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The Effect of a Crossover Diffuser Configuration on the Performance of a Mixed Flow Compressor Stage for a Micro Gas Turbine Engine

Mixed flow compressor configurations are prevalent in Micro Gas Turbine (MGT) engines. Fitting these with a crossover diffuser allows for superior diffusion and flow re-alignment within the space restrictions attributed to MGT engines. Compressor performance is largely affected by diffuser design. The study focused on various crossover diffuser configurations, aiming to improve compressor design point performance and operating range. Novel diffuser configurations included tandem vane, splitter vane and combination configurations. It is shown that these provide superior design point performance compared to legacy diffuser types, as well as increased operating range when compared to single vane crossover diffuser configurations.

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