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Experimental Research on the Inducer of the Centrifugal Compressor

Tetsuro NAGANO*

Recently the researches for the practical use of the small gasturbines made rapid progress. The small gasturbines are promising as the prime movers of the automobiles. Every element of the construction has an important effect upon the gasturbines. Especially the performance of the compressor gives a large influence upon that of the gasturbine. In experiment, the author used the centrifugal compressor which is used usually in a small gasturbine. Four kinds of inducers were used and the influences which were caused by the difference of the inducer were investigated. In the tests the axial positions and the phase of the inducers were changed, and the results were obtained about adiabatic thermal efficiency, flow rate, pressure ratio, reaction grade, etc.

In consequence, the ordinary type inducer showed the highest efficiency, 0.72, but the operating points exist near to the surging area. On the other hand, the inducer which had a little distance between the inducer and the impeller showed 0.70 efficiency, moreover it showed good flow rate, pressure ratio, and reaction grade. However about the distance between them, there is some limit. The overlap type of the inducer was expected to show a good result, but, on the contrary, its results were completely worse.

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