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Title : CASCADE TESTS ON CE 20 LOX TURBINE NOZZLE BLADE PROFILE

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Abstract : LPSC, ISRO, as part of their CE 20 cryogenic engine development program, desired to get the liquid oxygen [LOX] turbo pump turbine profiles tested at the NAL Transonic Cascade Tunnel to obtain basic aerodynamic performance data. The first rotor, stator and the second rotor profiles of the LOX turbine have already been tested in TCT and the results have been disseminated. The present task involves the aerodynamic evaluation of the nozzle profile of LOX turbine, in TCT. This profile was tested at five different inlet flow angles and eight outlet Mach numbers, covering the design and several off design conditions. Aerodynamic performance parameters such as profile loss, exit flow angle, flow velocities and surface Mach number distribution were evaluated. The effect of incidence on these performance parameters were also studied in detail. Oil flow visualization study was done at the design condition to study the flow behavior on the blade surfaces.