**Effect of mesh type and size: Pipe Flow**

This is a very interesting simulation using a classic case of developing flow in a circular pipe (one of the most widely investigated and taught flow types).

- A very high level of convergence have been ensured (very low level of residuals) to ensure that machine and convergence error are minimized to insignificant levels.
- **The key highlight is the velocity profile in the boundary layer when calculations were performed using tetrahedrons and the prisms. Note the zig-zag pattern in case of tetrahedrons.**
- The investigation into the cause(s) of such variations and pattern is left to the interested analysts and cfdyna.com would be keen to hear from them.

**Convergence**

Good convergence ensured in all the cases

![Convergence Graph](image)

**Coarse Mesh:**
Uniform Tetrahedrons with maximum size of 2 mm
**Fine Mesh:**
Uniform Tetrahedrons with maximum size of 1 mm
**Prism Mesh in Boundary Layer**

Prism layer height 2 mm and number of layers is 1, uniform Tetrahedrons with maximum size of 2 mm after the prism layer.
Prism Mesh in Boundary Layer

Prism layer height 1 mm and number of layers is 2 created by splitting the first layer used in previous section, uniform tetrahedrons with maximum size of 2 mm after the prism layers.