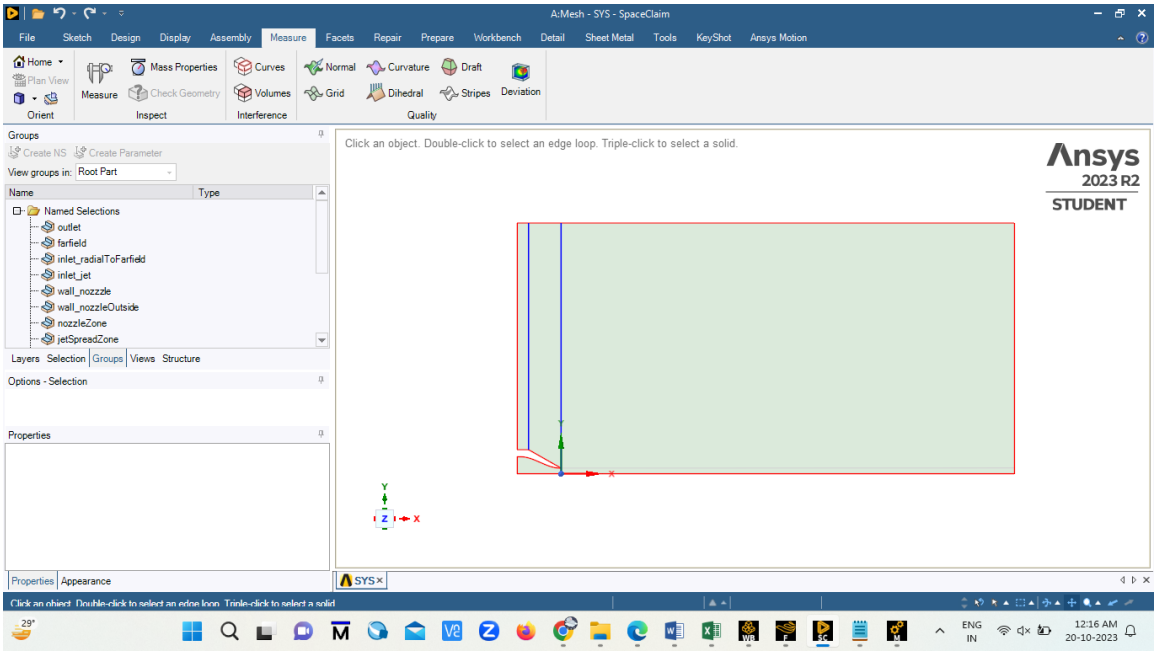
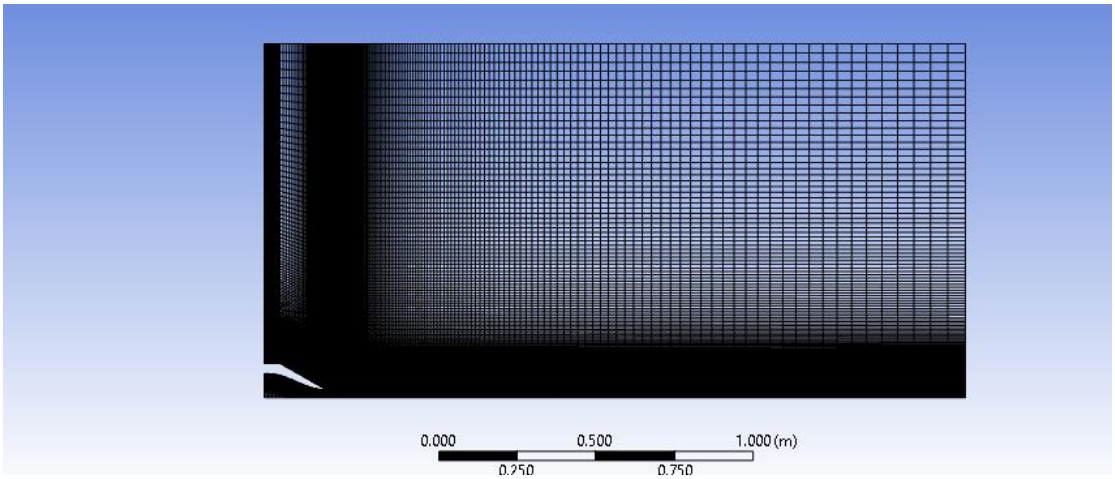
	Pref	101325	Pa				
	Mref	0.985			radius	25.4	mm
	Tref	294.444	K		diameter	0.0508	m
	T0/Tref	1.194045			U	335.333	m/s
	(T0)nozzle	351.5794	K				
	P0/Pref	1.860255					
	(P0) nozzle	188490.3	Pa				
	M_free	0.01					
	T0/Tref	1.00002					
	P0/Pref	1.00007					
	(Po) free	101332.1					
	(To)free	294.4499					
To solvent	(Pg)_nozzle	87165.32	Pa				
	(Pg)_free	7.092927					

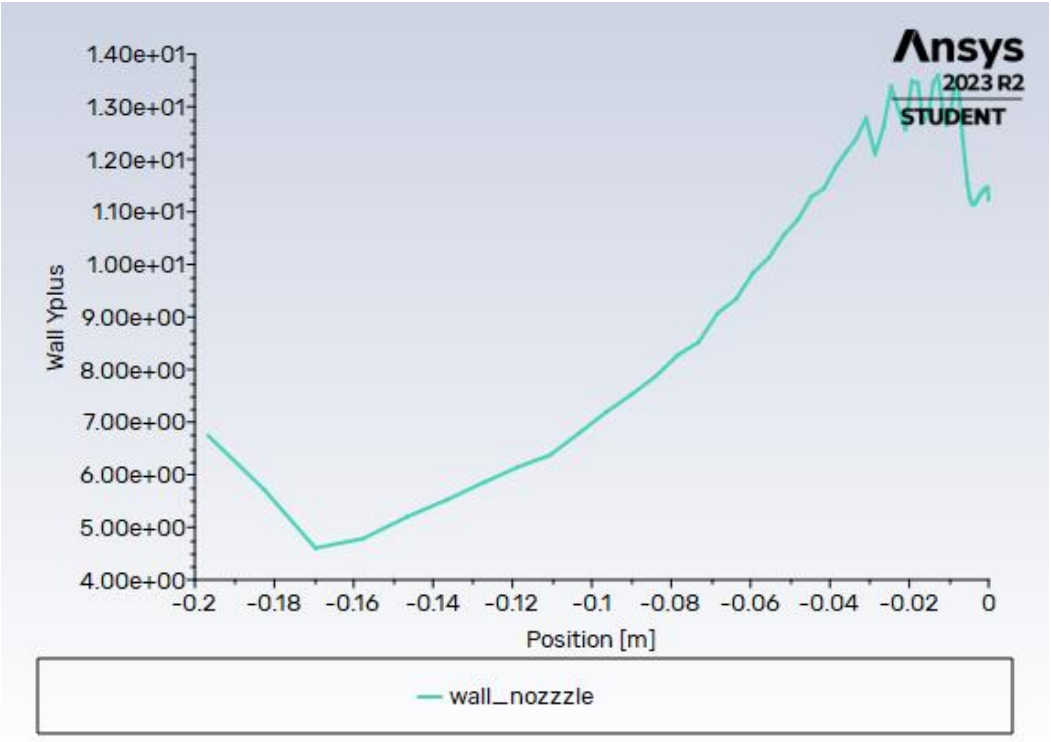


Geometry



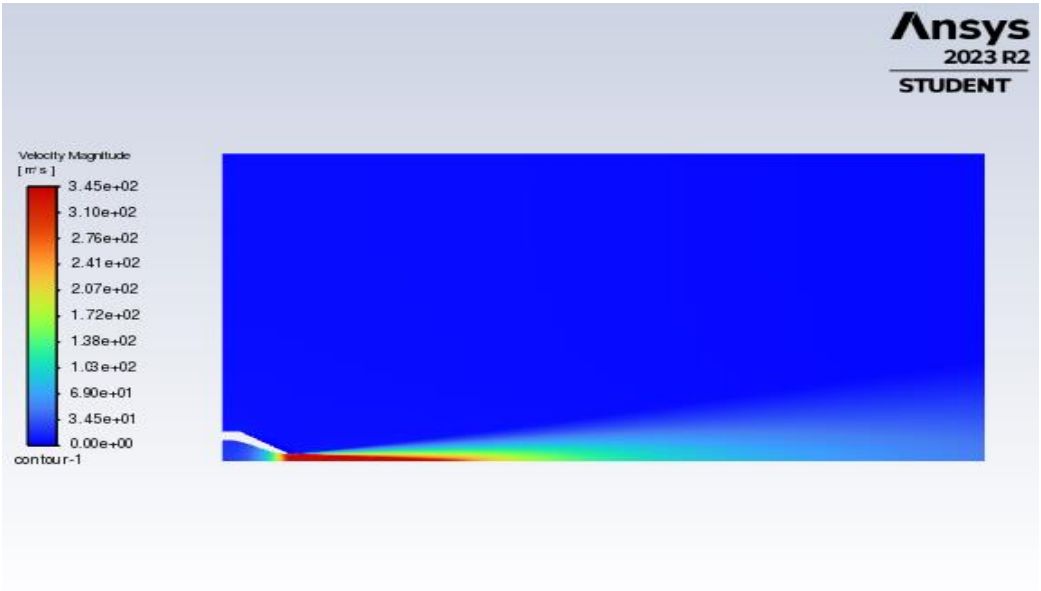
Fine meshing

Variation of wall Y+



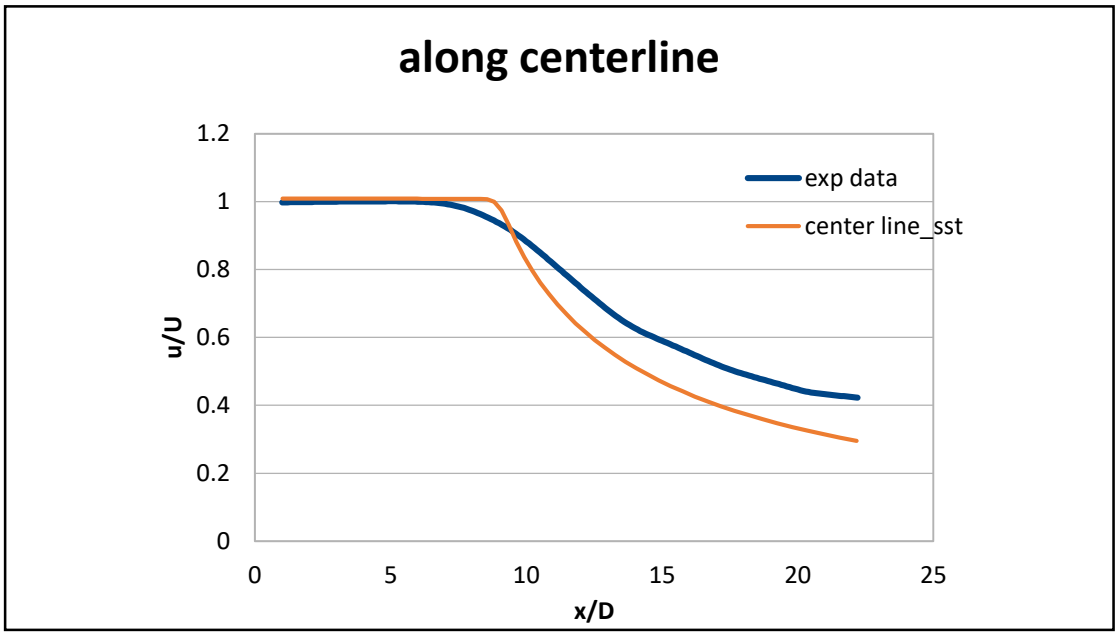
- The y+ value is 4.63 and is sufficient to study the boundary layer effects

Velocity Contour

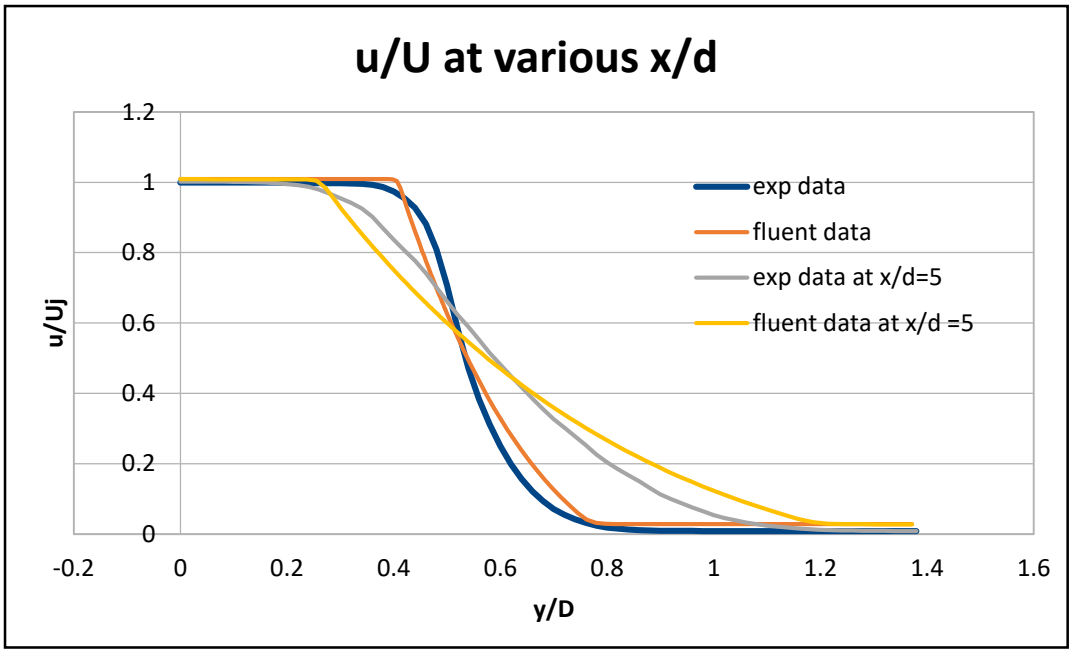


- The flow starts from zero velocity and achieve sonic velocity at throat of nozzle.
- The jet get expanded due to the entrainment of flow from free stream.

Velocity Profiles

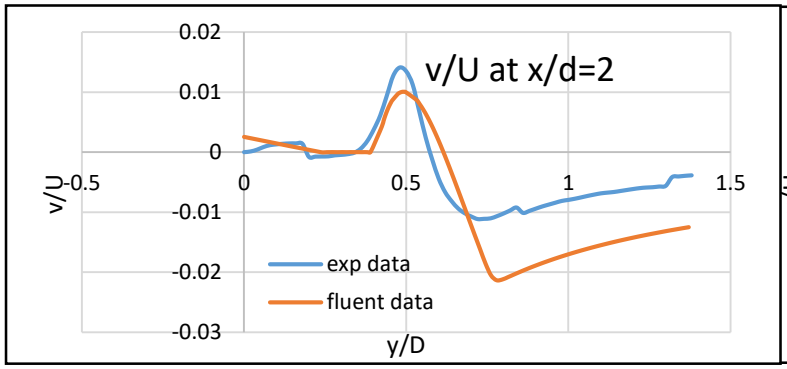


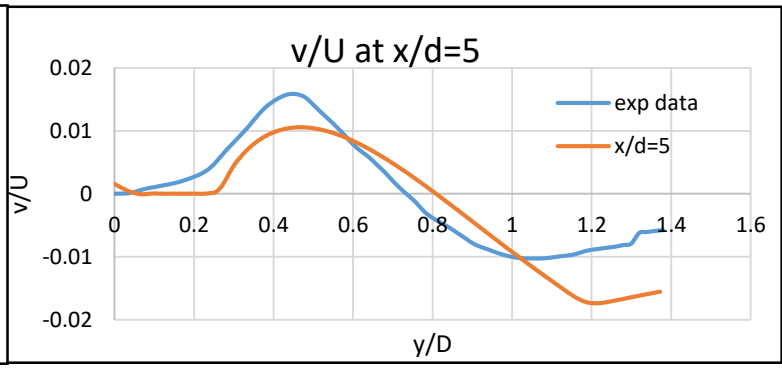
- From the velocity contour also, it is clearly observed that after the nozzle exit, the velocity get decreased continuously from sonic velocity, due to the addition of external mass flow rate.
- The curves from the 2 set of data follows the same trend, but there is relatively sudden drop of velocity in SST model.
- The straight line indicates the Length of potential core, where there is no viscous effects
- Here the mean velocity remains constant and close to jet exit velocity and the flow is uniform and irrotational as it is not affected by the shear and hence no velocity gradients are present.



- Close to the axis and in free stream region, there is constant axial velocity. But in entrainment region, the variation is observed. Increase in axial location (x/d=2 & 5), increases the velocity gradients. The little variation is still there when compared with Experimental data

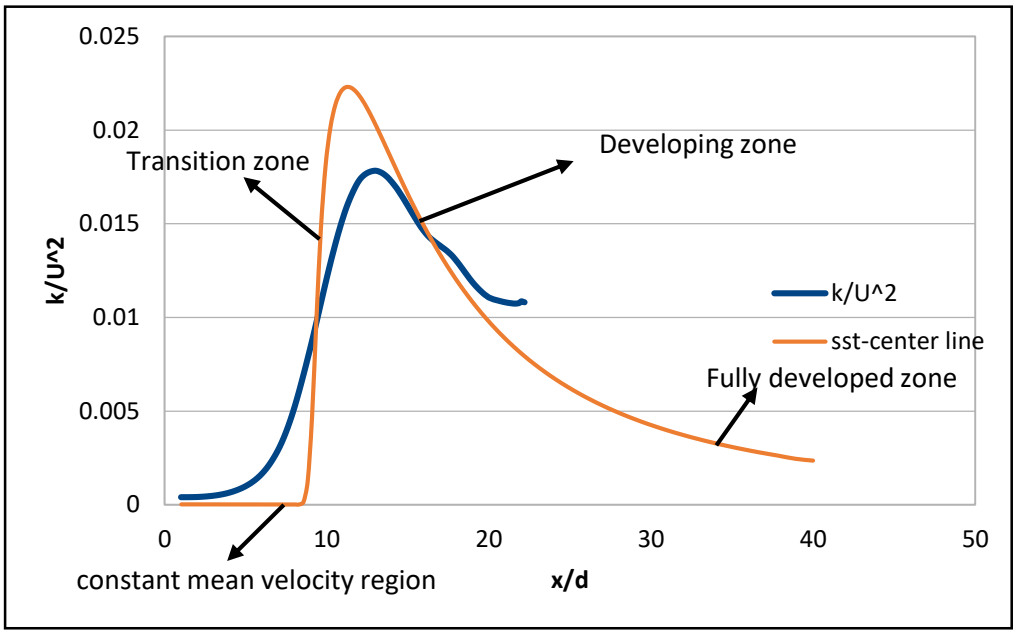
Radial Velocity





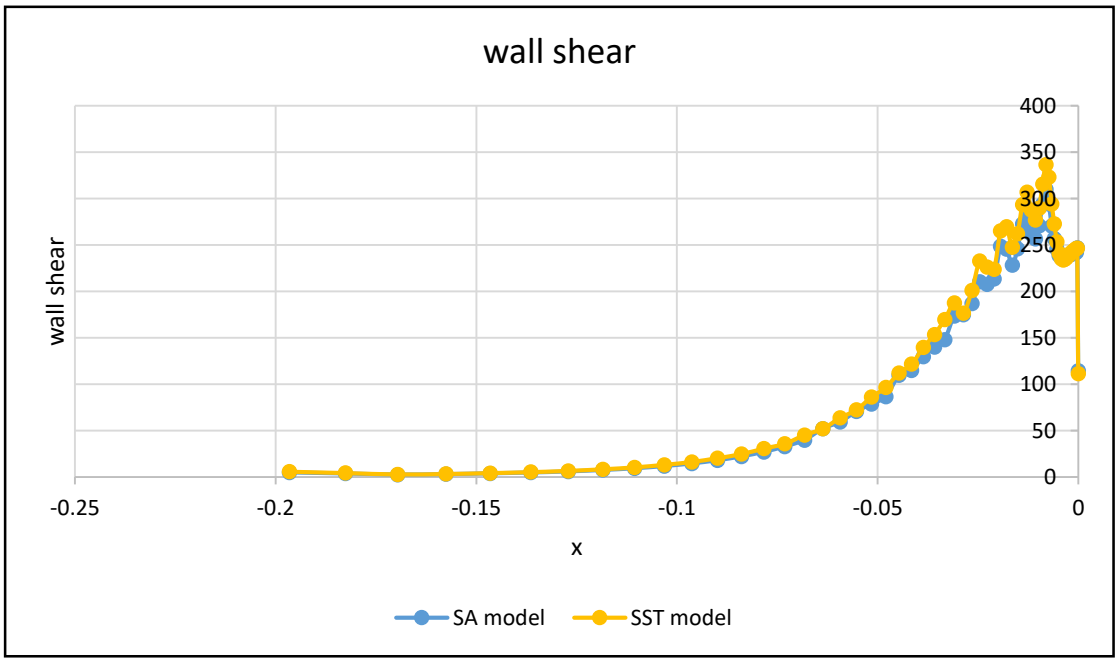
- The radial velocity variation along normal to jet direction describes there is peak value and it is greater for axial location nearer to jet exit.
- The zigzag pattern is because of shear effects between jet and outside free stream flow.

Turbulent kinetic energy along centerline:



- The Turbulent kinetic energy is almost zero nearer to the nozzle exit, after that it start increasing and reaches maximum in transition zone, after that there is a continuous decrease in energy due to fully developed flow is achieved and has decreasing velocity.

Comparison of two different viscous models (SA and SST)



- It is observed that there is little variation in wall shear between two models and that too near to the nozzle exit.
- So for this analysis, it is appropriate to use any one of the turbulent viscous model