AUTODESK.

NACA 4412

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Report Contents

Design 1

Length units	cm
Coordinate system	Cartesian 3D

SCENARIO 1

MATERIALS

NAME	ASSIGNED TO	PROPERTIES	
Air	CFDCreatedVolume	Density	Equation of State
		Viscosity	1.817e-05 Pa-s
		Conductivity	0.02563 W/m-K
		Specific heat	1004.0 J/kg-K
		Compressibility	1.4
		Emissivity	1.0
		Wall roughness	0.0 meter
		Phase	Vapor Pressure
Carbon Fibre	Part1.Body1	X-Direction	3.0 W/m-K
		Y-Direction	Same as X-dir.
		Z-Direction	Same as X-dir.
		Density	1.6 g/cm3
		Specific heat	0.8 J/g-K
		Emissivity	0.9 None
		Transmissivity	0.0 None
		Electrical resistivity	1.6 ohm-cm
		Wall roughness	0.001 centimeter

BOUNDARY CONDITIONS

TYPE	ASSIGNED TO
Unknown	Surface:7 Surface:9
Velocity Normal(25 m/s)	Surface:9

INITIAL CONDITIONS

TYPE	ASSIGNED TO

MESH

Automatic Meshing Settings

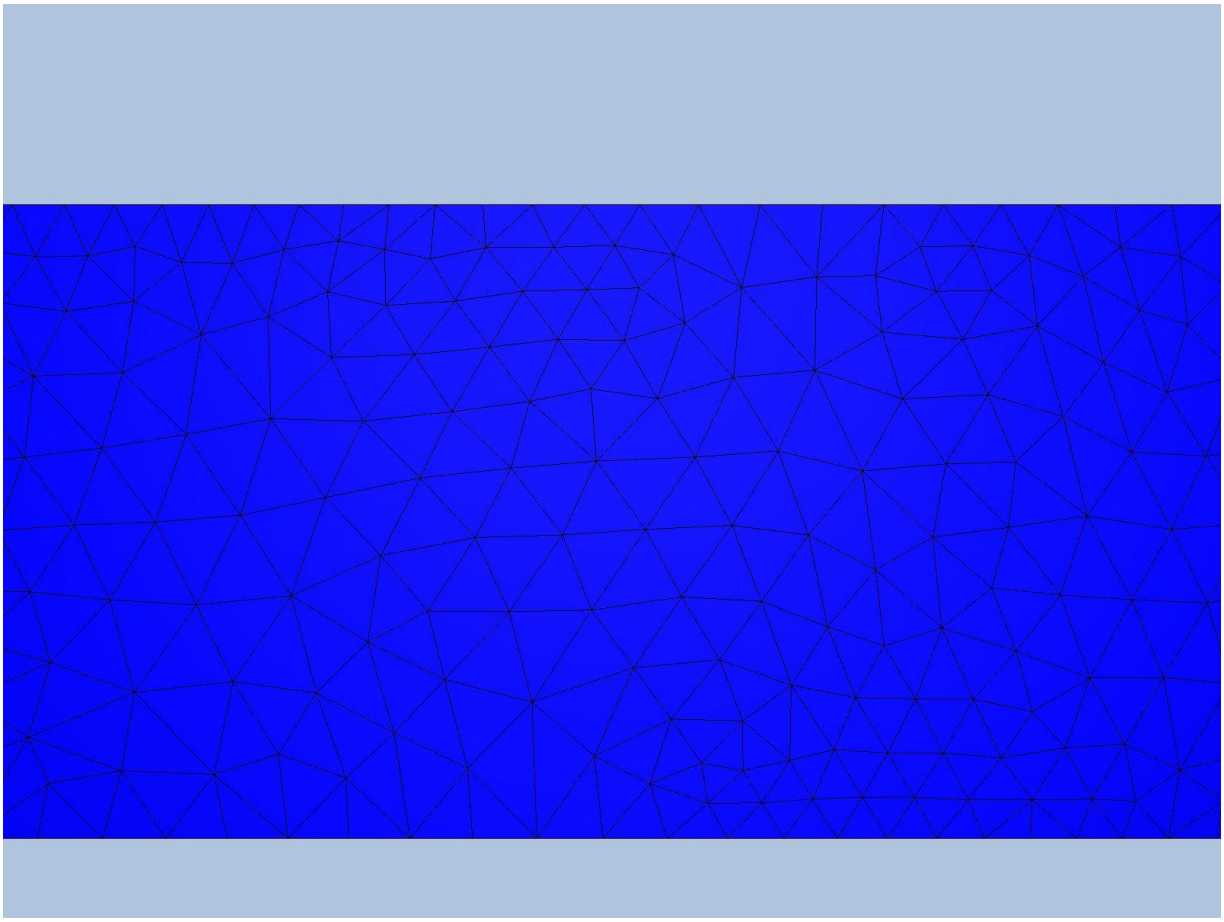
Surface refinement	False
Gap refinement	False

Resolution factor	1.0
Edge growth rate	1.1
Minimum points on edge	2
Points on longest edge	10
Surface limiting aspect ratio	20

Mesh Enhancement Settings

Mesh enhancement	True
Enhancement blending	False
Number of layers	3
Layer factor	0.45
Layer gradation	0.0

Meshed Model



Number of Nodes	37573
Number of Elements	150794

PHYSICS

Flow	On
Compressibility	Incompressible
Heat Transfer	Off
Auto Forced Convection	Off
Gravity Components	0.0, 0.0, 0.0
Radiation	Off
Scalar	No scalar
Turbulence	On

SOLVER SETTINGS

Solution mode	Steady State
Solver computer	MyComputer
Intelligent solution control	On
Advection scheme	ADV 5
Turbulence model	k-epsilon

CONVERGENCE

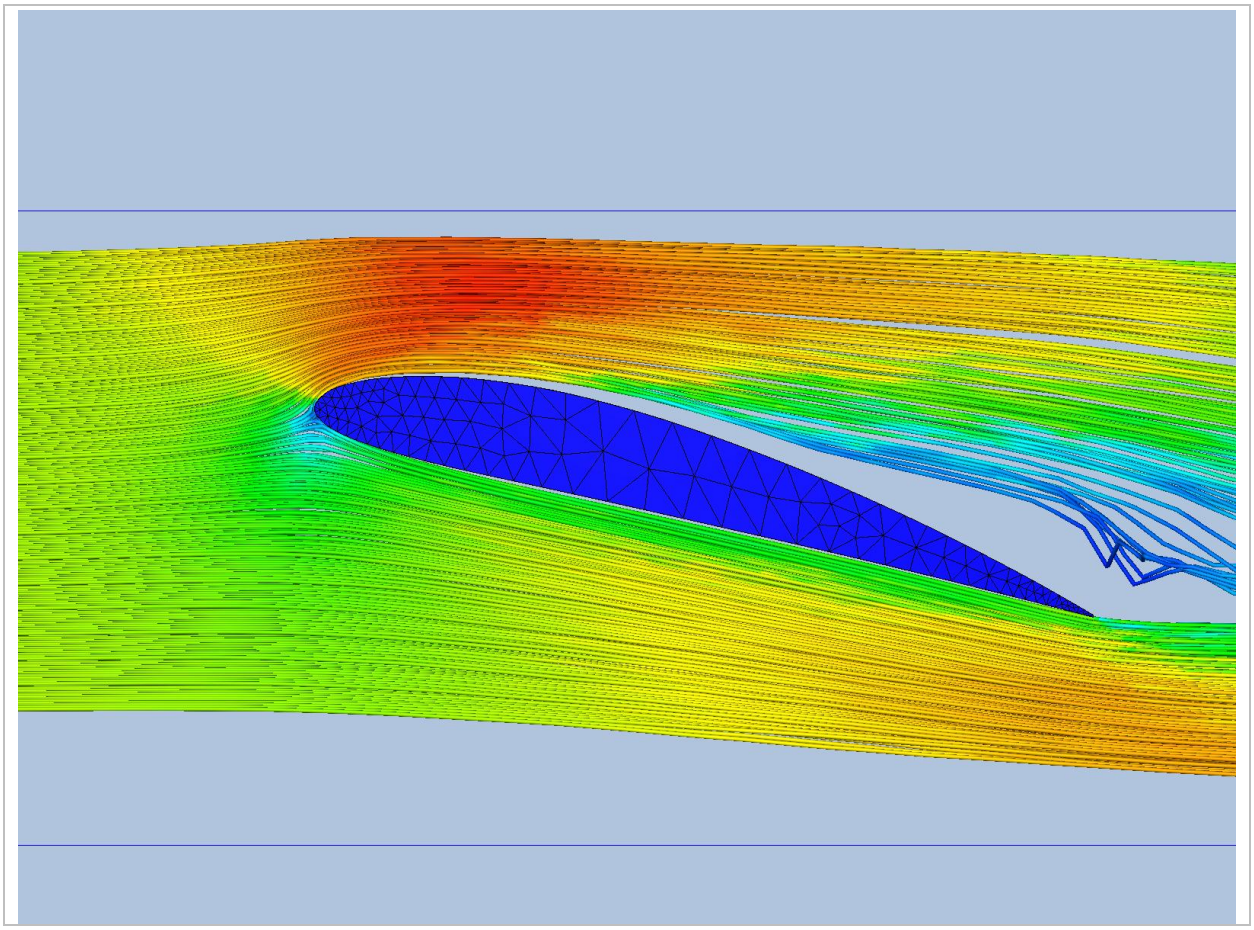
Iterations run	100
Solve time	142 seconds
Solver version	24.1.10

Energy Balance

Mass Balance

	IN	OUT
Mass flow	537.178 g/s	N.A.
Volume flow	445889.0 cm^3/s	N.A.

RESULTS



Inlets and Outlets

inlet 1	inlet bulk pressure	14647.5 dyne/cm^2
	inlet bulk temperature	0.0 C
	inlet mach number	0.0712301
	mass flow in	537.178 g/s
	minimum x,y,z of	0.0
	node near minimum	4982.0
	reynolds number	220463.0
	surface id	9.0
	total mass flow in	537.178 g/s
	total vol. flow in	445889.0 cm^3/s
	volume flow in	445889.0 cm^3/s

Field Variable Results

VARIABLE	MAX	MIN
cond	0.03 W/cm-K	0.0002563 W/cm-K
dens	1.6 g/cm^3	0.00120473 g/cm^3
econd	11.7594 W/cm-K	0.0 W/cm-K
emiss	1.0	0.0
evisc	10.3698 g/cm-s	0.0 g/cm-s
gent	106037.0 1/s	0.0316228 1/s
press	26153.9 dyne/cm^2	6121.7 dyne/cm^2
ptotl	26153.9 dyne/cm^2	0.0 dyne/cm^2
scal1	0.0	0.0
seebeck	0.0 V/K	0.0 V/K
shgc	0.0	0.0
spech	1.004 J/g-K	0.8 J/g-K
temp	0.0 C	0.0 C
transmiss	0.0	0.0
turbd	8639050000.0 cm^2/s^3	3716.88 cm^2/s^3
turbk	1411760.0 cm^2/s^2	1.817e-07 cm^2/s^2
ufactor	0.0	0.0
visc	0.0001817 g/cm-s	0.0 g/cm-s
vx vel	3970.73 cm/s	-293.383 cm/s
vy vel	1576.14 cm/s	-1722.72 cm/s
vz vel	1993.8 cm/s	-1146.46 cm/s
wrough	0.001 cm	0.0 cm

Component Thermal Summary

PART	MINIMUM TEMPERATURE	MAXIMUM TEMPERATURE	VOLUME AVERAGED TEMPERATURE
Part1.Body1	0	0	0
CFDCreatedVolume	0	0	0

Fluid Forces on Walls

pressx	233690.0 dynes
pressy	-22222.0 dynes
pressz	-62686.0 dynes
shearx	51326.0 dynes
sheary	-487.95 dynes
shearz	3342.6 dynes

Decision Center