Solution of 2-D Euler Equations: VKI-1 Turbine Blade

Spatial discretization by Roe's upwind scheme:
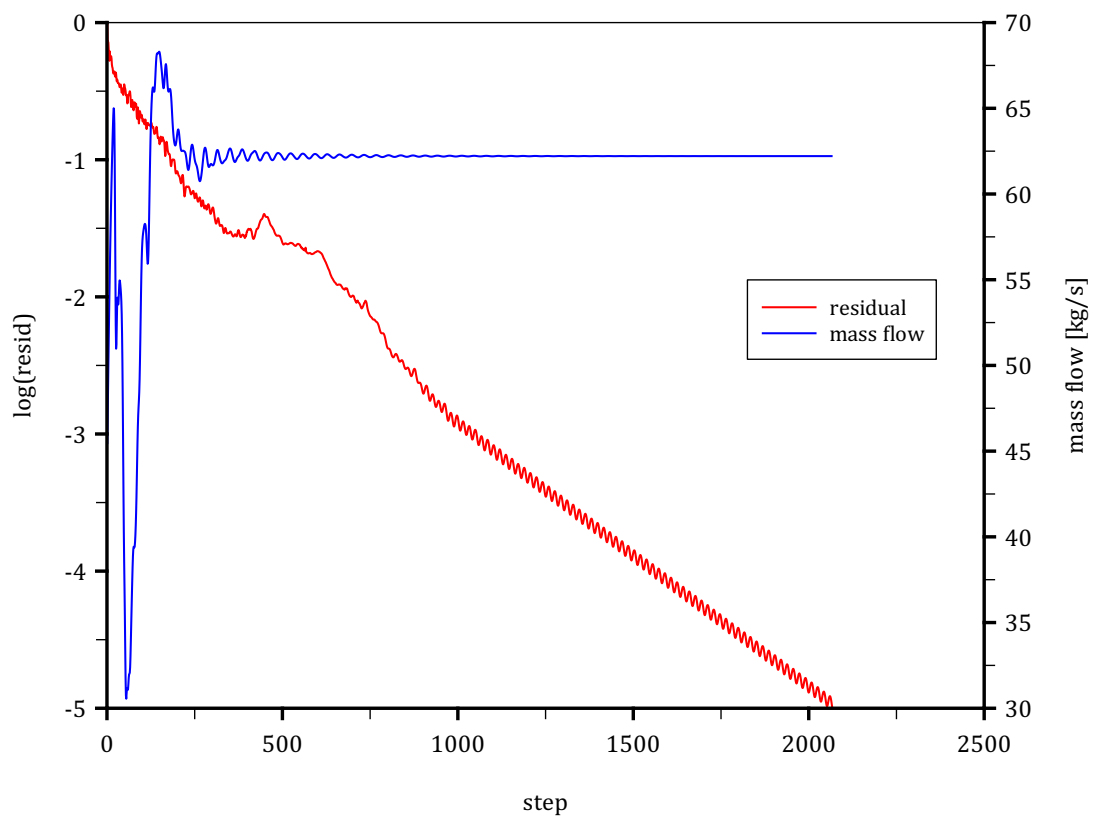$\sigma = 5.5, \varepsilon = 0.4, K = 1$

Boundary conditions:
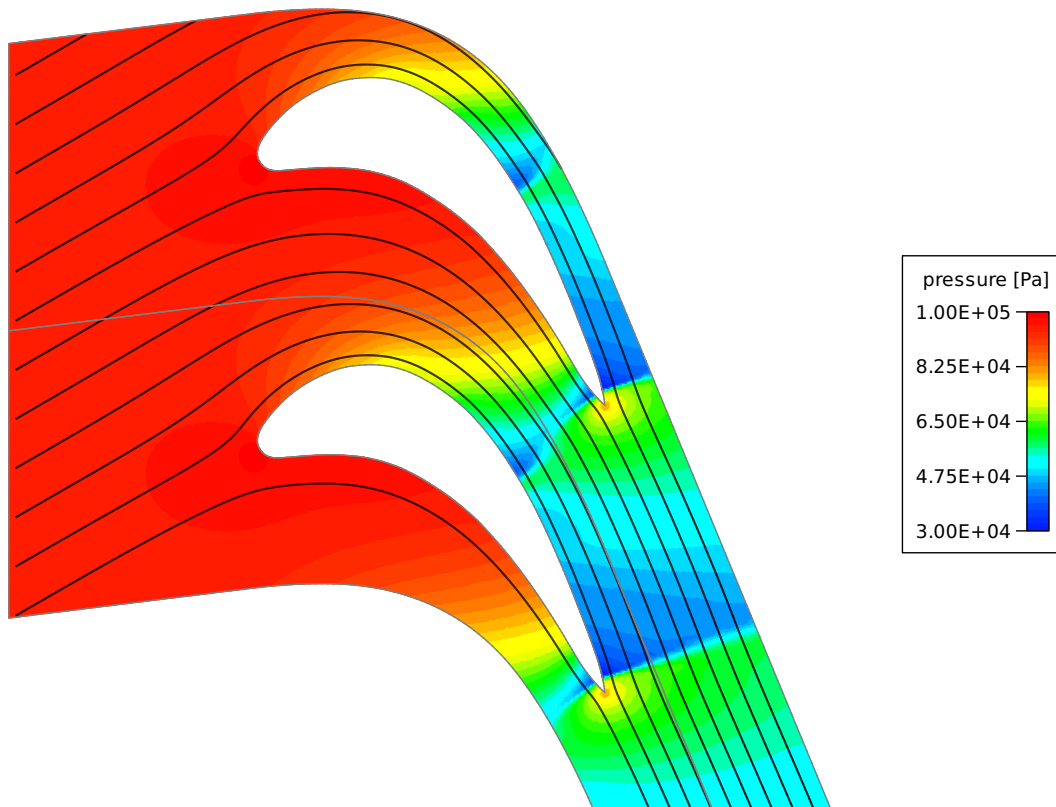$p_{t,inl} = 1.0 \cdot 10^5$ Pa, $T_{t,inl} = 300.0$ K, $\alpha_{inl} = 30°$, $p_{out} = 5.283 \cdot 10^4$ Pa.
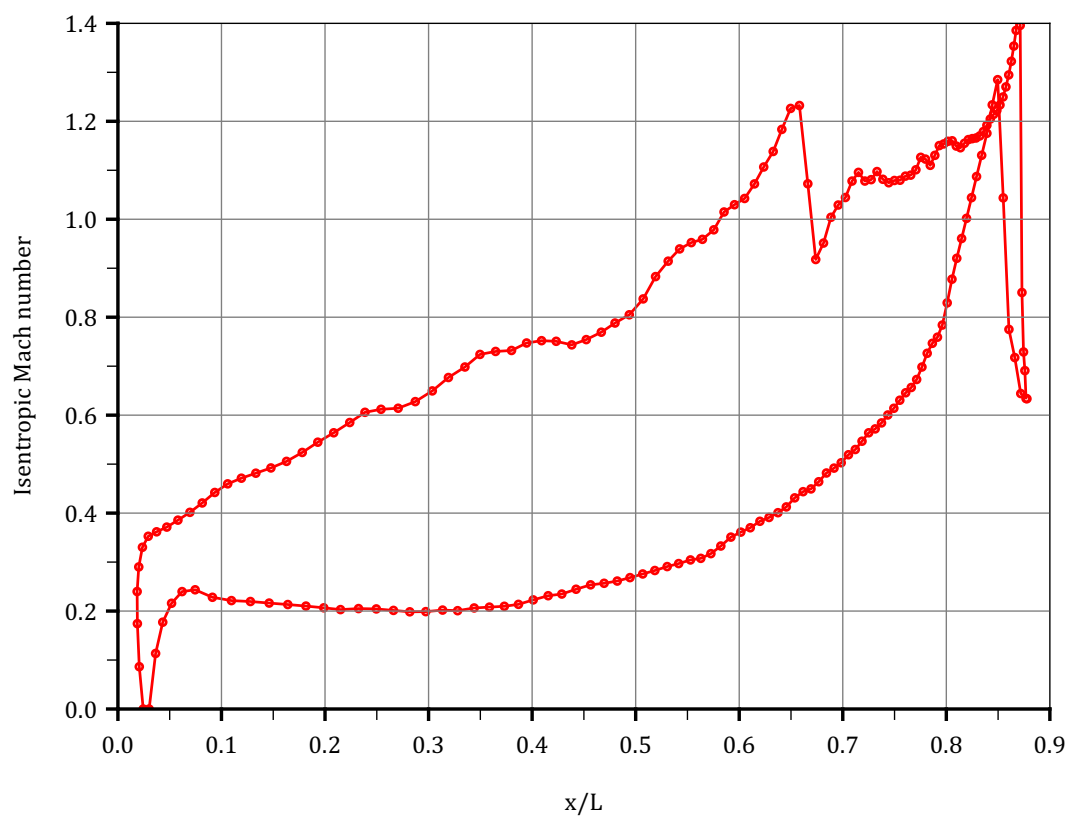
Reference:
Kiock, R.; Lehthaus, F.; Baines, N.C.; Sieverding, C.H.: *The Transonic Flow Through a Plane Turbine Cascade as Measured in Four European Wind Tunnels.* ASME J. Engineering Gas Turbines and Power, 108 (1986), pp. 277-284.

Convergence history.

Pressure distribution and streamlines inside the cascade.

Isentropic Mach number over the *x*-axis. Note that the waviness of the distribution on the suction side is caused by discontinuities of the surface curvature.