as per website instructions.

Thank you again for submitting your paper to the IFToMM Sixth International Conference on Rotor Dynamics and for contributing to the success of this Conference. We look forward to seeing you in Sydney in 2002.

Sincerely,

Arthur W Lees
Member of Scientific and Technical Committee and Review Organiser
for IFToMM Sixth International Conference on Rotor Dynamics

Reviewer A

The author presents a 'so-called' new theory of rotors dynamics, which applies an additional forque of an actuator to calculate the forces and movements acting on the rotor and analyzes the rotor dynamics with static disbalance. Unfortunately, I am not persuaded that there is anything valuable. Besides, in my personal view, there are two criticisms in the following.

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A. Equation errors

Equation 19 and 20 on page 3 & 4, which expresses the reaction forces and their directions in supports, are totally wrong. The centrifugal force caused by the rotation is not considered in his equations. Reaction forces and directions are likely to be determined as:

$$R_1 = R_2 = \frac{1}{2}\sqrt{(F_{kp} - F_\gamma \sin\alpha)^2 + (F_y - F_\gamma \cos\alpha)^2}$$

$$tg\xi = \frac{F_{kp} - F_\gamma \sin\alpha}{F_y - F_\gamma \cos\alpha}$$

Equation 11, the equation of moments relatively to point C should be corrected to the following:

$$M_u + m\omega^2 ae\cos\alpha - kae\sin\alpha = 0$$

Equation $\alpha = \dfrac{m\omega^2 e}{\sqrt{\dfrac{k^2}{m^2\omega^4} - \dfrac{2k}{m\omega^4} + 2}}$ on page 5 needs to be corrected as

$$\alpha = \frac{e}{\sqrt{\dfrac{k^2}{m^2\omega^4} - \dfrac{2k}{m\omega^4} + 2}}.$$

B. Typing mistakes

There are so many typing mistakes throughout the paper. For instance, of of the rotors' inertia, coordinatee (*coordinate)* system, bigher (*higher)* velocity, rotor retation (*rotation*), way (*may*) be, takes placer (*place*), bag (*big*) general supervision, *etc*. The author should use the spelling and grammar tools to have a double check before sending off the paper.

The distance or the value of displacement should be expressed as *a* (not a or α) in the text and the angle as α (not a). The mixture of them causes much confusing for understanding.

The centrifugal force denoted in the text should be consistent with the note in figure 1.

I suggest that the paper would not be acceptable in its present form for the Journal or IFToMM Conference publication.

Reviewer B

The article is full of incorrect and inconsistent results, it being very difficulty to understand the detailed logic of the arguments put forward due to a language problem. There does not appear to be an understanding of the behaviour of flexible shafts in the rotor dynamics sense and it is not clear how the laws of motion are derived. Use of Newtons law or a Lagrangian approach would be more transparant.

Reviewer C was very negative

THE ANSWER!

Eric Hahn
Arthur Lees
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Dear Professor E.Hahn,
Dear Professor A. Lees,

We received the review of our Paper "New Theory of Rotor Dynamics: Disk Rotor Dynamics with Static Unbalance" (Paper # 216).

The Paper is the first of papers that will provide fundamentals of "inertial" theory of the rotor dynamics. Therefore, we emphasize the paper. Note, as early as abstract submission we had explained that "inertial" theory of rotor dynamics differs in kind from "vibration" one, which is applied currently.

We considered the review and came to the following conclusions.

C, B, and A reviewers found out no weaknesses of new "inertial" theory of the rotor dynamics. Such opinion is based on lack of specific reasonable remarks concerning the theory directly. Just A reviewer advanced a remark relating to correctness of the equations determining the bearings response values and directions. These equations are provided as an example of new theory capacity and promote better explanation of new theory.

In order to prove the correctness of equations we inform the following.

The rotor interacts with the bearings via the flexible bend shaft. Therefore, the bearing responses are only determined by $F_{\text{кp}}$ and F_y independently of number and direction of the forces affecting the rotor.

We paid heed to Mr. A comments regarding misprints and quality of translation. The final paper allow for all of them.

Also, we would like to note that new "inertial" theory is already created and our target is to acquaint world scientific society with this advanced theory. It is in the interests of all Conferees.

Other purpose is a frank discussion with the scientists to clear the general directions of the theory further development. Therethrough, we would like that any Conference participant would have an opportunity to be acquainted timely with our theory by the Final Paper. We found no reasons that hamper the insertion of the Final Paper into the Proceedings.

We also point out that submission of application to take part in the conference and sending a summary for expert review was carried out a long time before the organizers took the decision to apply stand papers at the conference.

Our paper was classified as stand paper. We consider this classification to be wrong, because it is not foreseen by the regulations of the conference and our paper is calculated at hearing. This matter hinders foreign scientists in getting acquainted with the new theory.

We expect proper regulation of these matters.

Sincerely,
A.Zhivotov