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A. Kurabayashi
Hitachi Ltd.

Y. Shinji
Hitachi Ltd.

Y. Kunii
Hitachi Ltd.

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STRESS MEASUREMENT OF HIGH SPEED COMPRESSOR VALVES

Akira Kurabayashi
Yutaka Shinji
Yoshikatsu Kunii

Hitachi Ltd., Mechanical Engineering Research Lab.
Nakagawa 5-1, Adachi-ku, Tokyo, Japan

ABSTRACT

With a view to grasping the dynamic strain of valve plates in relation to the fatigue life of valve plates used in compressors for air conditioners and refrigerators, application and problems concerning three methods of measurement ----- "brittle coating method", "strain gauge method" and "copper plating method" ----- have been studied and these measuring techniques have been established.

The copper plating method which has been developed in Japan needs no lead wire and provides easy measurement of revolving bodies and small spaces. Therefore, the method is considered to be best suited for the actual dynamic strain measurement of the valve plate for small high speed compressor and particularly for the quantification of stress concentration. Accordingly, the following discussion covers points which seem to come into question in the quantification of valve stress.

- (1) Effect of temperature under repeated load
- (2) Relation between number of repetitions and stress
- (3) Effect of difference in stress wave form

Stress level and stress distribution in each section of various valves have been measured through the application of these measurements to actual operating compressors.