

터보기계 익렬 유동 해석을 위한 다중블록 격자 형성법

Multiblock Grid Generation for Turbomachinery Cascade-Flow Analysis

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ABSTRACT

A multiblock grid generation has been developed to be reliably used for a Navier-Stokes simulation of the turbomachinery flow-fields. A multiblock structure simplifies the creation of structured H -grids about complex turbomachinery geometries and facilitate the creation of a grid in the tip flow region. The numerical algorithm adopts the combination of the algebraic and elliptic method to create the internal grids efficiently and quickly. The grid refinement process is enhanced by developing strategies to utilized Bezier curves and splines along with weighted transfinite interpolation technique and by formulating the grid-imbedding method for the viscous boundary-layer meshes. For purposes of illustration, the grid generator is applied to the high turning turbine rotor blades. Three different types of computational grids are provided to be compared with respect to the grid adaptation to the flow simulations. The grid quality of the multiblock structure is good in the passages, with gloval orthogonality and adequate smoothness.

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