Ansys
2025 R2

Ansys Fluent Simulation Report

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Table of Contents

System Information

Application	Fluent
Settings	2d, double precision, pressure-based, SST k-omega
Version	25.2.0-10204
Source Revision	5eecd5d865
Build Time	Jun 16 2025 10:44:41 EDT
CPU	Intel(R) Core(TM) i5-1035G1
OS	Windows

Geometry and Mesh

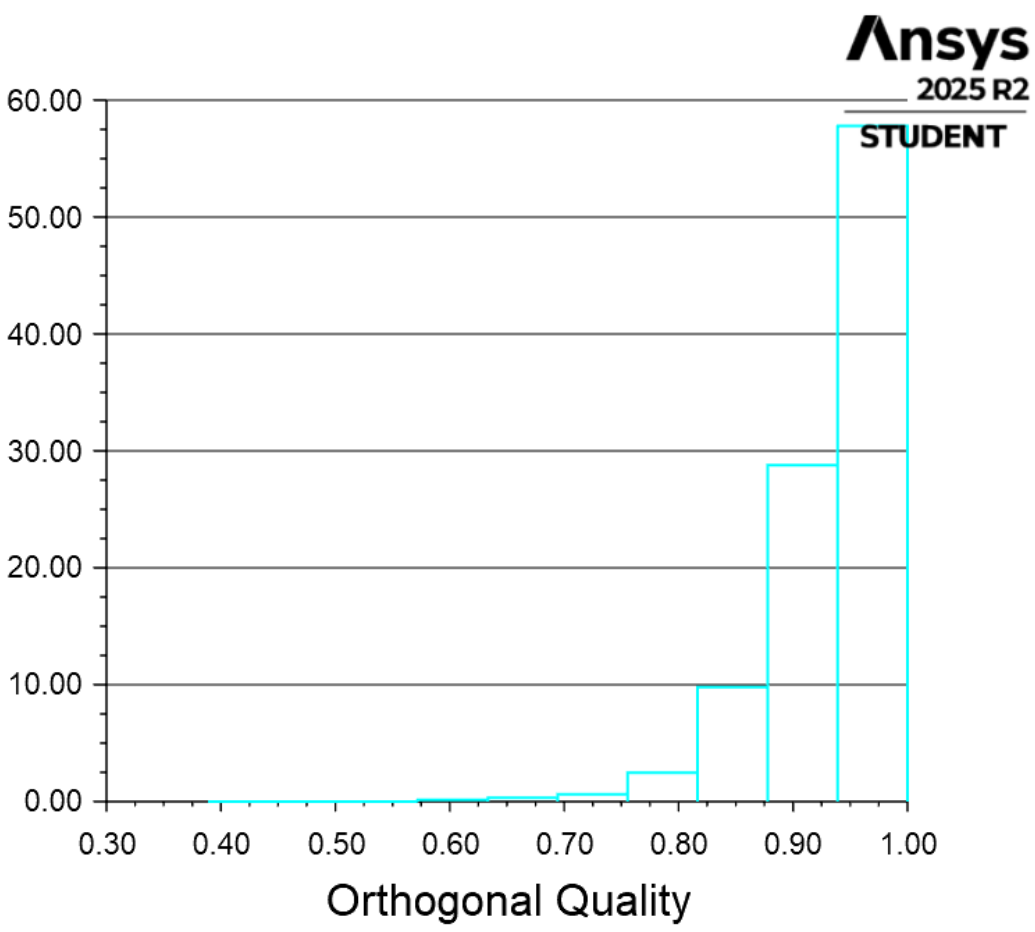
Mesh Size

Cells	Faces	Nodes
877	1789	912

Mesh Quality

Name	Type	Min Orthogonal Quality	Max Aspect Ratio
surface_body	Mixed Cell	0.38863667	5.2846224

Orthogonal Quality



Simulation Setup

Physics

Models

Model	Settings
Space	2D
Time	Steady
Viscous	SST k-omega turbulence model

Material Properties

– Fluid	
– air	
Density	1.225 kg/m^3
Viscosity	1.7894e-05 kg/(m s)
– Solid	
– aluminum	
Density	2719 kg/m^3

Cell Zone Conditions

– Fluid	
– surface_body	
Material Name	air
Specify source terms?	no
Specify fixed values?	no
Frame Motion?	no
Laminar zone?	no
Porous zone?	no

Boundary Conditions

– Inlet	
– inlet	
Velocity Specification Method	Components
Reference Frame	Absolute
Supersonic/Initial Gauge Pressure [Pa]	0
X-Velocity [m/s]	14.56
Y-Velocity [m/s]	1.02
Turbulence Specification Method	Intensity and Viscosity Ratio
Turbulent Intensity [%]	5
Turbulent Viscosity Ratio	10
– Outlet	
– outlet	
Backflow Reference Frame	Absolute
Gauge Pressure [Pa]	0
Pressure Profile Multiplier	1
Backflow Direction Specification Method	Normal to Boundary
Turbulence Specification Method	Intensity and Viscosity Ratio
Backflow Turbulent Intensity [%]	5
Backflow Turbulent Viscosity Ratio	10
Backflow Pressure Specification	Total Pressure
Build artificial walls to prevent reverse flow?	no
Average Pressure Specification?	no
Specify targeted mass flow rate	no
– Wall	
– airfoil	
Wall Motion	Stationary Wall
Shear Boundary Condition	No Slip
Wall Surface Roughness	Standard
Wall Roughness Height [m]	0

Wall Roughness Constant	0.5

Reference Values

Area	1 m^2
Density	1.225 kg/m^3
Depth	1 m
Enthalpy	0 J/kg
Length	1 m
Pressure	0 Pa
Temperature	288.16 K
Velocity	14.59568 m/s
Viscosity	1.7894e-05 kg/(m s)
Ratio of Specific Heats	1.4
Yplus for Heat Tran. Coef.	300
Reference Zone	surface_body

Solver Settings

– Equations	
Flow	True
Turbulence	True
– Numerics	
Absolute Velocity Formulation	True
– Under-Relaxation Factors	
Pressure	0.3
Density	1
Body Forces	1
Momentum	0.7
Turbulent Kinetic Energy	0.8
Specific Dissipation Rate	0.8
Turbulent Viscosity	1
– Pressure-Velocity Coupling	
Type	SIMPLE

– Discretization Scheme	
Pressure	Second Order
Momentum	Second Order Upwind
Turbulent Kinetic Energy	Second Order Upwind
Specific Dissipation Rate	Second Order Upwind
– Solution Limits	
Minimum Absolute Pressure [Pa]	1
Maximum Absolute Pressure [Pa]	5e+10
Minimum Static Temperature [K]	1
Maximum Static Temperature [K]	5000
Minimum Turb. Kinetic Energy [m^2/s^2]	1e-14
Minimum Spec. Dissipation Rate [s^-1]	1e-20
Maximum Turb. Viscosity Ratio	100000

Run Information

Number of Machines	1
Number of Cores	1
Case Read	24.885 seconds
Data Read	1.151 seconds
Iteration	7.575 seconds
AMG	1.132 seconds
Virtual Current Memory	2.85592 GB
Virtual Peak Memory	2.90764 GB
Memory Per M Cell	2525.64

Solution Status

Iterations: 1293

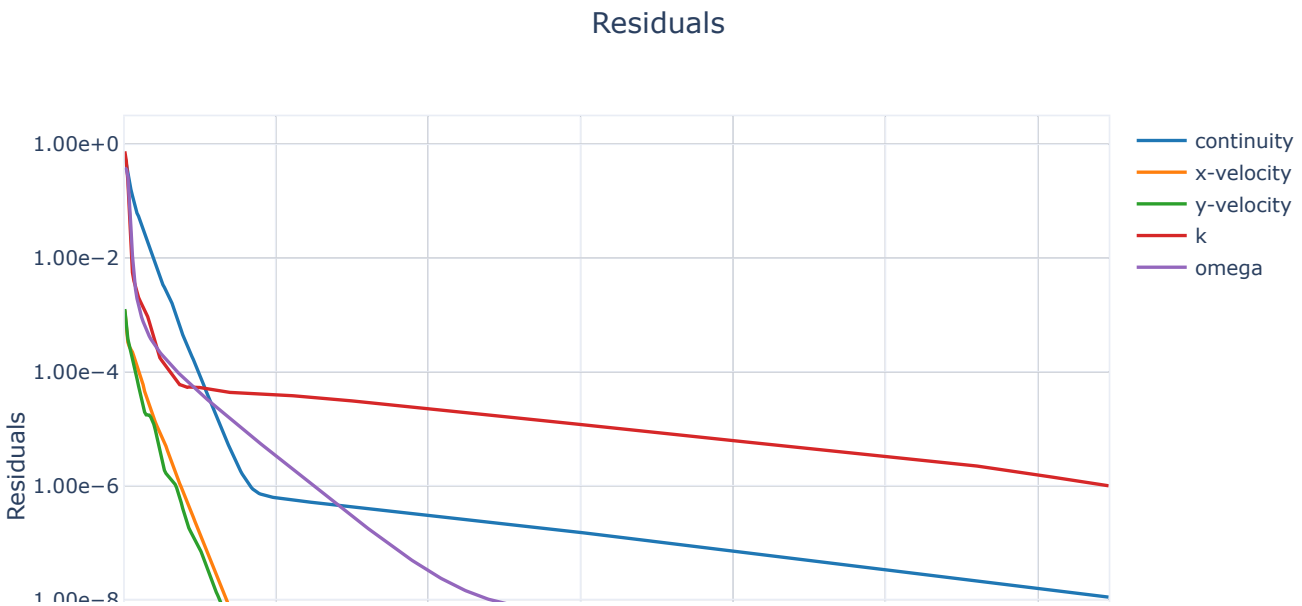
	Value	Absolute Criteria	Convergence Status
continuity	1.102428e-08	1e-06	Converged
x-velocity	1.007665e-11	1e-06	Converged
y-velocity	6.332899e-12	1e-06	Converged
k	9.960206e-07	1e-06	Converged
omega	5.342213e-10	1e-06	Converged

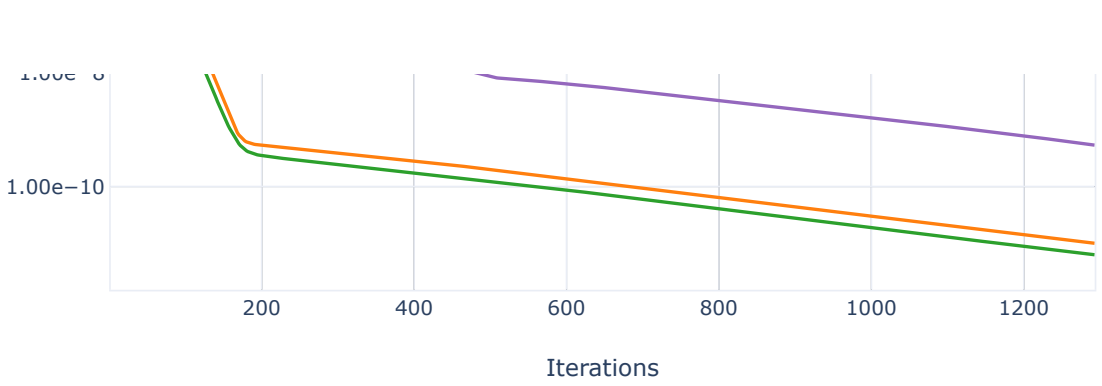
Report Definitions

cl	0.3902287	
cd	-0.001639976	

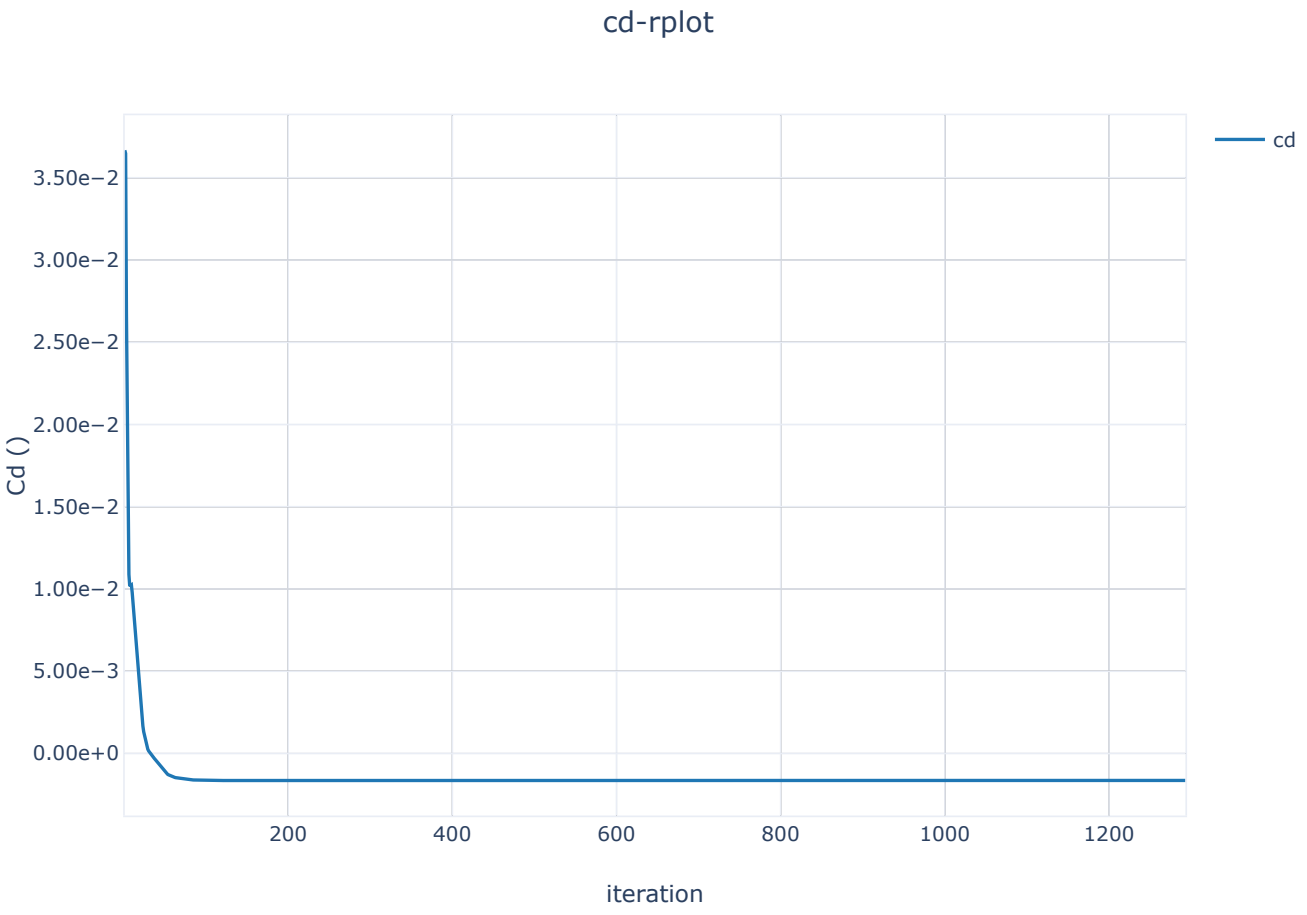
Plots

Residuals

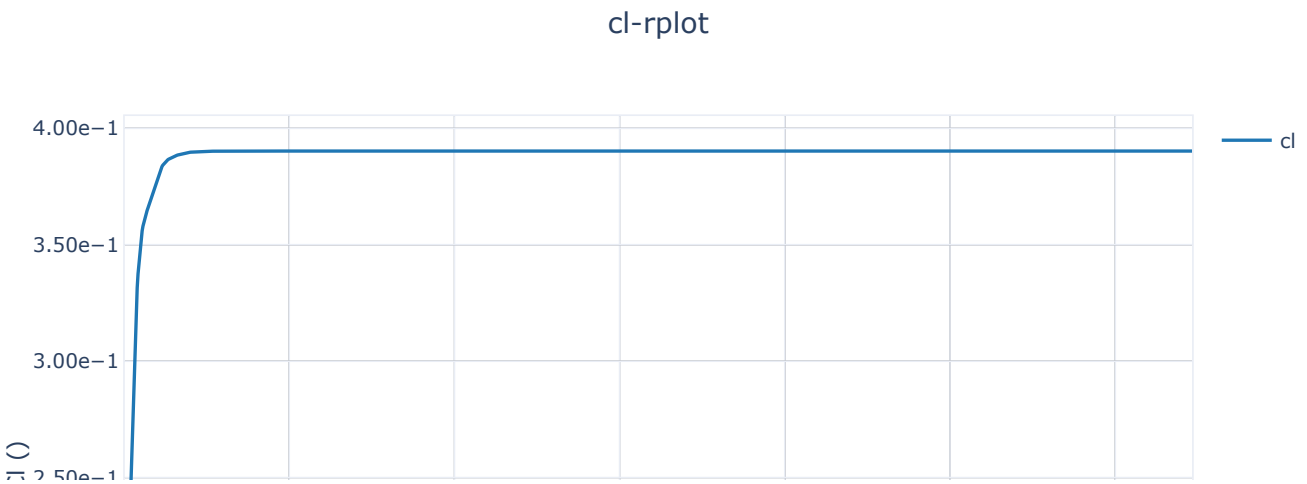


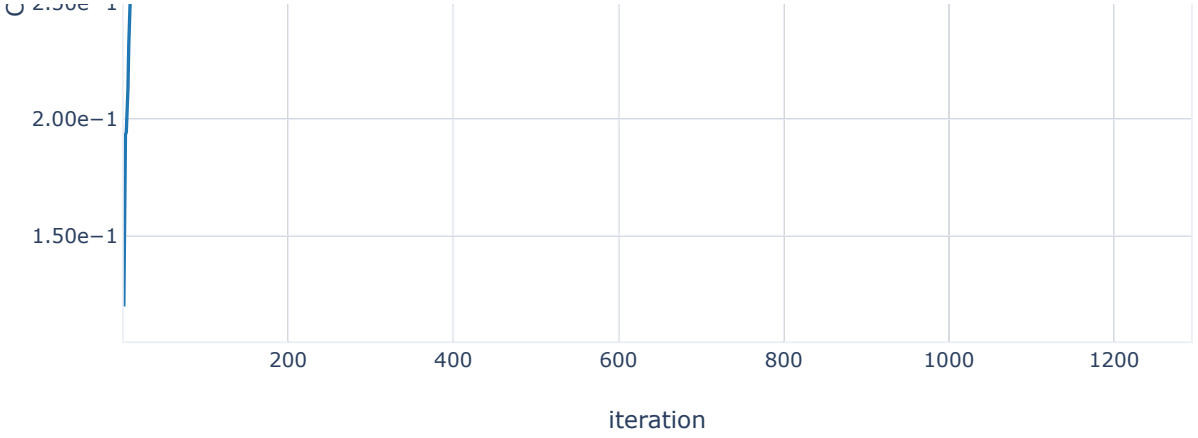


cd-rplot



cl-rplot





Scenes

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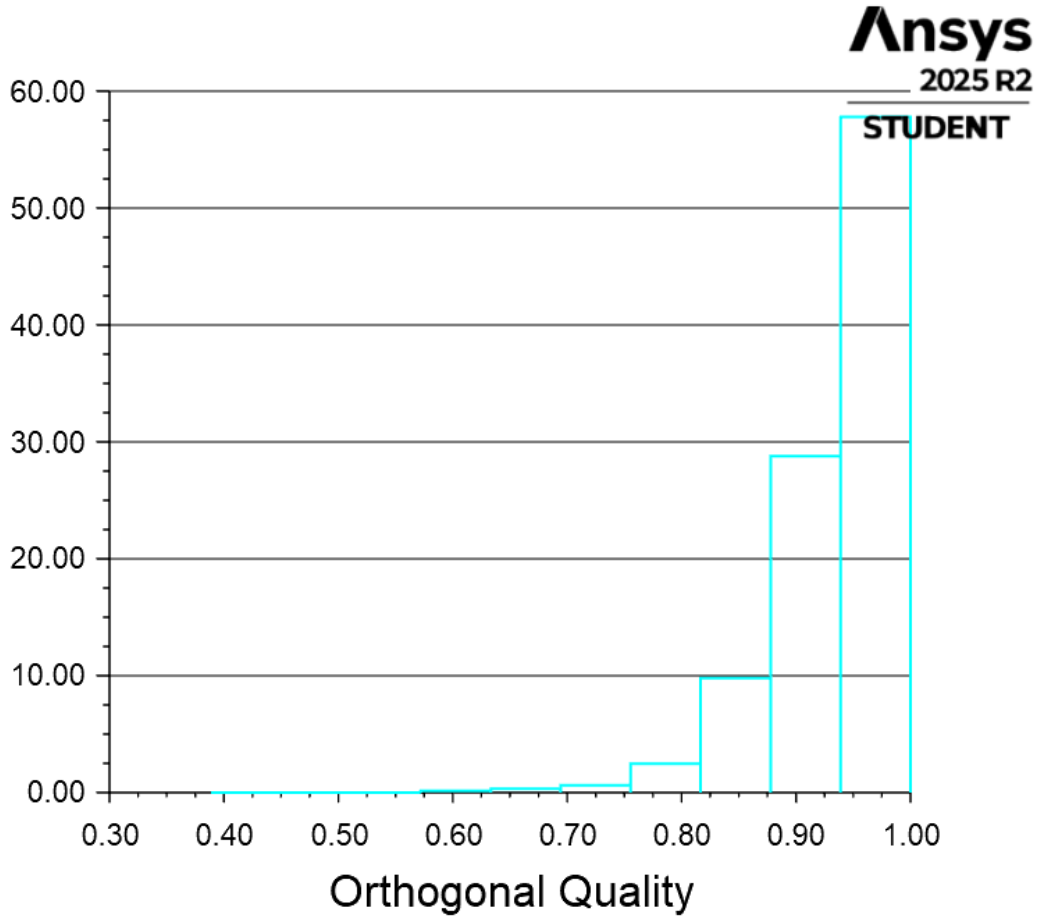
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STUDENT
60.00
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40.00
30.00
20.00
10.00
0.00
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.00
Orthogonal Quality