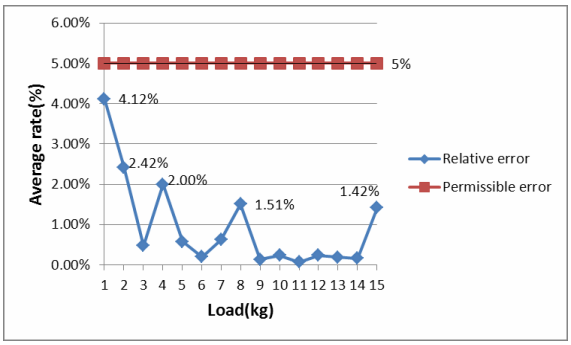

Figure 15: Comparison of experimental results on average error rate and engineering permissable error rate.

4. CONCLUSION

In this paper, ANSYS Workbench is used to analysis the modal of thermostatic oscillator, and we get the inherent frequency and vibration mode. Through the change of the modal analysis we can predict the change of dynamic structure. It will provide the reference for the accurately modal analysis of vibration characteristic the fault diagnosis for vibration and the optimization design of structural dynamic characteristics. The analysis method and consequences on the mechanism of thermostatic oscillator can provide instructions for the development and research on oscillator's mechanism. We can get some results as follows: (1) This paper designed a new automatic balancing device and carries on the analysis, from the results we can indicate that when the balance blocks of the thermostatic oscillator in different angles, the frequencies change little, the changes of the internal coordinates has little effect on the frequency variation of the machine . (2) According to the simulation result, the constraint modal results accord with the actual displacement constraints of thermostatic oscillator. The automatic balancing machine in the first six order some part of the mechanical structure appear deformation, but the bottom bearing does not appear to be out of shape. (3) Experiments indicate that the new thermostatic oscillator can meet the design of requirements and reduce the vibration effectively.

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