AUTODESK.

NACA 4412

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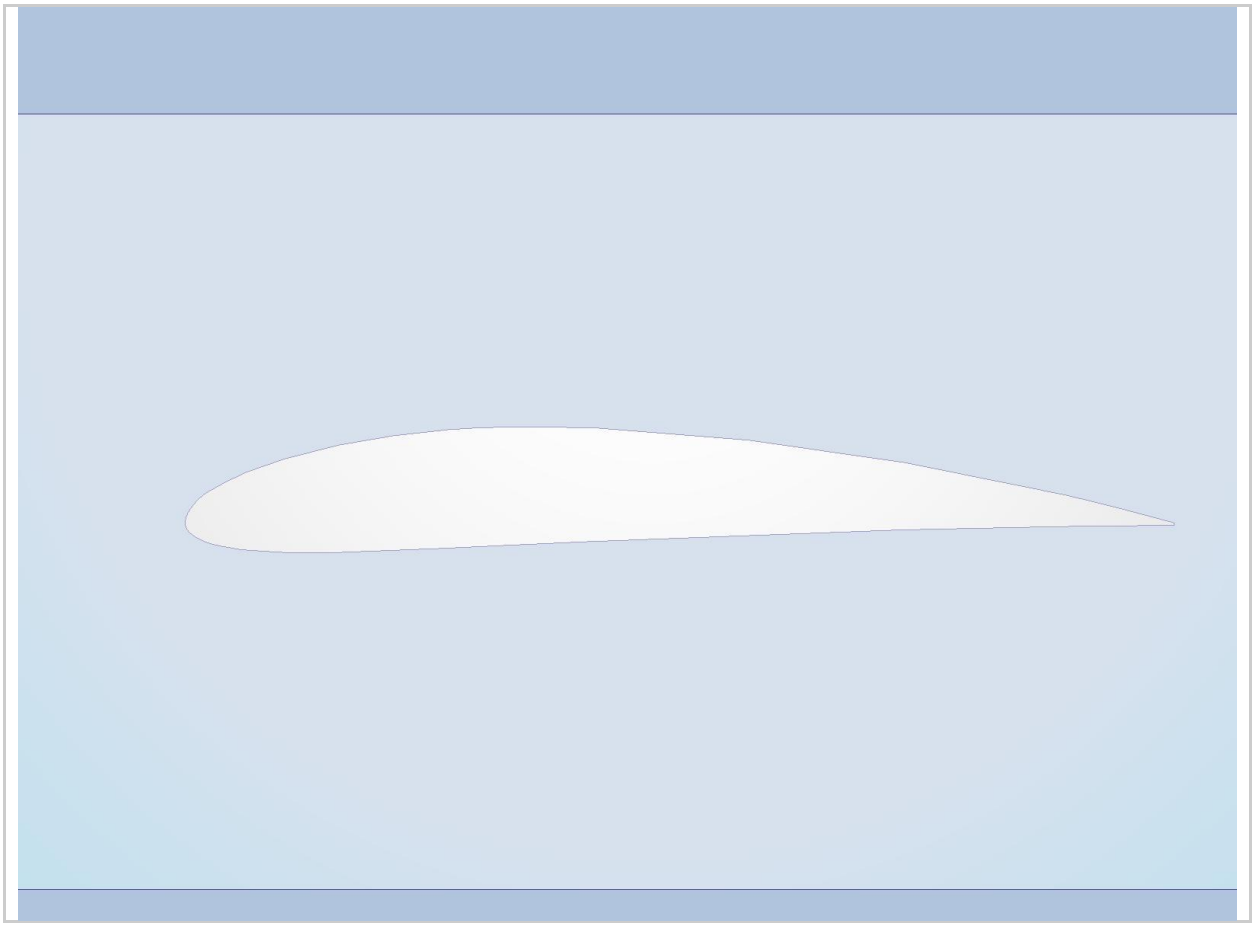
Report Contents

Design 1

Length units	cm
Coordinate system	Cartesian 3D

SCENARIO 1

MATERIALS



NAME	ASSIGNED TO	PROPERTIES	
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
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

BOUNDARY CONDITIONS

TYPE	ASSIGNED TO
Velocity Normal(25 m/s)	Surface:2 Surface:9
Unknown	Surface:7

INITIAL CONDITIONS

TYPE	ASSIGNED TO

MESH

Automatic Meshing Settings

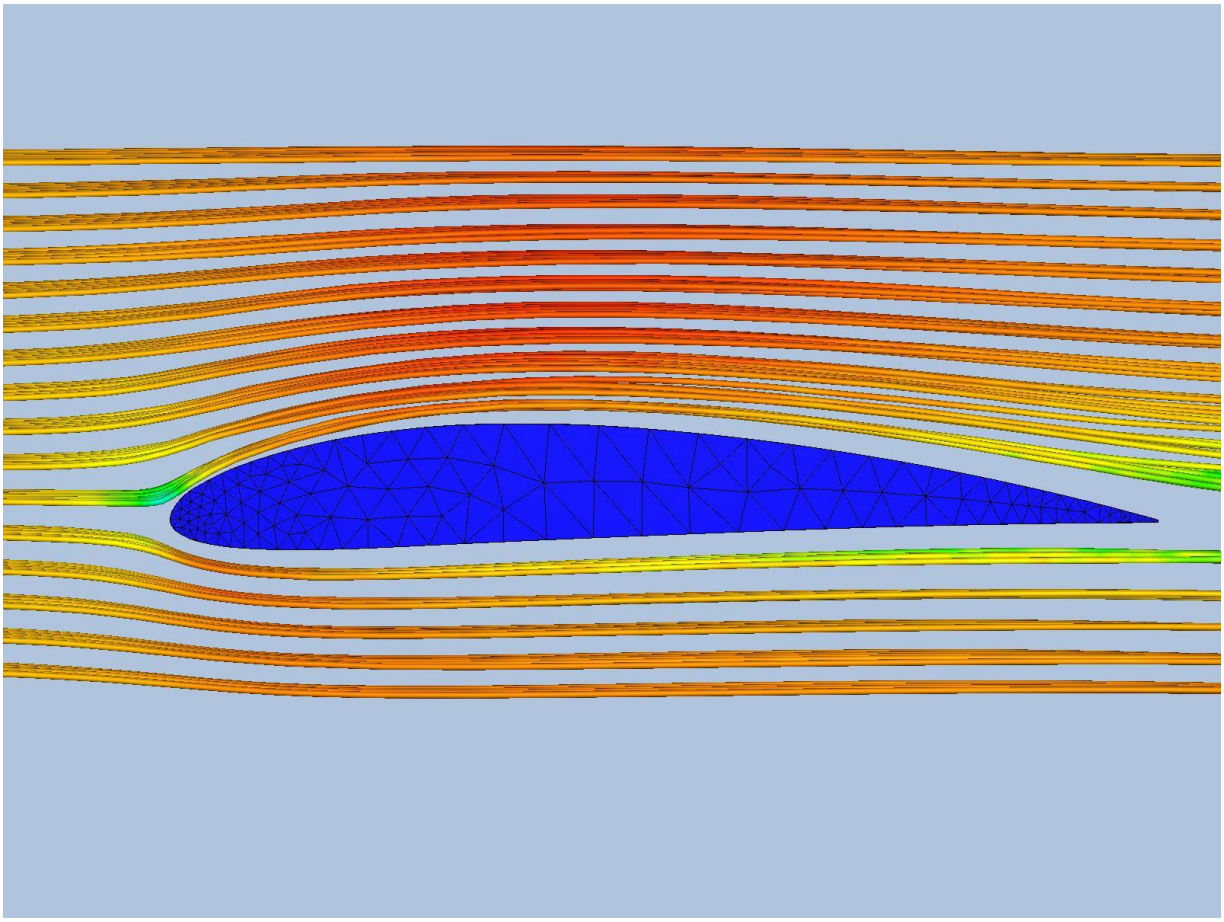
Surface refinement	False
Gap refinement	False

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	35775
Number of Elements	146933

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

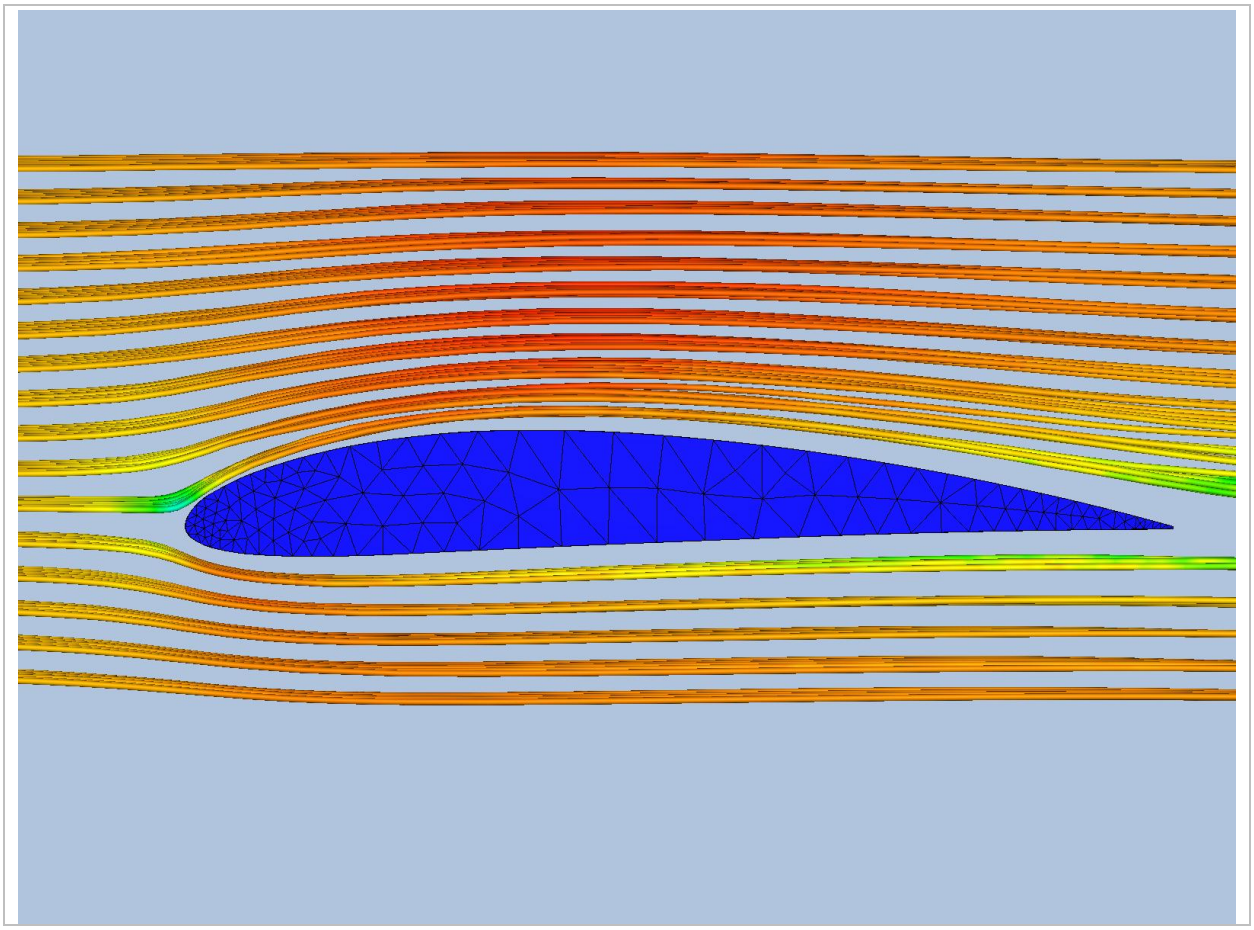
Iterations run	225
Solve time	120 seconds
Solver version	24.1.10

Energy Balance

Mass Balance

	IN	OUT
Mass flow	644.7 g/s	N.A.
Volume flow	535139.0 cm^3/s	N.A.

RESULTS



Inlets and Outlets

inlet 1	inlet bulk pressure	7884.77 dyne/cm^2
	inlet bulk temperature	0.0 C
	inlet mach number	0.0707135
	mass flow in	644.7 g/s
	minimum x,y,z of	0.0
	node near minimum	4576.0
	reynolds number	241478.0
	surface id	9.0
	total mass flow in	644.7 g/s
	total vol. flow in	535139.0 cm^3/s
	volume flow in	535139.0 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	3.8118 W/cm-K	0.0 W/cm-K
emiss	1.0	0.0
evisc	5.39776 g/cm-s	0.0 g/cm-s
gent	89785.7 1/s	0.0316228 1/s
press	16462.7 dyne/cm^2	2951.63 dyne/cm^2
ptotl	16462.7 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	5268300000.0 cm^2/s^3	847.26 cm^2/s^3
turbk	865524.0 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	3243.26 cm/s	-109.536 cm/s
vy vel	1252.25 cm/s	-1308.79 cm/s
vz vel	1180.63 cm/s	-1520.36 cm/s
wrough	0.0 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	47466.0 dynes
pressy	-19917.0 dynes
pressz	-2291.1 dynes
shearx	55443.0 dynes
sheary	177.33 dynes
shearz	168.32 dynes

Decision Center

SUMMARY PARTS

SUMMARY PART 1

RESULT QUANTITY	DESIGN 1::SCENARIO 1
Avg Temperature	0.0
Max Temperature	0.0
Min Temperature	0.0
Volume	133.652