

Abstract :

This work consists to develop, from an initial machine, a process of gas turbines design while studying the meridian flow in the axial multi stages turbo machinery with compressible fluid. The flow equations are identical to those in the free vortex configuration and outside the blade zone in the case of single stage axial machines. A particular analytical resolution was elaborate on which a treatment on an ideal machine carried out initially and then on a real gas turbine with two stages were it was considered the reception essays of the machine in question which includes records with various levels of power (the turbine is used for the drive of an alternator). An analysis on the tests of the real machine was carried out to validate the selected analytical resolution. The method carried out and validated made it possible to calculate a factor for the design of new machines from the initial machine. We can to validate the calculation of this factor with a numerical resolution by working out a program (calculation by finites differences is carried out in this study)