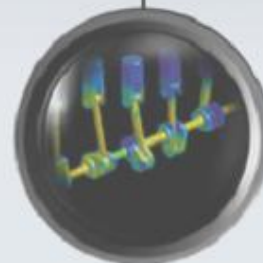
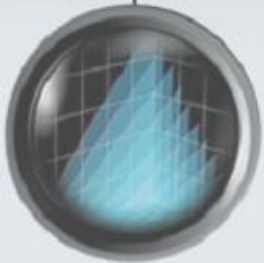


Performance Computations for an Air Centrifugal Compressor with ANSYS CFX

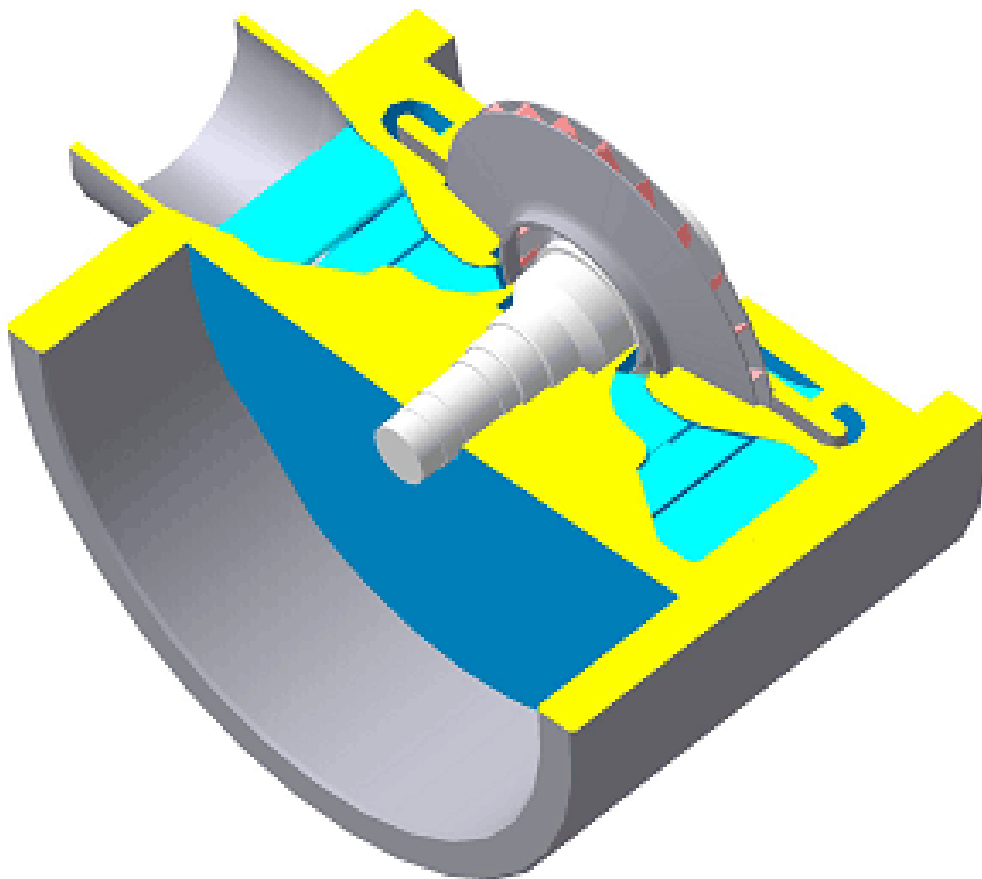
*Myakushev K.V. Starodubtsev M.A.
CAE-SERVICES*

ANSYS CFX[®]



CAE-SERVICES

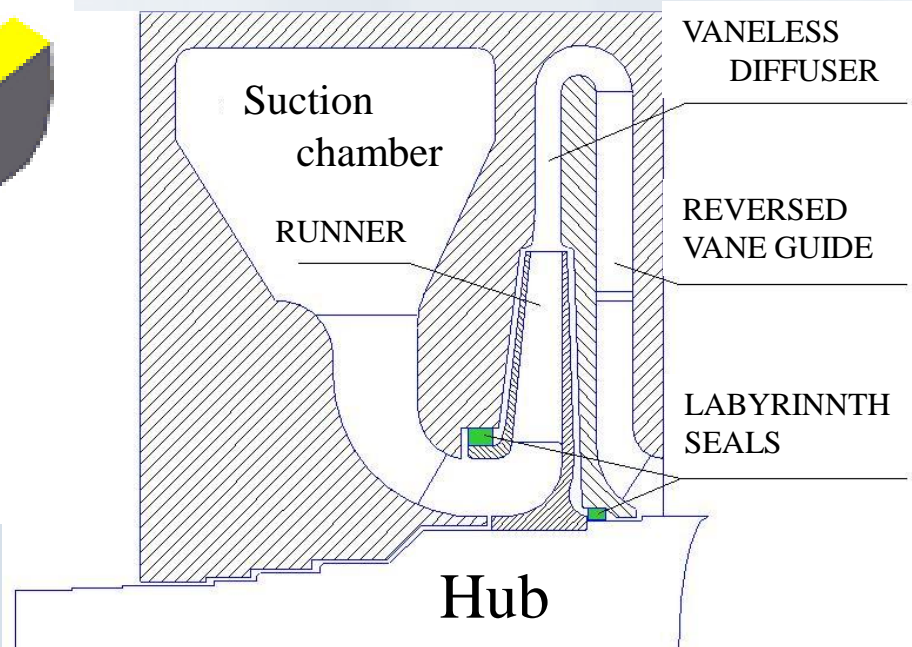
GEOMETRY



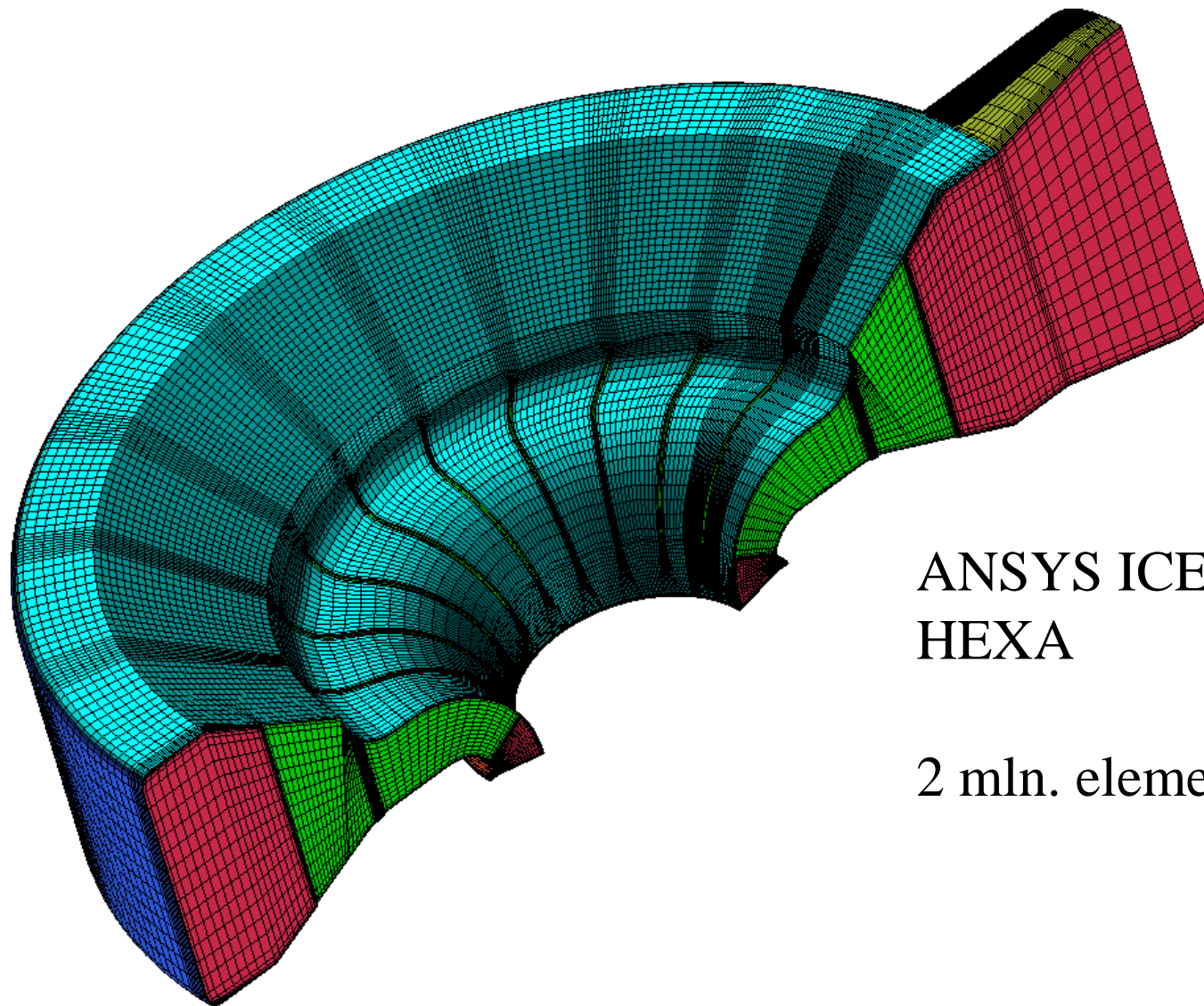
PARASOLID (*.x_t)

Medium under consideration:
Air

Rotor Rate:
4000 Rev/min



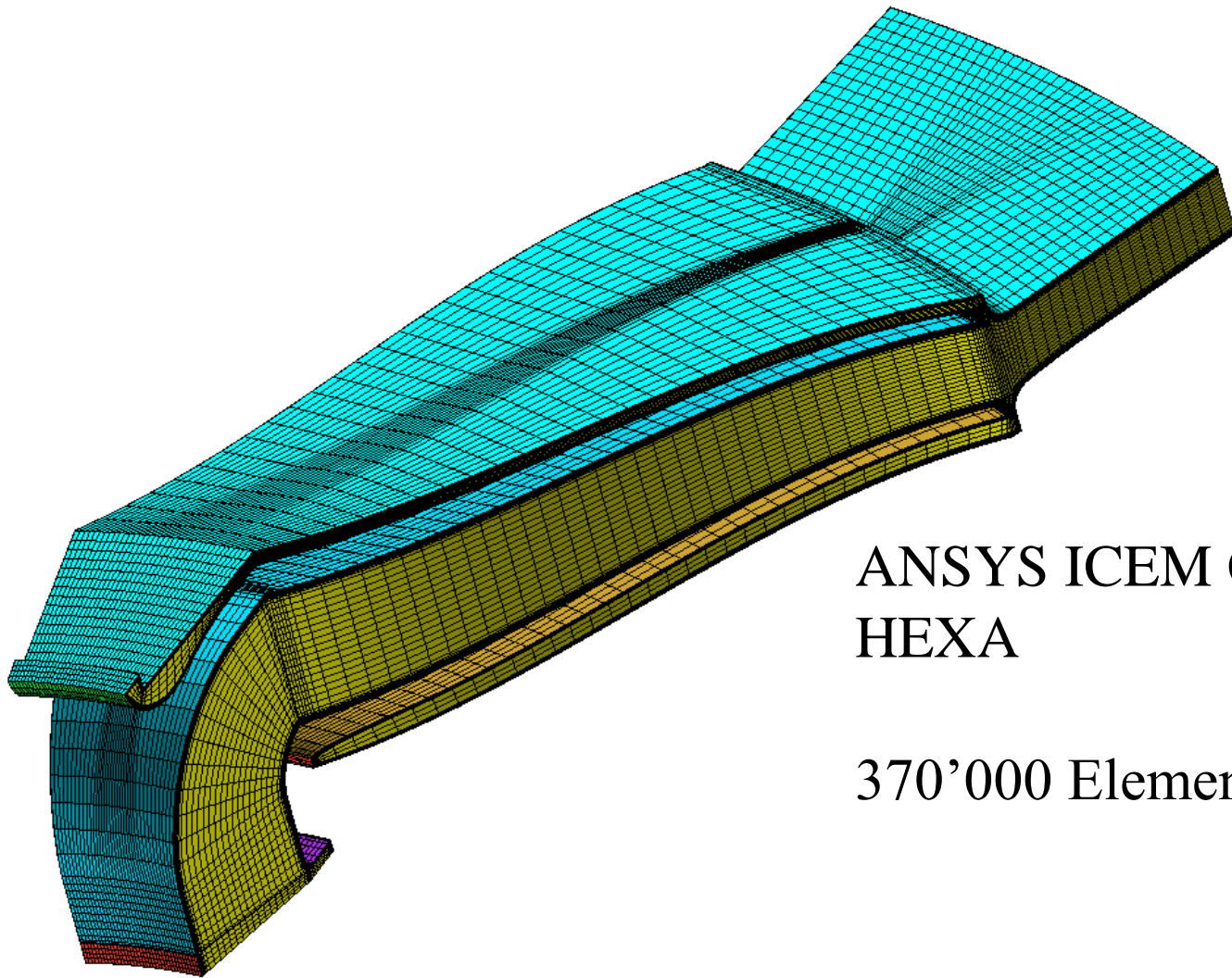
Static Vacuum Chamber and Stator Blades (20 channels)



ANSYS ICEM CFD 10.0
HEXA

2 mln. elements

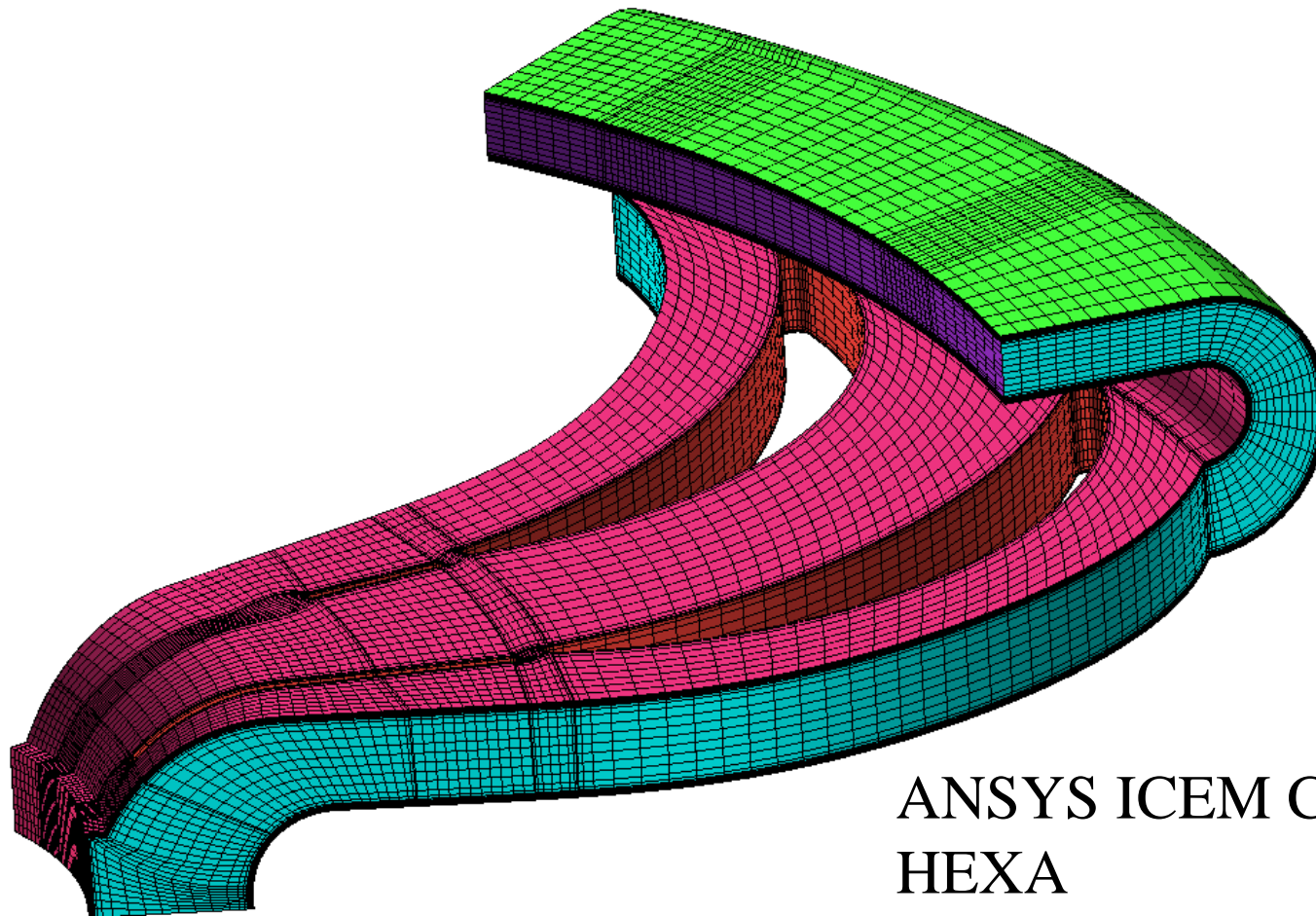
Rotor Channel



ANSYS ICEM CFD 10.0
HEXA

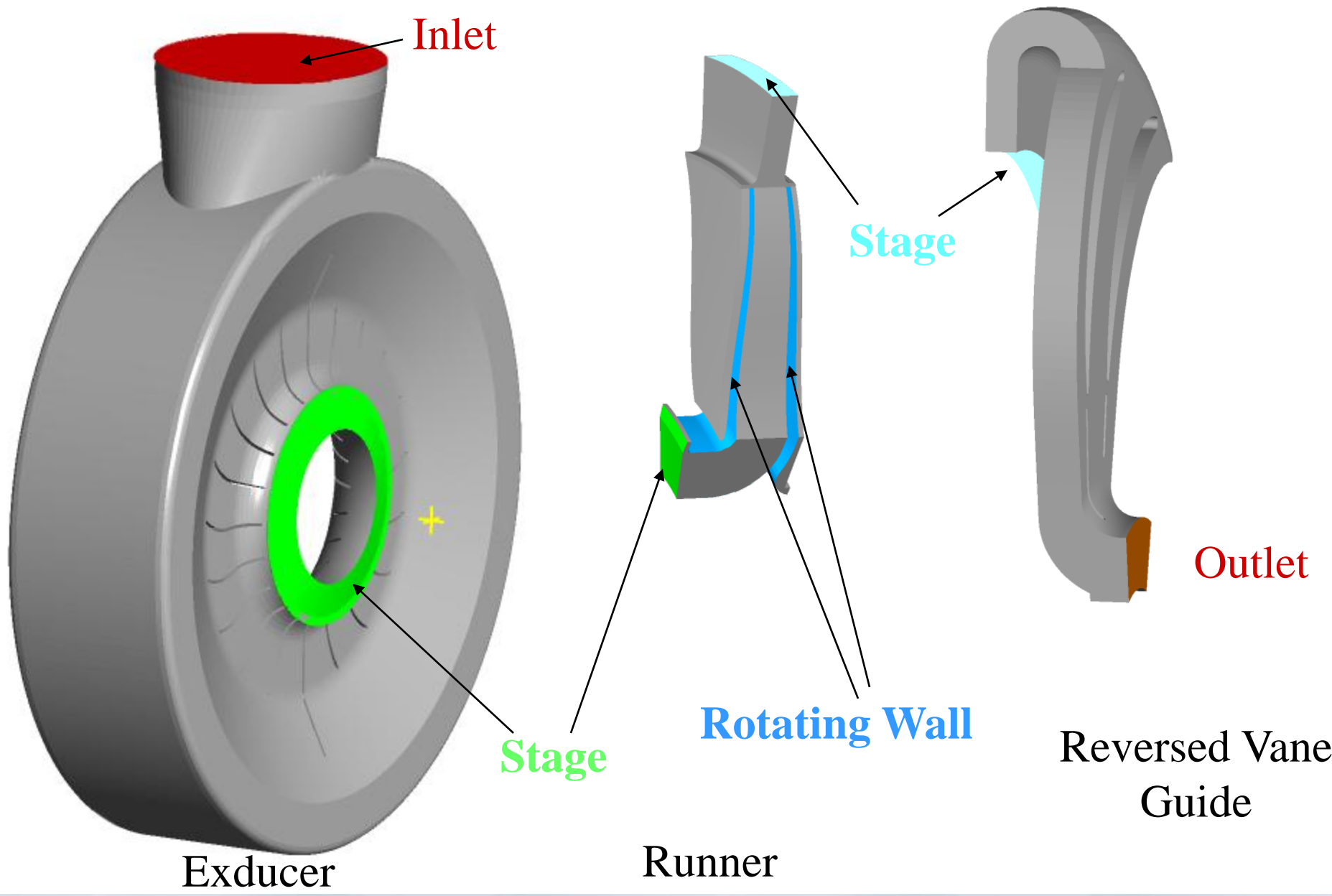
370'000 Elements

Two Channels of Reversed Vane Guide

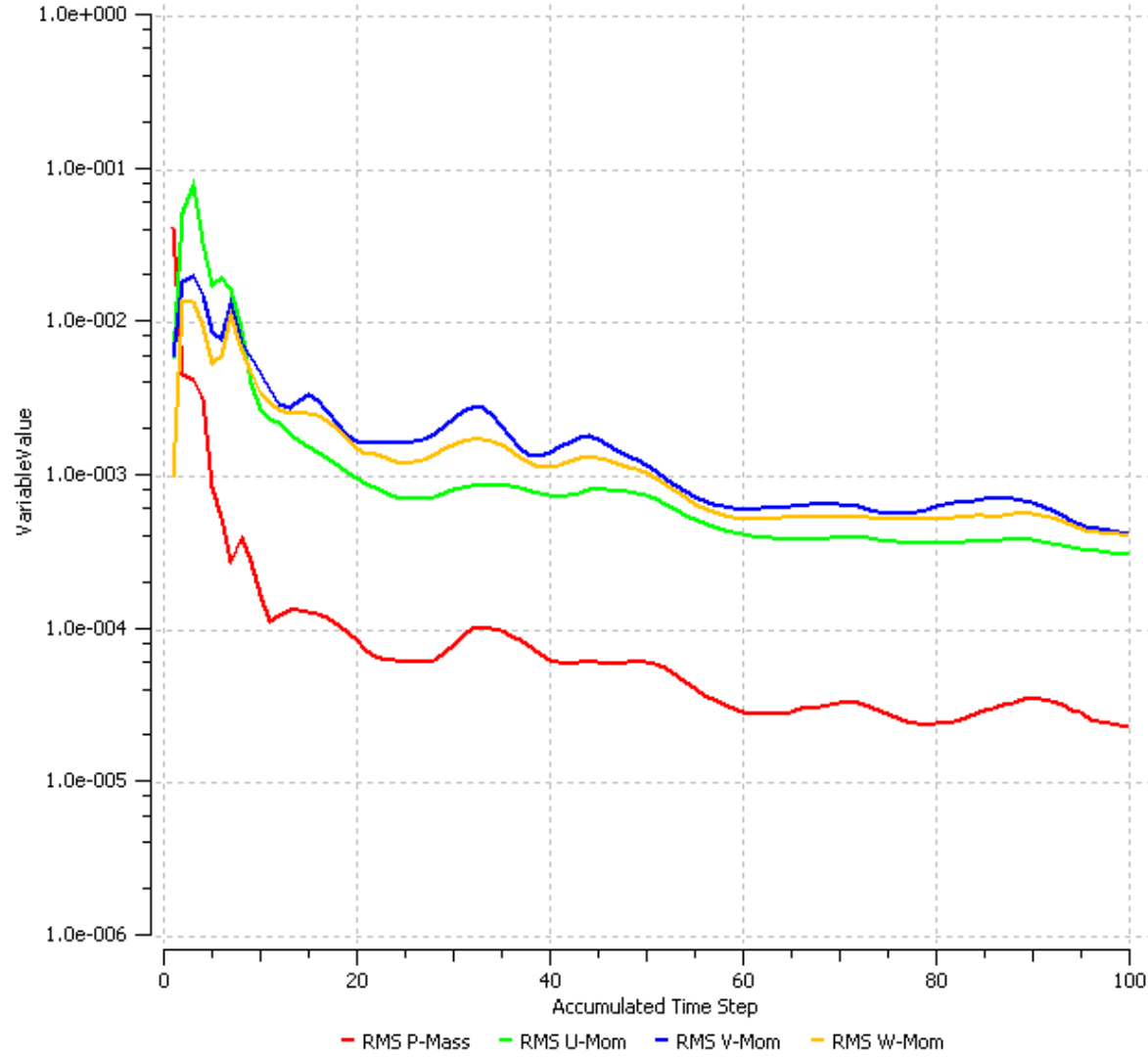


ANSYS ICEM CFD 10.0
HEXA

390'000 Elements



Run second Momentum and Mass - RMS



6 Nodes Cluster (12Cores)

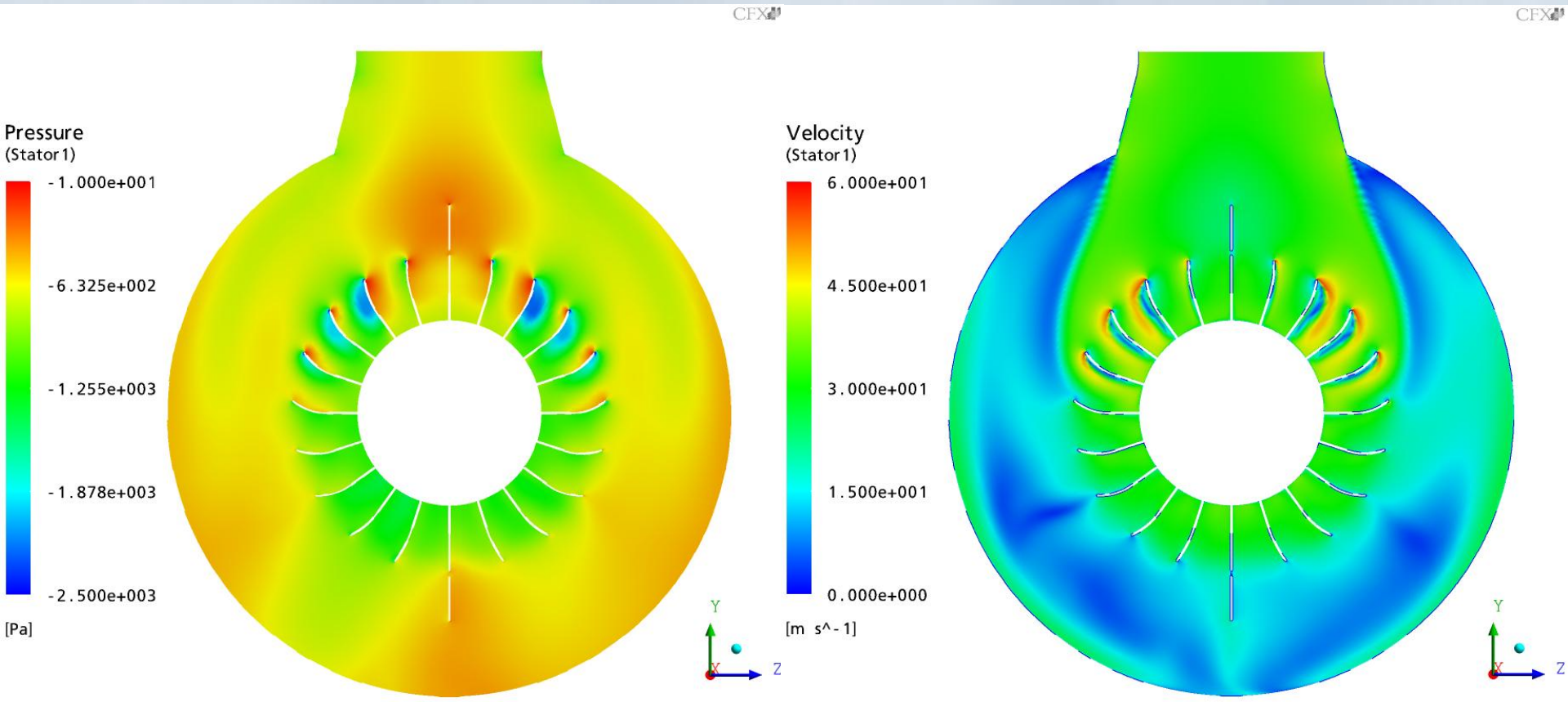
CPU: Pentium4 2.0ГГц

Memory: RDRAM 2GB

Net: Gigabit Ethernet

Calculation Time: 5 Hours

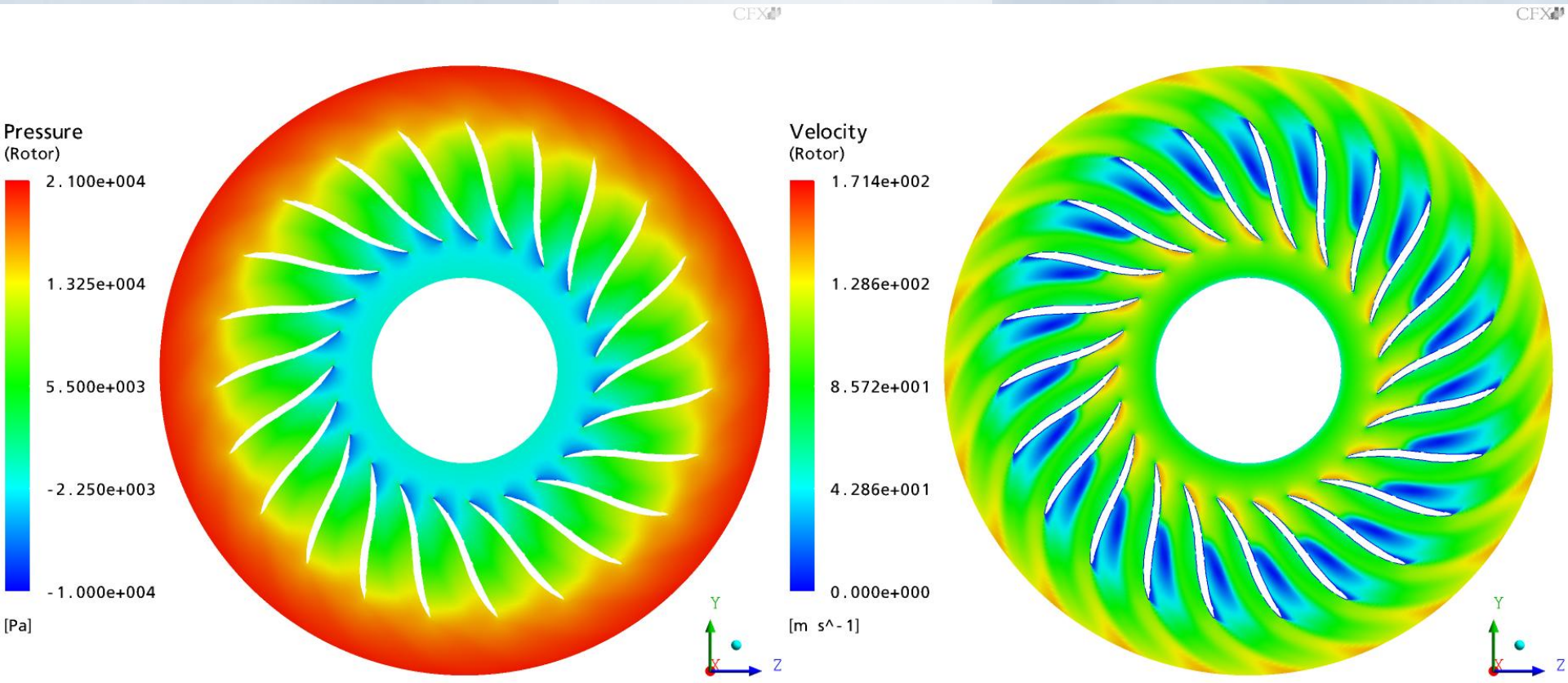
Static Vacuum Chamber and Stator Blades (20 channels)



Поле давления

Поле скорости

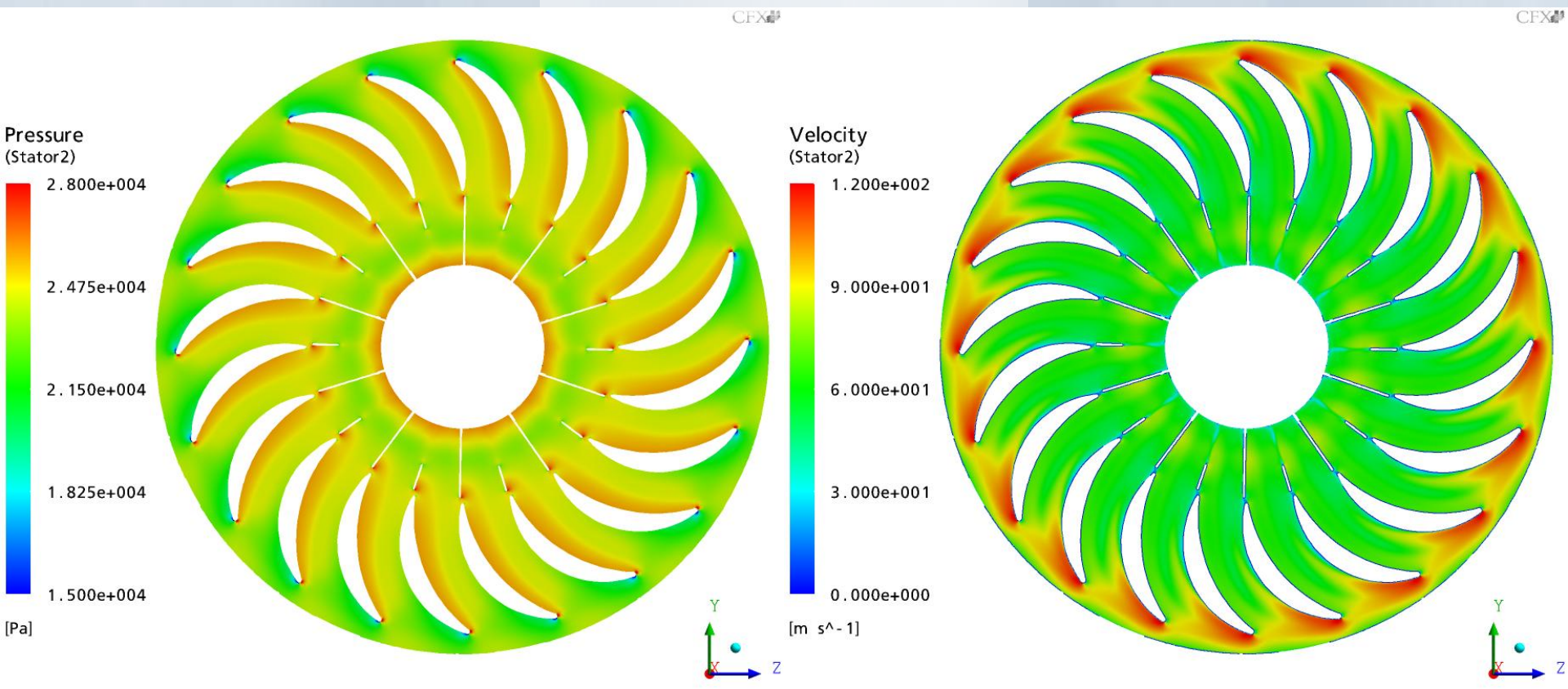
Runner's Channels



Pressure Field

Velocity Field

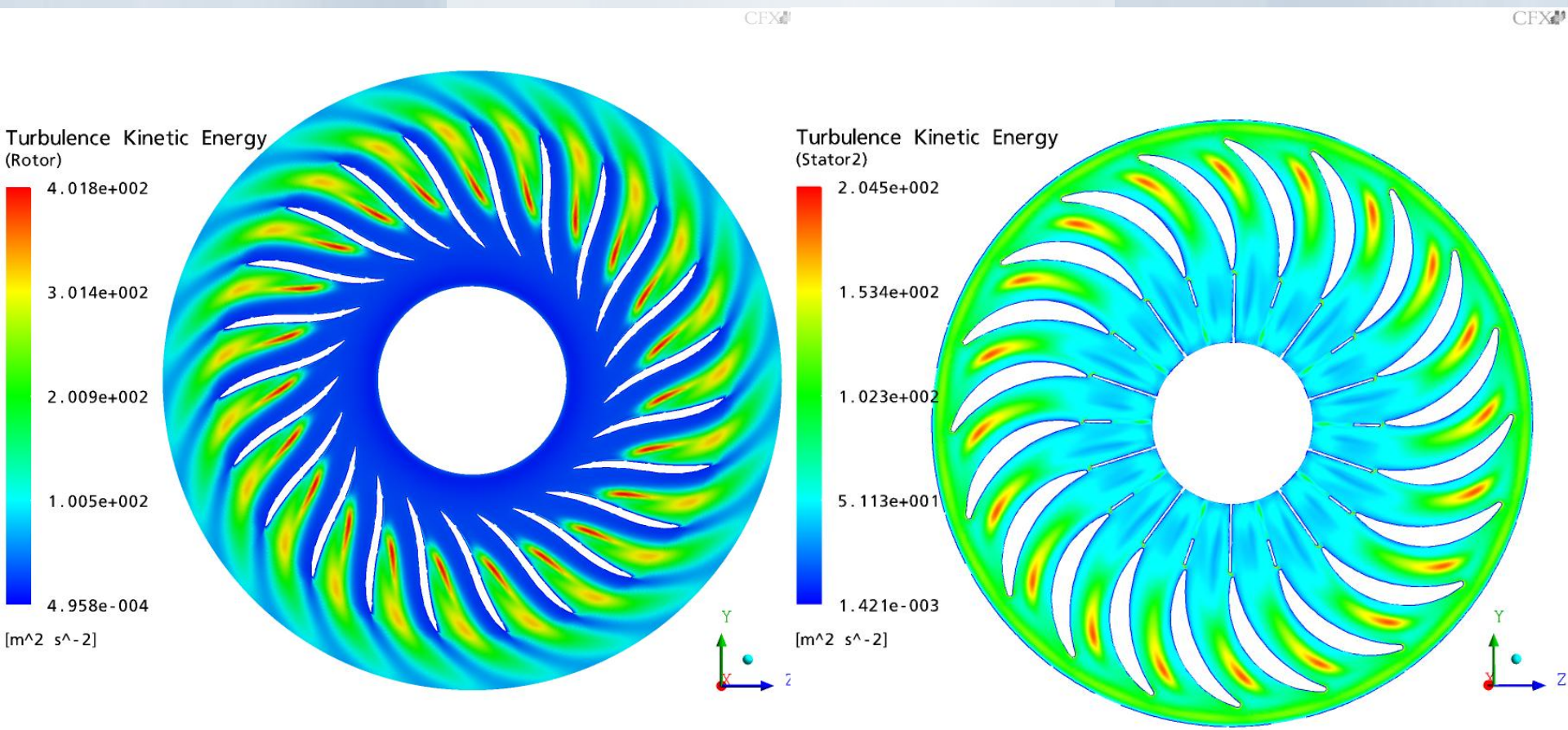
Reversed Vane Guide



Pressure Field

Velocity Field

Energy of Turbulent Pulsation



Runner's Channels

Reversed Vane Guide

Integral Performance

Pressure Drop ΔP : **24500 [Pa]**

Volume Rate Q : **6 [kg/sec]**

Torque: **375 [N m]**

Efficiency $\eta = \frac{\Delta P Q}{M \Omega}$: **93[%]**

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