

Investigation and Perfection of Centrifugal Compressor Stages by CFD Methods

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Abstract : Stator elements «Vane diffuser + crossover + return channel» of stages with different specific speed were investigated by CFD calculations. The regime parameter was introduced to present efficiency and loss coefficient performance of all elements together. Flow structure demonstrated advantages and disadvantages of design. Flow separation in crossovers was eliminated by its shape modification. Efficiency increased visibly. Calculated CFD performances are in acceptable correlation with predicted ones by engineering design method. The information obtained is useful for design method better calibration.

Keywords : vane diffuser, return channel, crossover, efficiency, loss coefficient, inlet flow angle

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