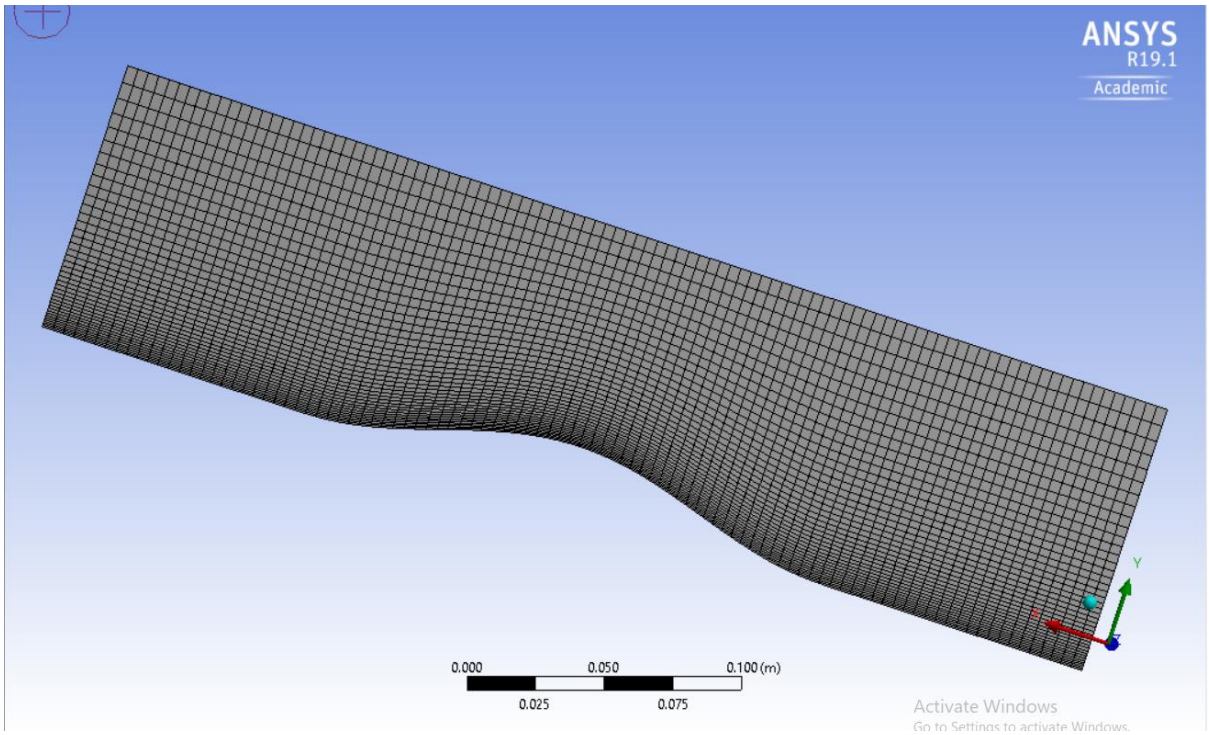
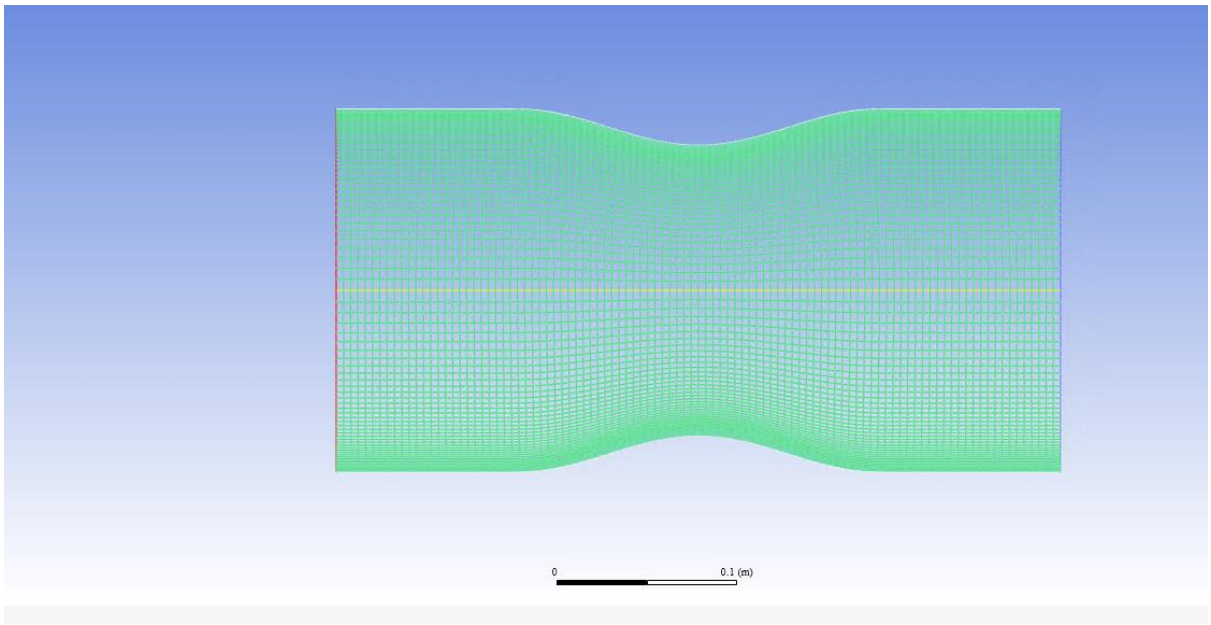
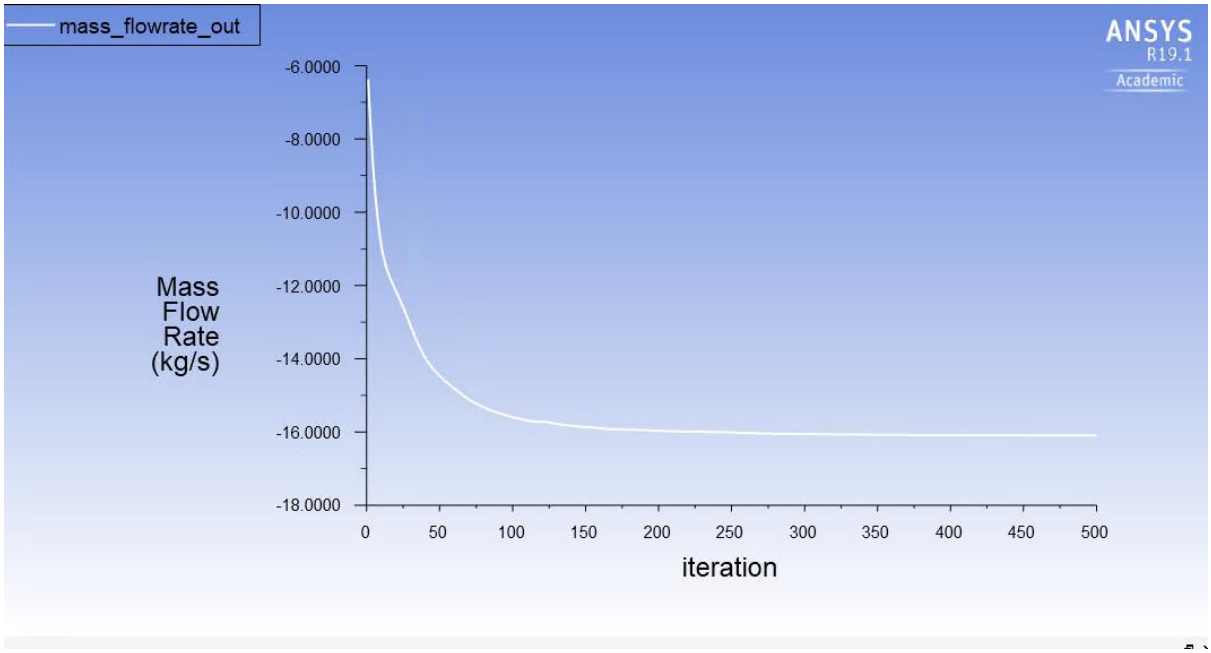
Meshing of the work

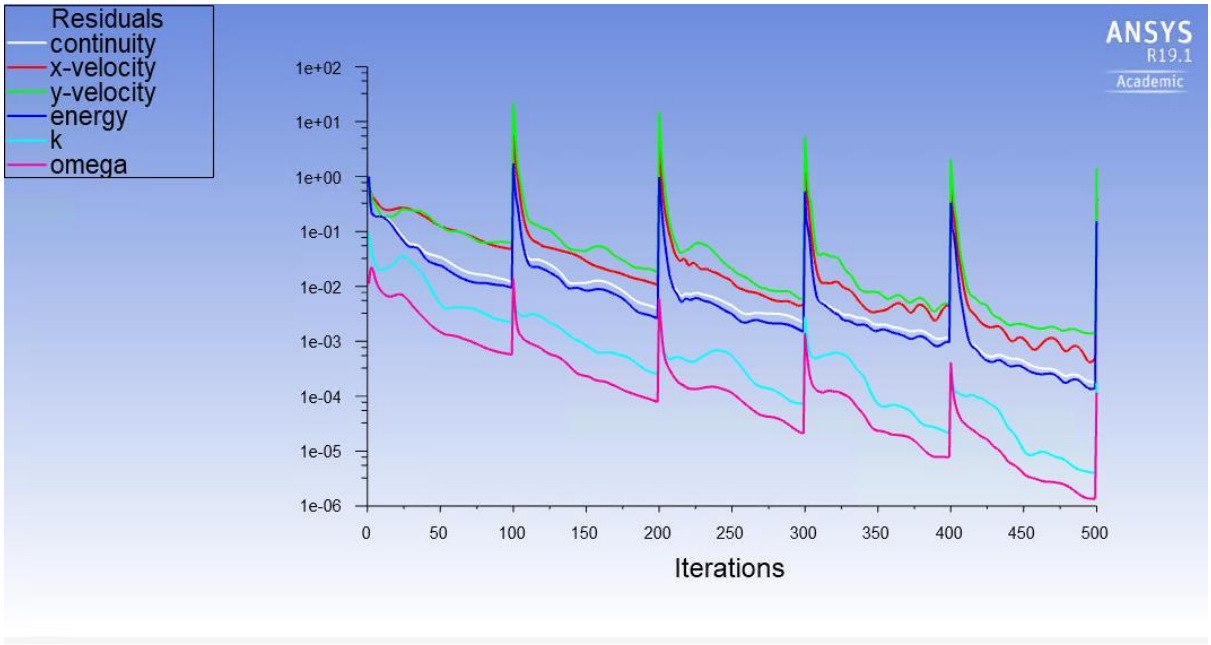


Using symmetry to produce the other half

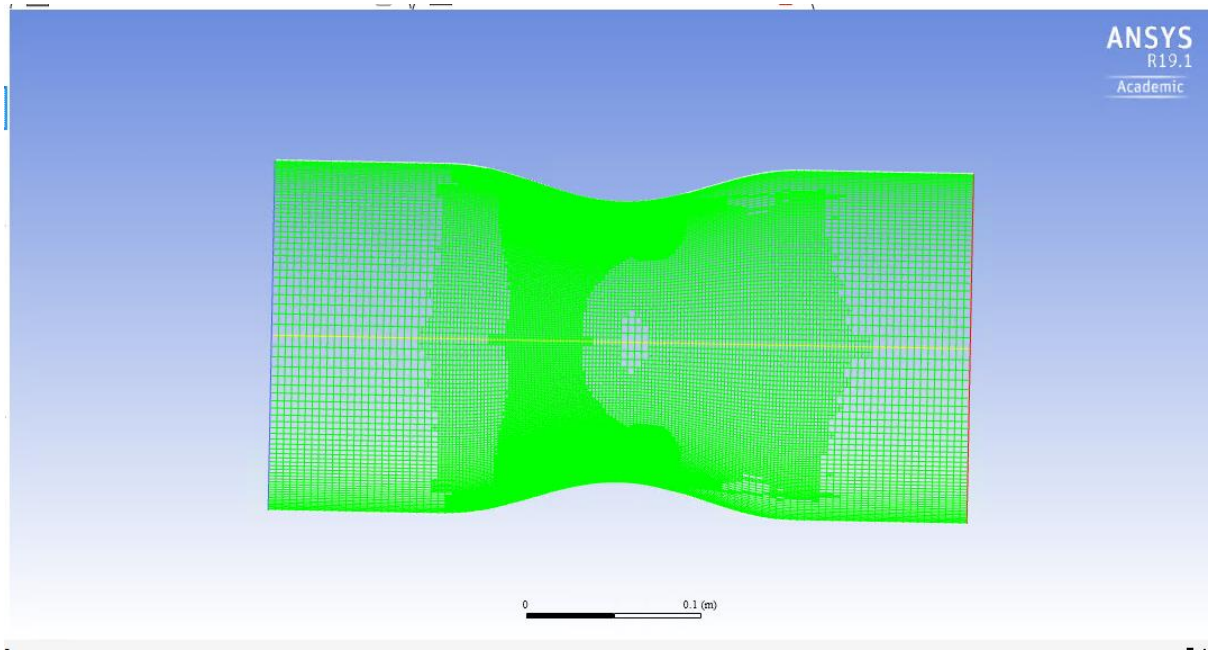


Calculating mass flow rate for 500 iterations

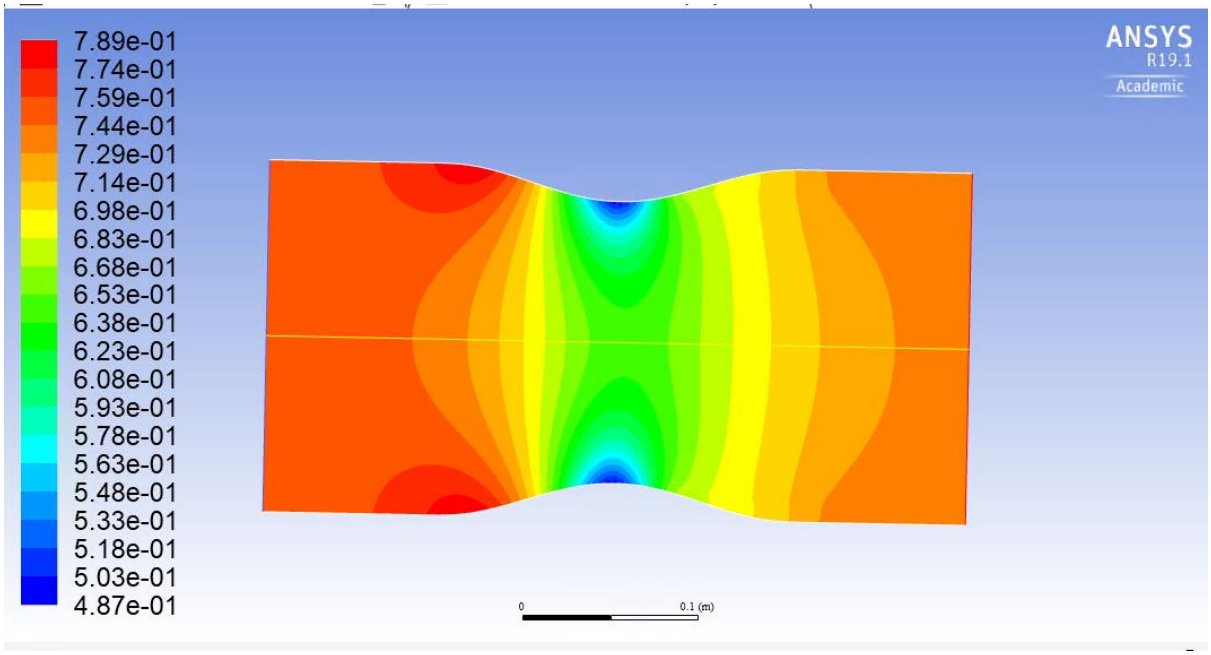




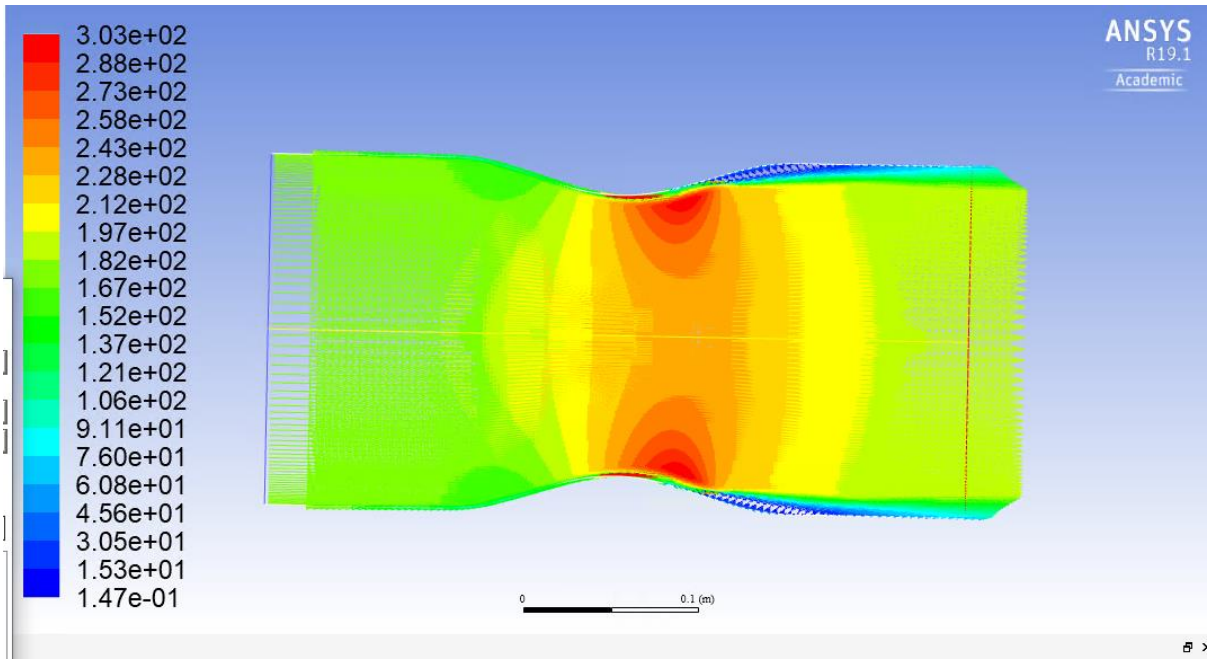
2D Nozzle Mesh after Adaption



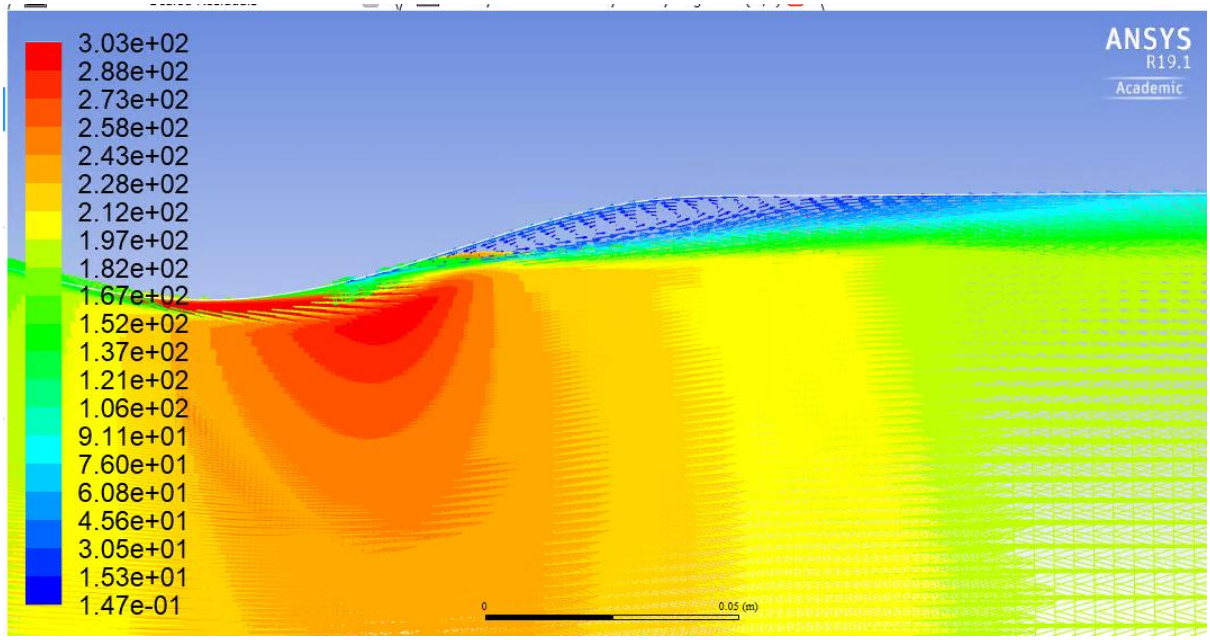
Contours of static pressure (steady flow)



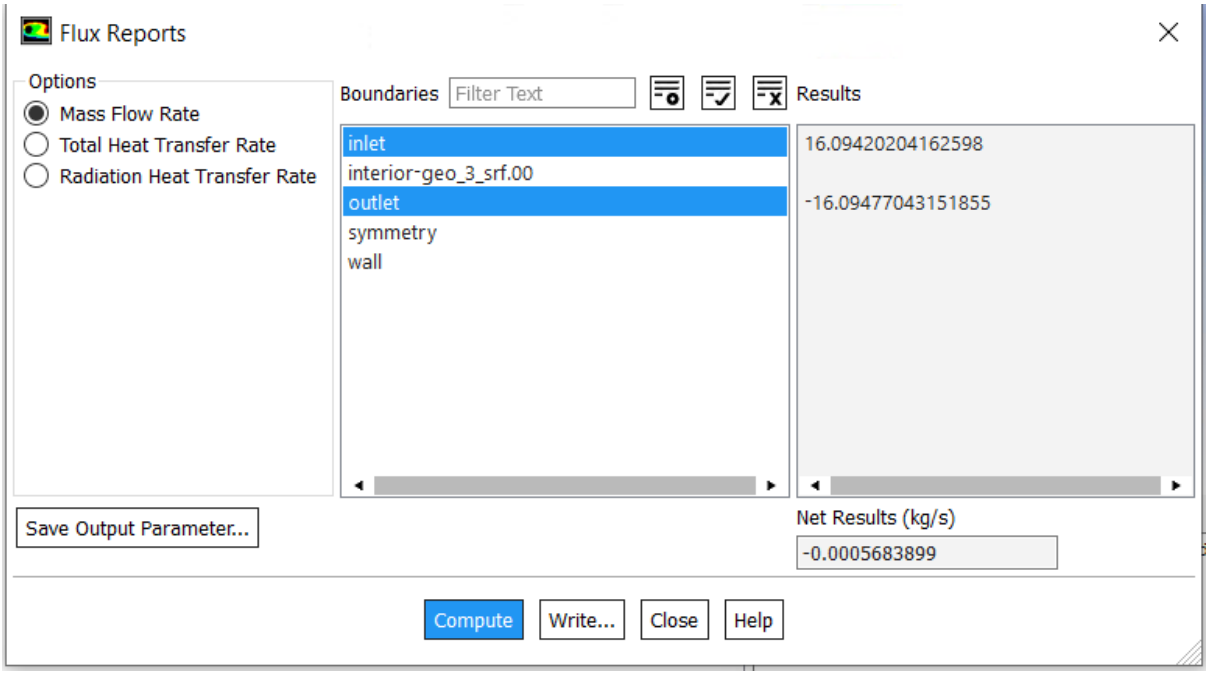
Velocity vectors showing recirculation (steady flow)



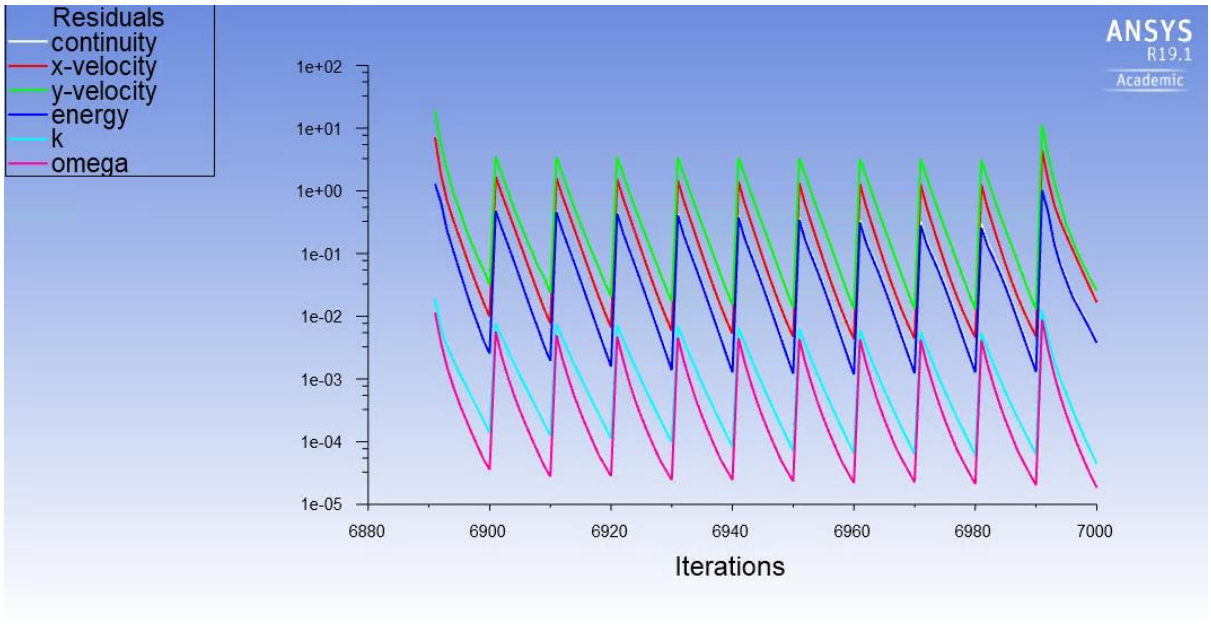
Zoomed image

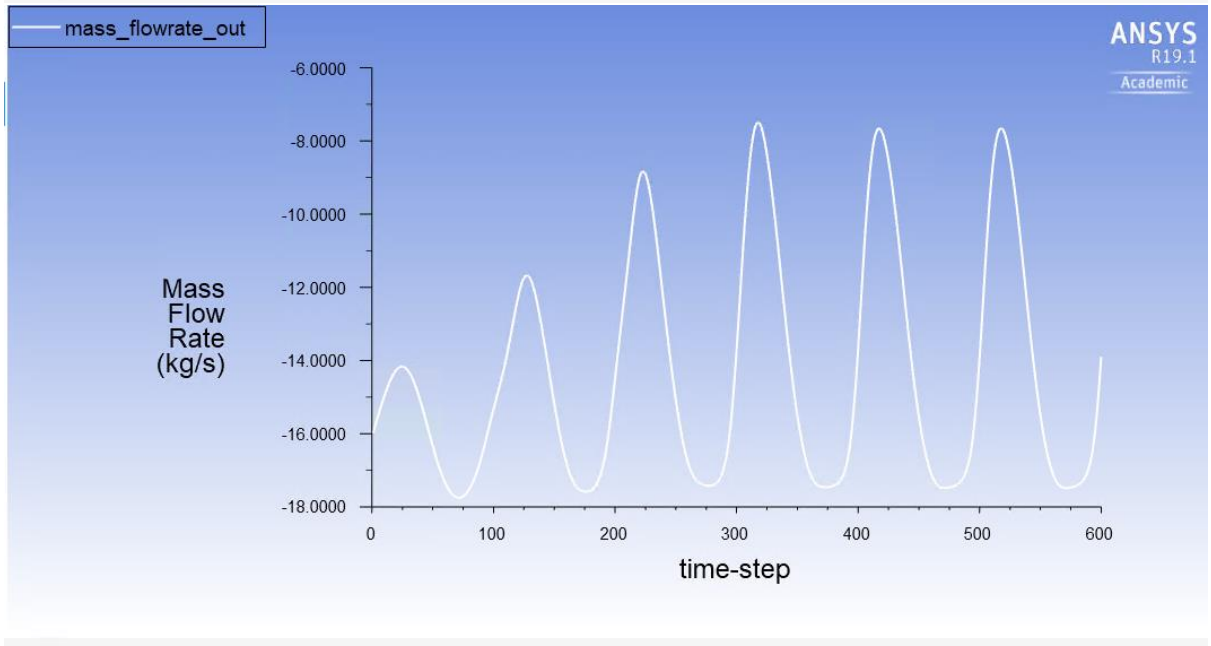


Flux report after computing for inlet and outlet

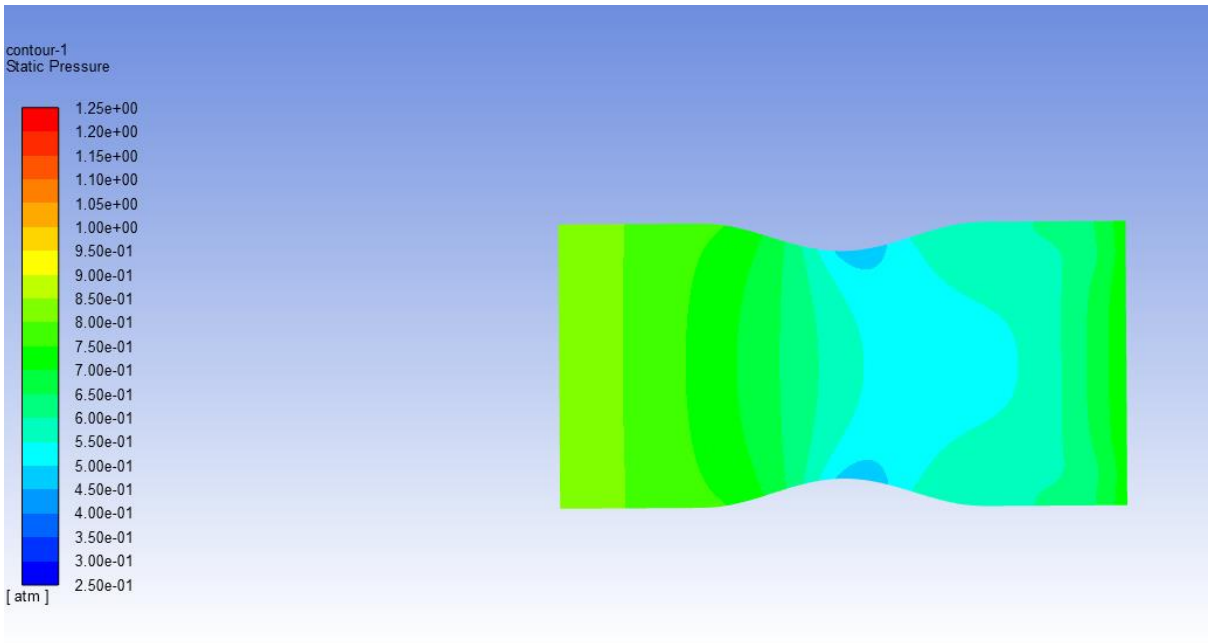


Calculating mass flow rate for 600 iterations

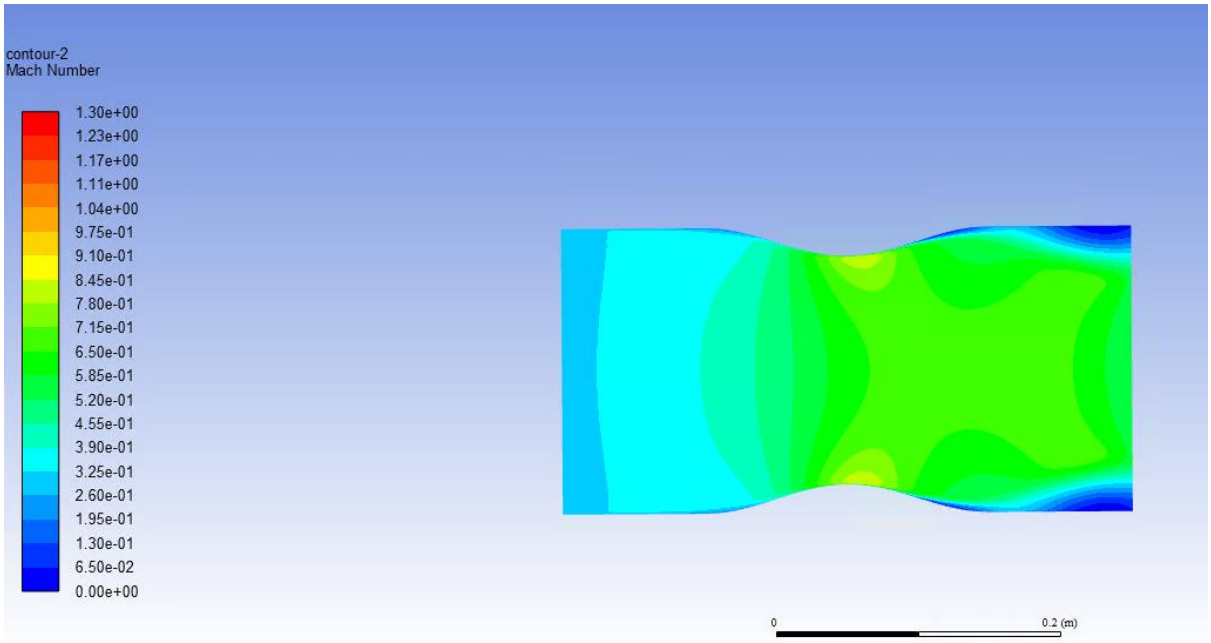




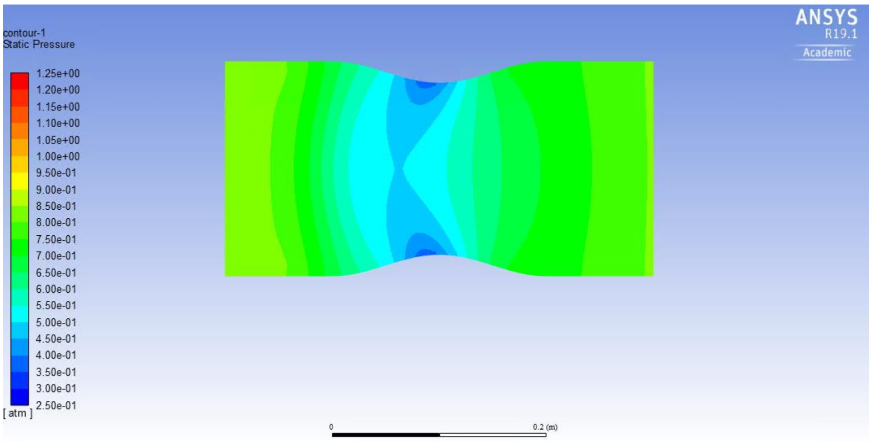
Pressure contour at t = 0.017136s

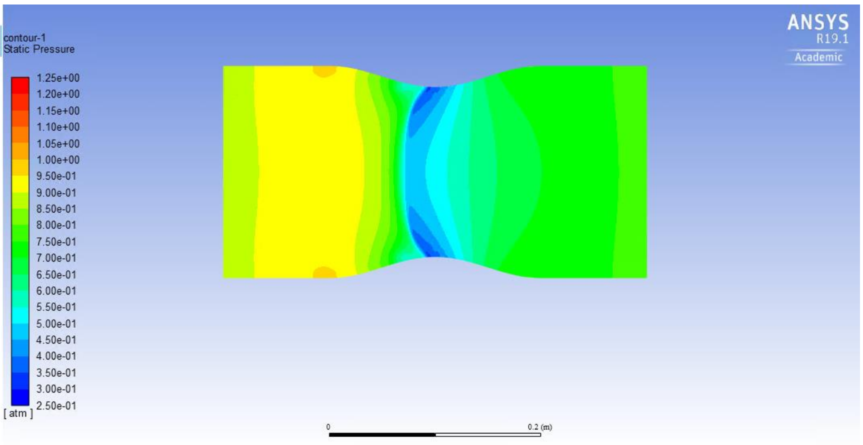


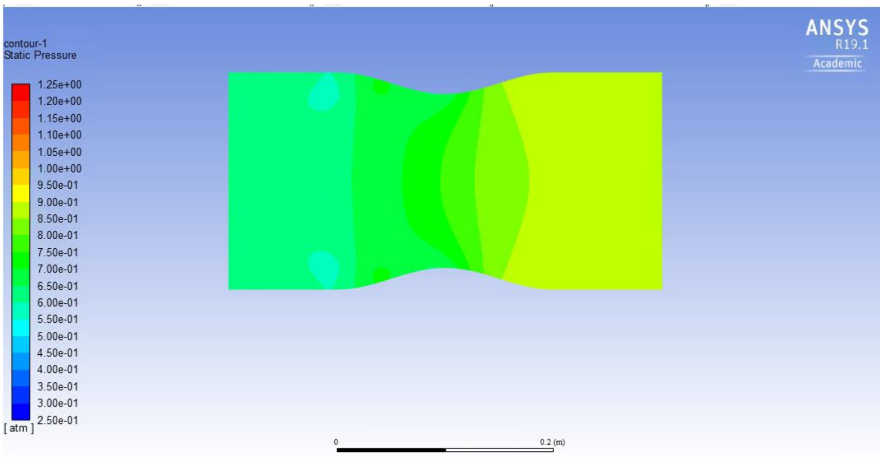
Mach number contour at t=0.017136 s



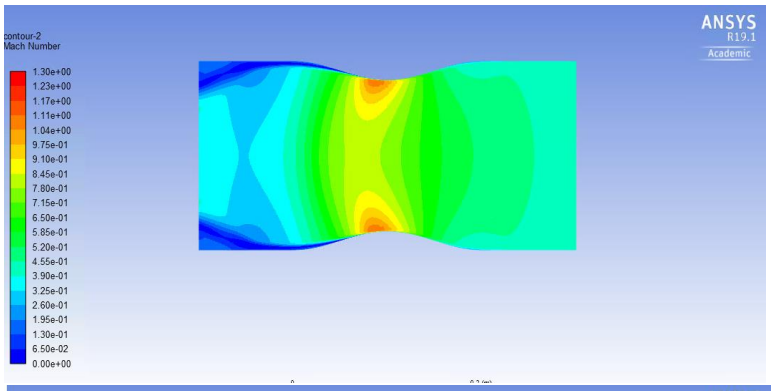
Here are some animation playback images for pressure contour

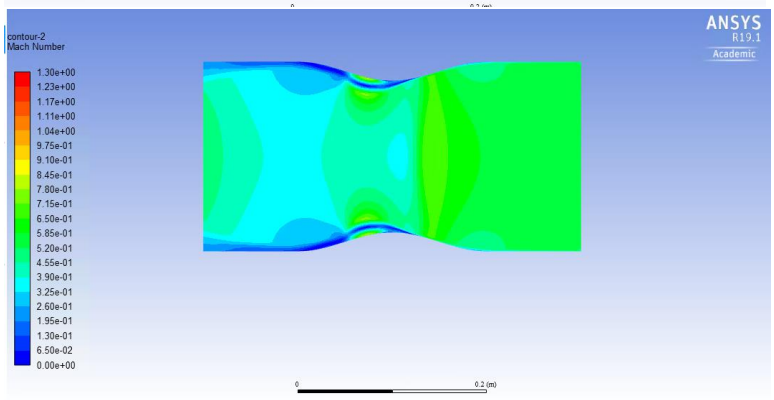


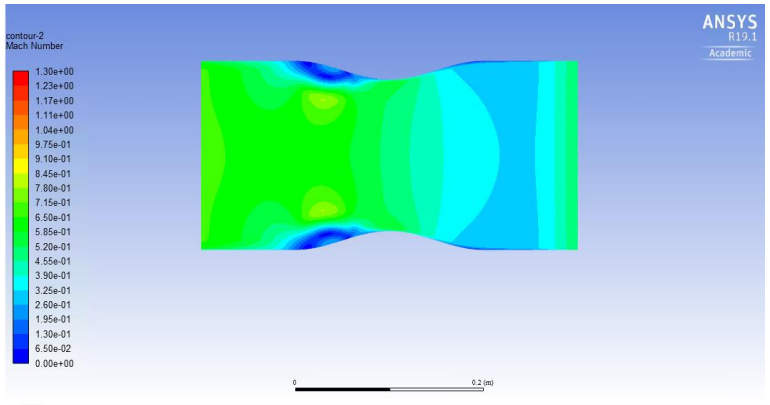




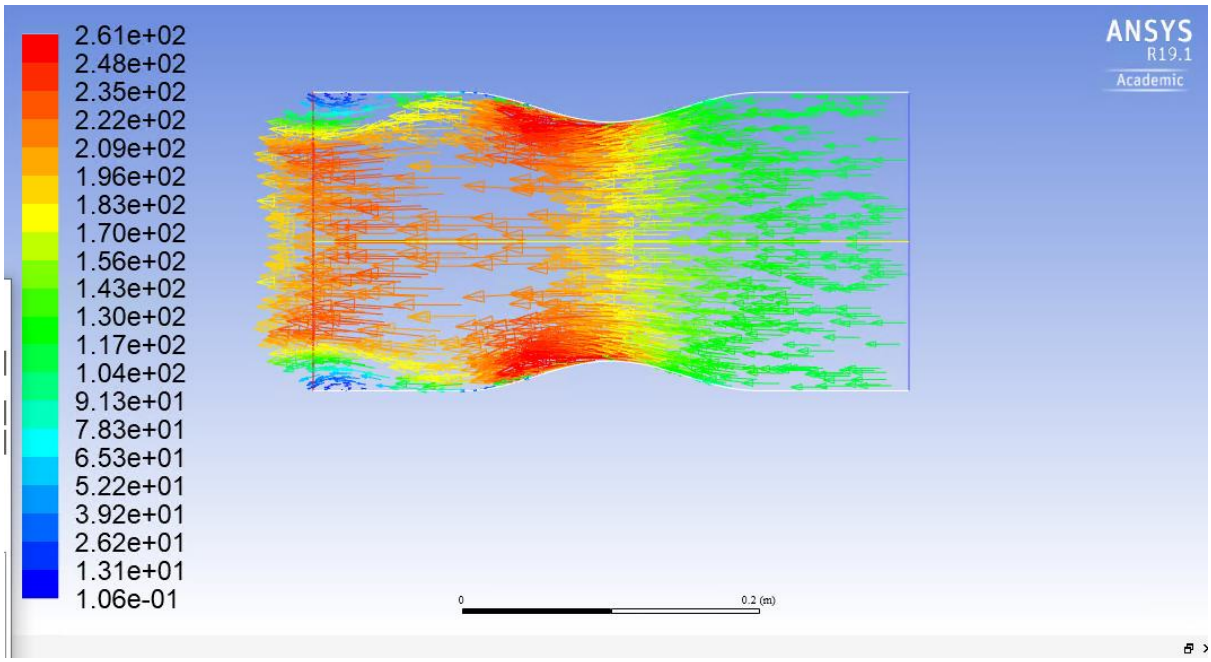
Here are some animation playback images for pressure contour





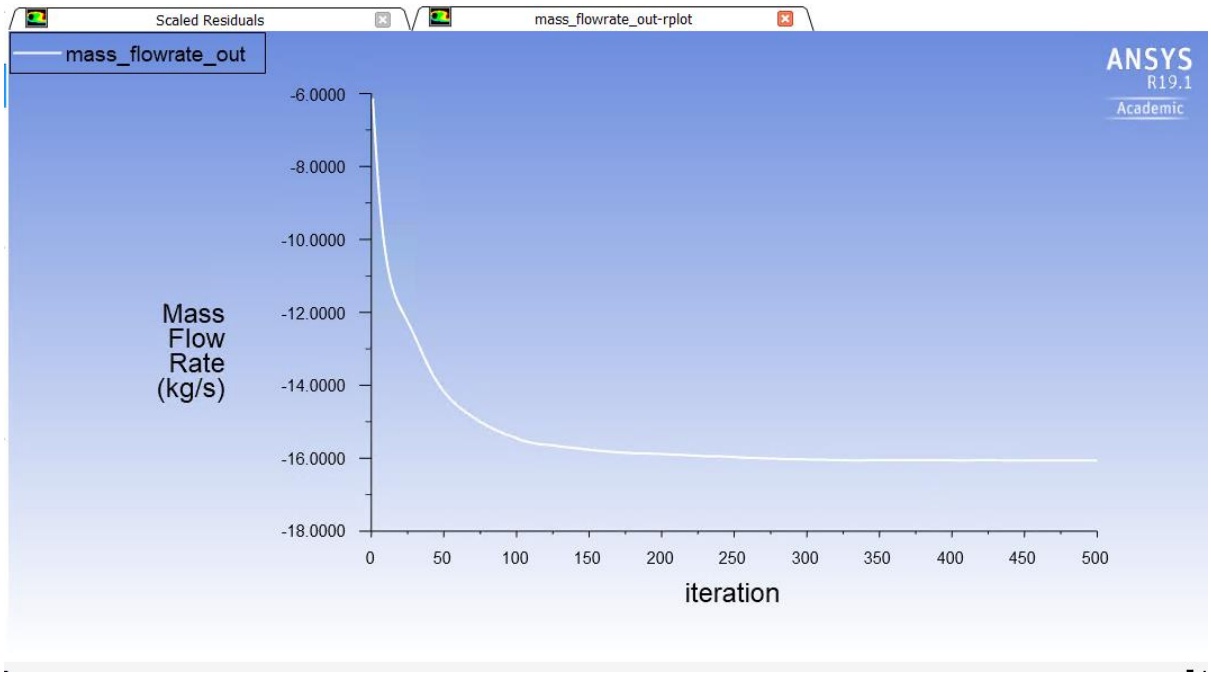


Velocity vector

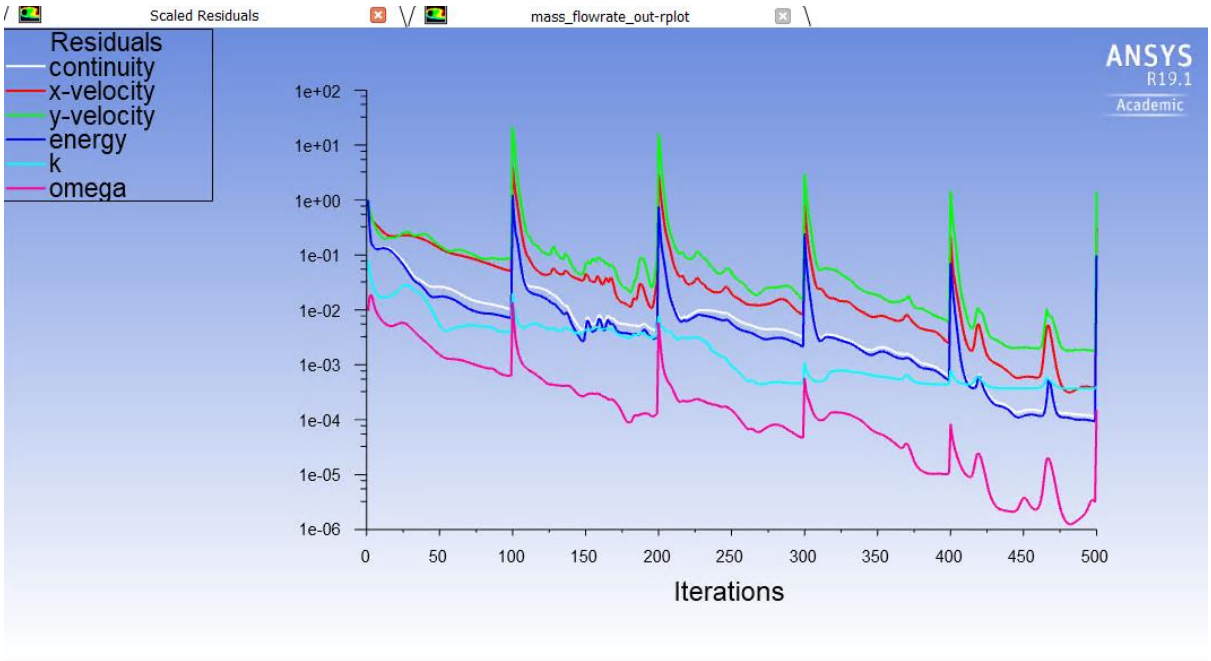


Third order

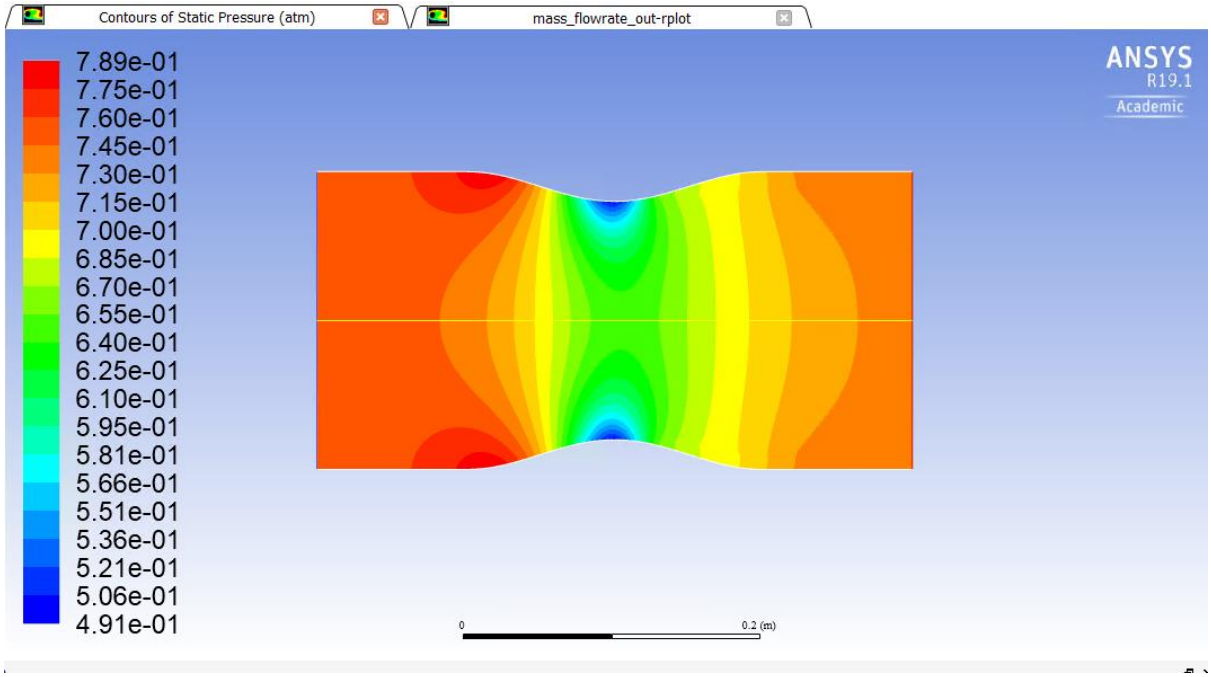
MASS FLOW RATE



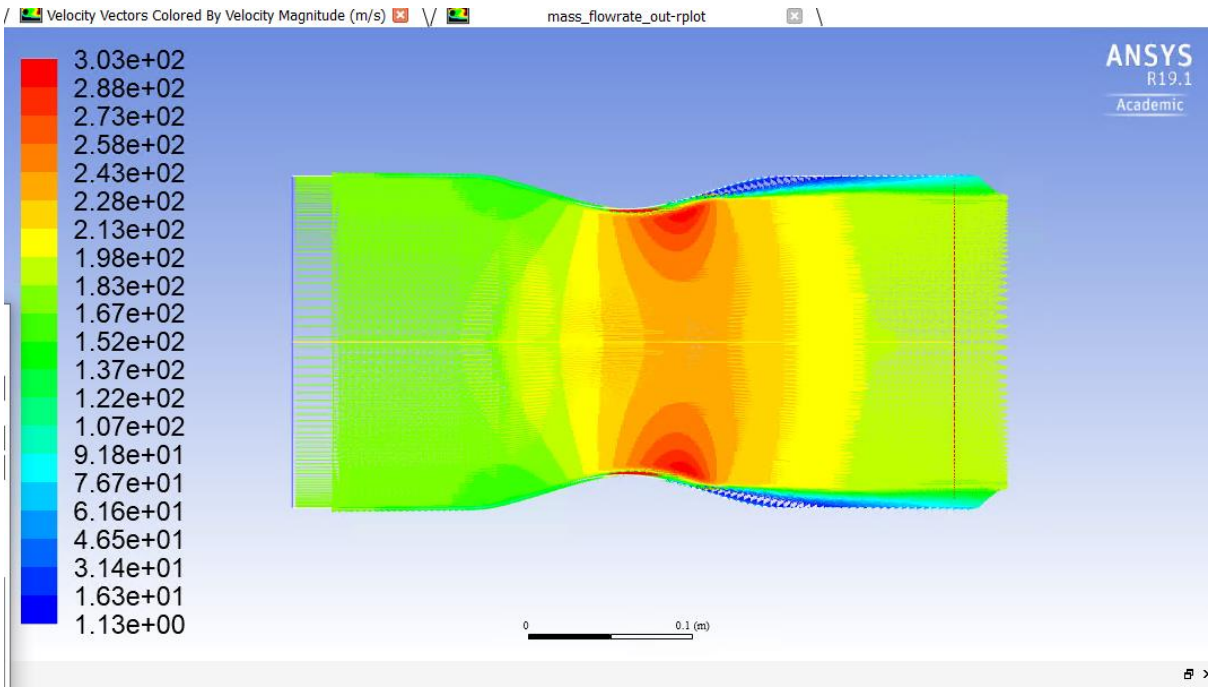
SCALED RESIDUALS



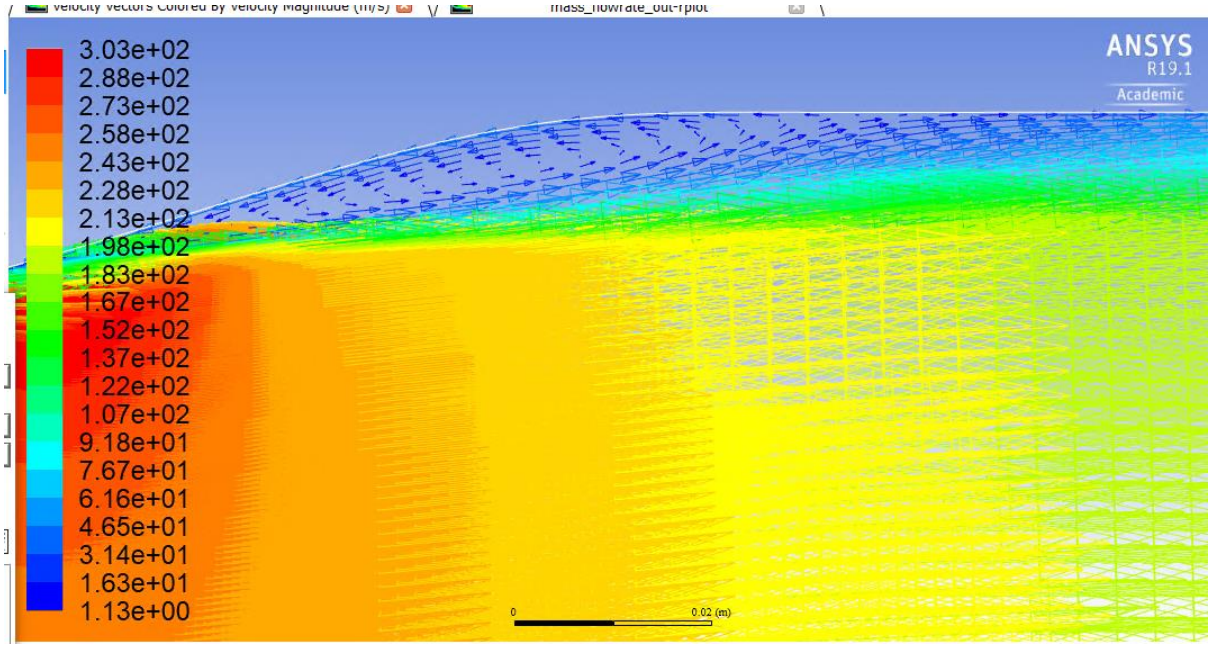
CONTOUR OF STATIC PRESSURE (STEADY FLOW)



VELOCITY VECTOR SHOWING RECIRCULATION (STEADY STATE)



ZOOMED VIEW


3.03e+02
2.88e+02
2.73e+02
2.58e+02
2.43e+02
2.28e+02
2.13e+02
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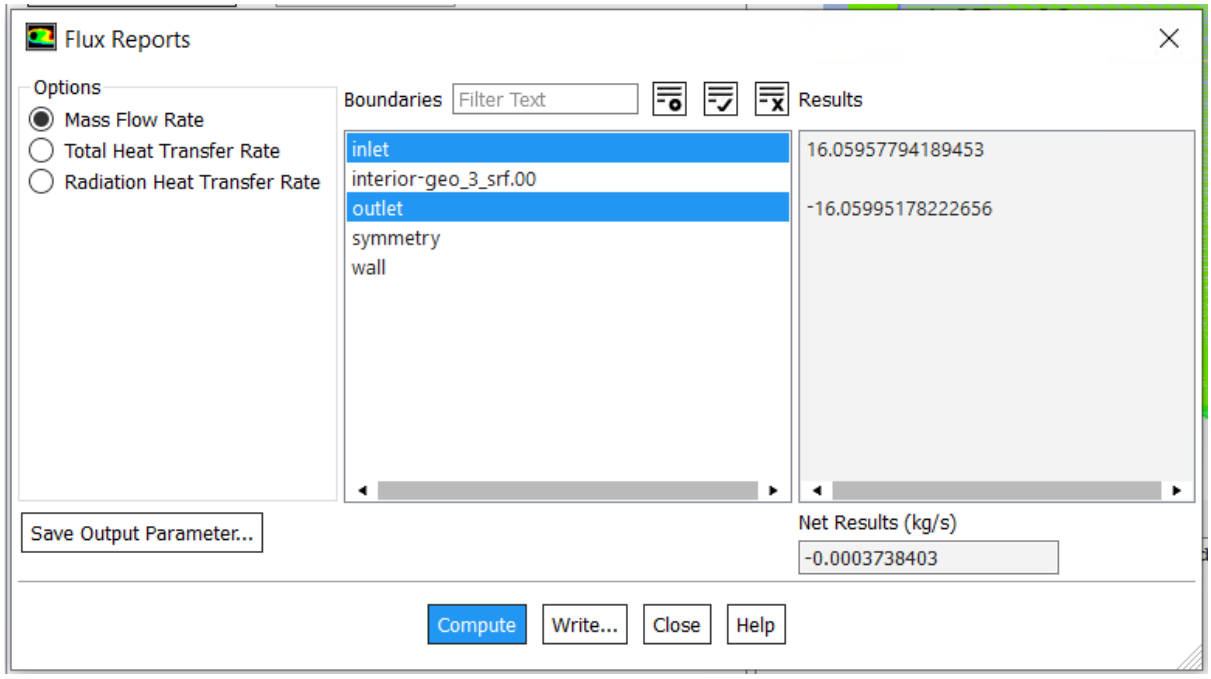
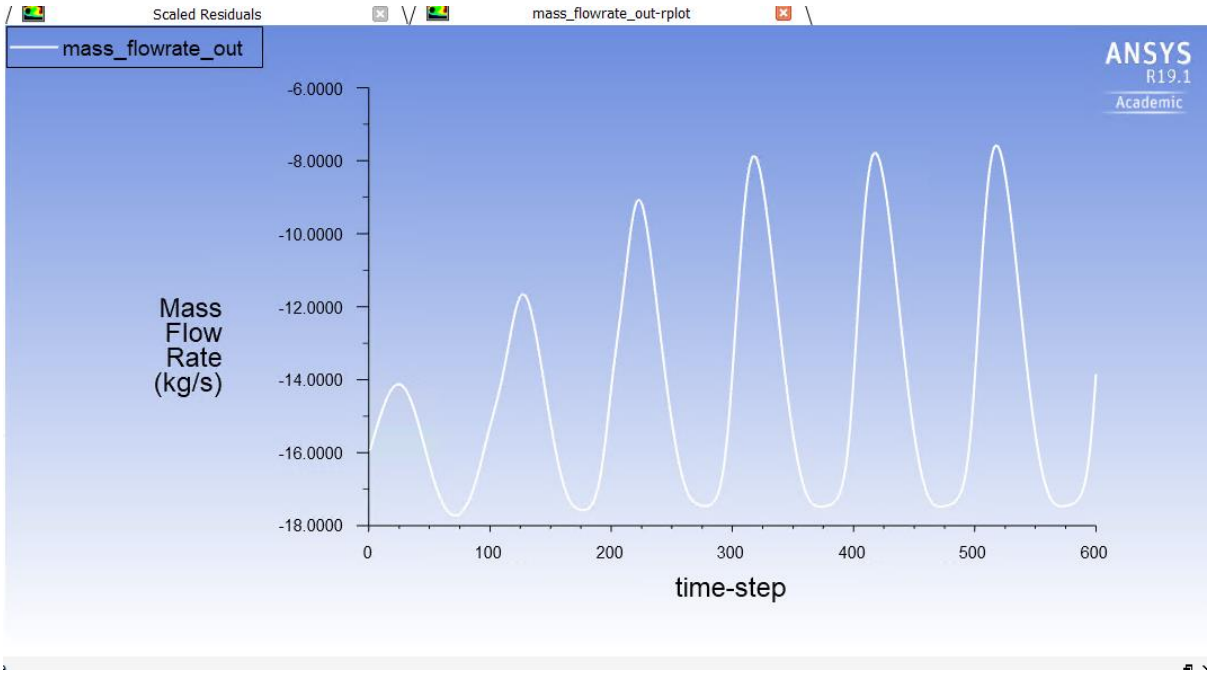
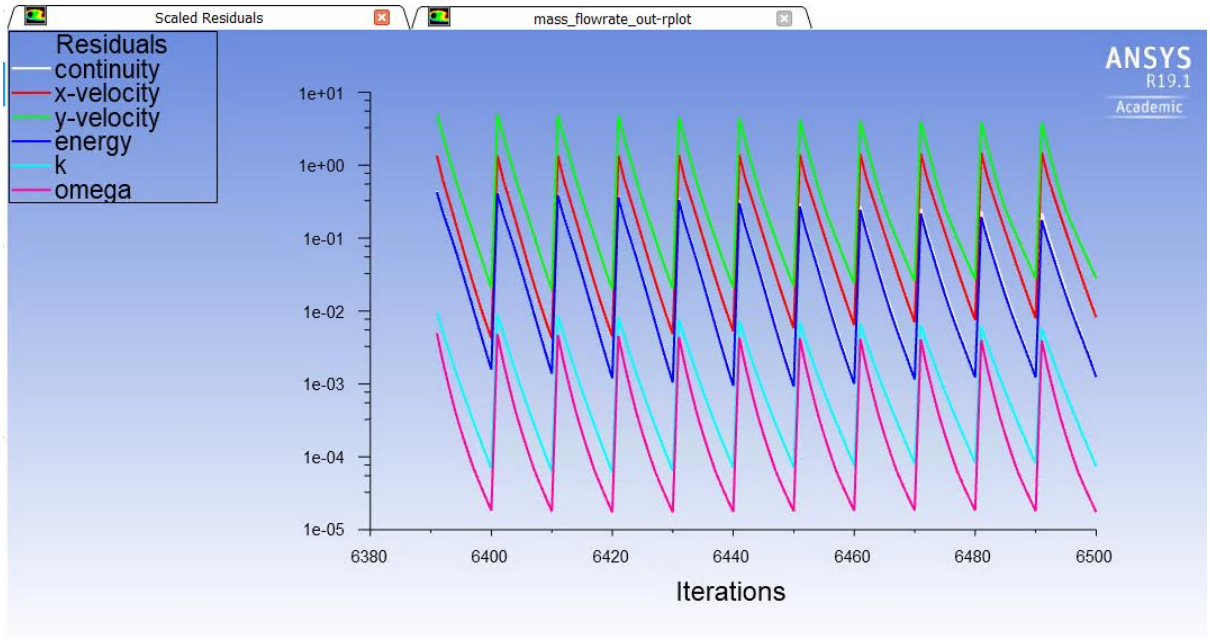
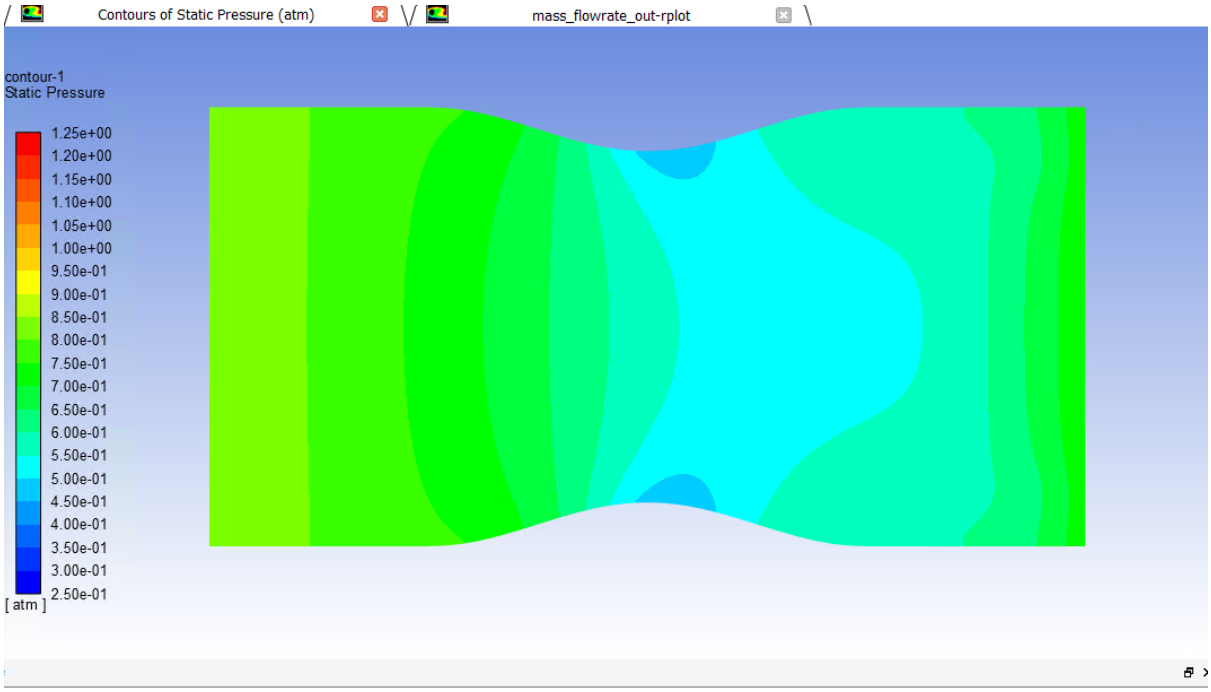
1.83e+02
1.67e+02
1.52e+02
1.37e+02
1.22e+02
1.07e+02
9.18e+01
7.67e+01
6.16e+01
4.65e+01
3.14e+01
1.63e+01
1.13e+00
ANSYS
R19.1
Academic
0
0.02 (m)


Flux Reports
Options
Mass Flow Rate
Total Heat Transfer Rate
Radiation Heat Transfer Rate
Boundaries
Filter Text
Results
inlet
interior-geo_3_srf.00
outlet
symmetry
wall
16.05957794189453
-16.05995178222656
Save Output Parameter...
Net Results (kg/s)
-0.0003738403
Compute
Write...
Close
Help

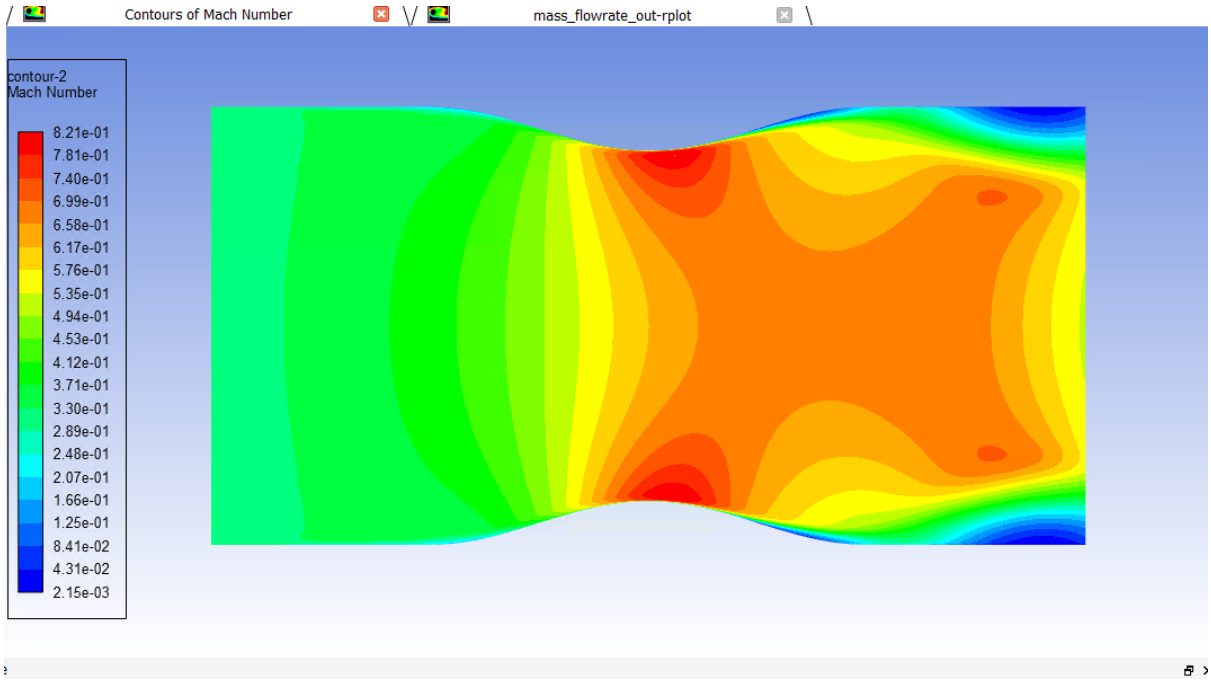

Scaled Residuals
mass_flowrate_out-rplot
mass_flowrate_out
ANSYS
R19.1
Academic
Mass
Flow
Rate
(kg/s)
-6.0000
-8.0000
-10.0000
-12.0000
-14.0000
-16.0000
-18.0000
0
100
200
300
400
500
600
time-step


Scaled Residuals
mass_flowrate_out-rplot
Residuals
continuity
x-velocity
y-velocity
energy
k
omega
ANSYS
R19.1
Academic
1e+01
1e+00
1e-01
1e-02
1e-03
1e-04
1e-05
6380
6400
6420
6440
6460
6480
6500
Iterations

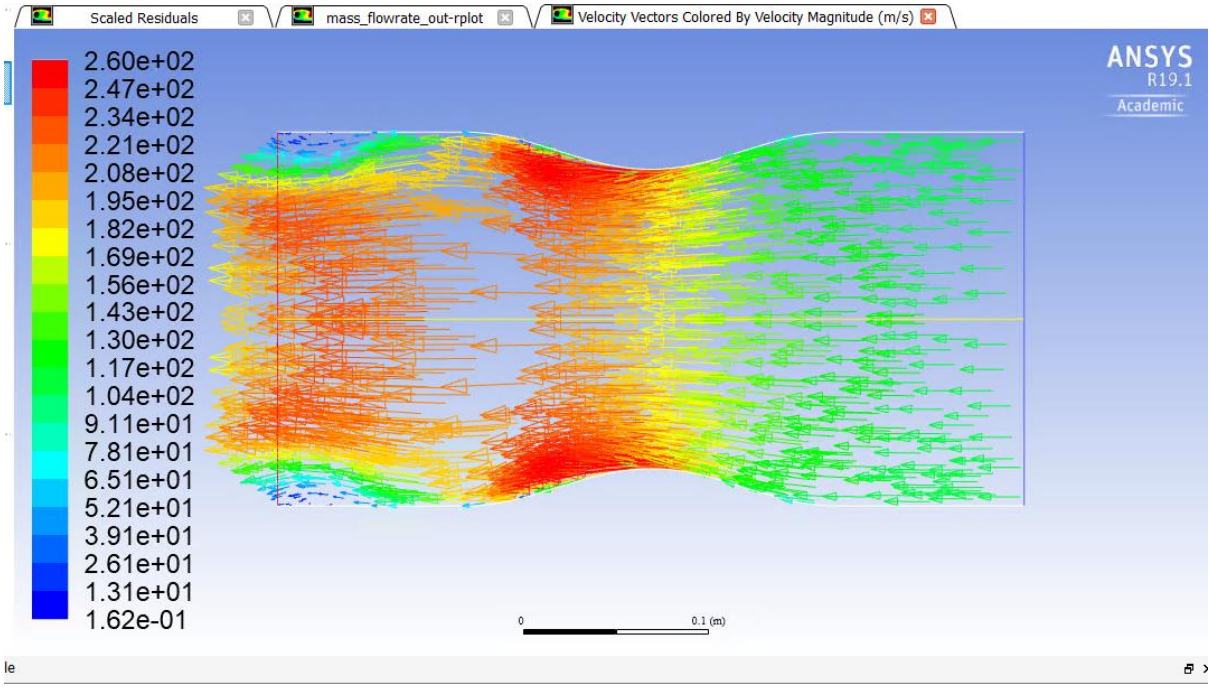
CONTOUR OF STATIC PRESSURE(t= 0.01736s)----transient state



CONTOUR OF MACH NUMBER (t= 0.01736s)-----transient state



VELOCITY VECTOR FOR 3RD ORDER CALCULATIONS



In this tutorial

We generated the steady state conditions as an initial condition for the transient case

We set the solution parameters for implicit time-stepping and apply a user -defined transient pressure profile at the outlet

Used mesh adoption to refine the mesh in areas with high pressure gradients to better capture the shocks

Learned to save the solution information as the transient calculation's proceeds

Created solution animation profile of the transient flow