

FLUENT - Partially Premixed Combustion

Author: Lara Backer, Cornell University - taken from ANSYS Inc. tutorial

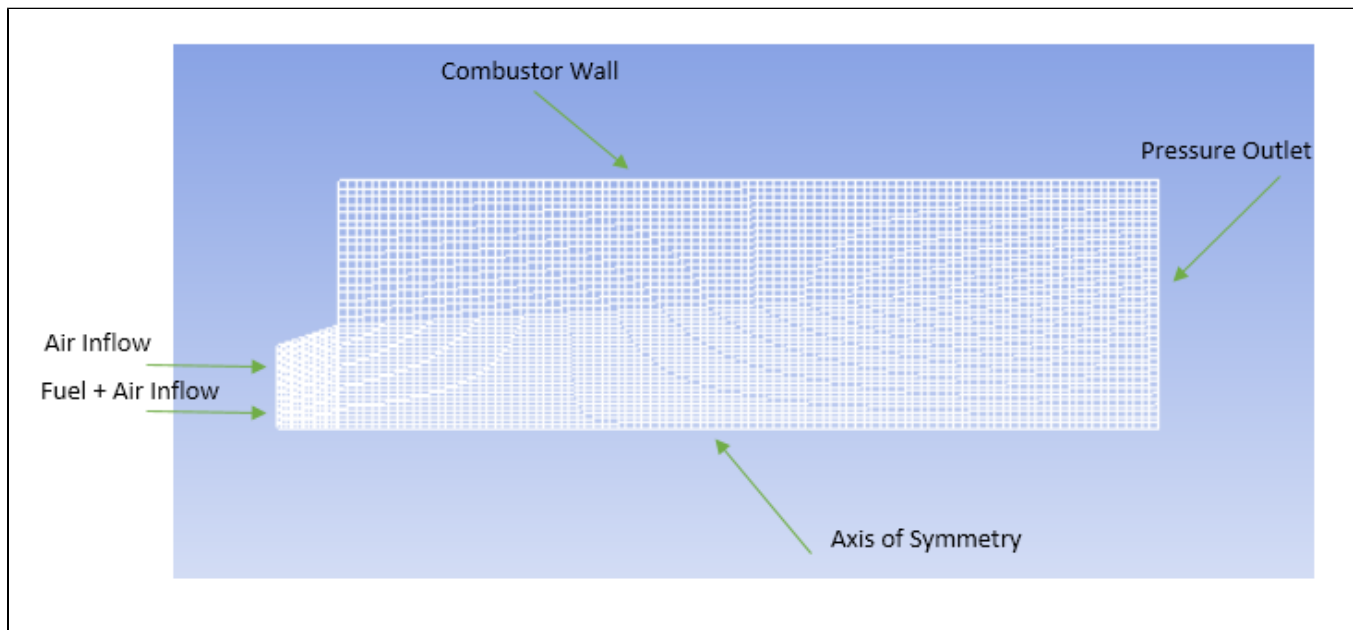
Problem Specification

1. Pre-Analysis & Start-Up
 2. Geometry
 3. Mesh
 4. Physics Setup
 5. Numerical Solution
 6. Numerical Results
 7. Verification & Validation
- Exercises
Comments

Partially Premixed Combustion

Created using ANSYS 14.5

Problem Specification



This is a partially premixed combustion case, which has inflows that reflect both premixed (fuel inflow) and nonpremixed (fuel and air mixing) conditions.

The fuel (CH_4) and air mixture has an equivalence ratio of 0.8, defined in the Physics Setup. It is injected at $T = 300\text{K}$ with an axial velocity of 50m/s and swirl velocity (direction) of 30m/s . The air inflow is at $T = 650\text{K}$ and is injected at 10m/s axially, with no swirl. This case is axisymmetric and so the physical combustion chamber is assumed to be cylindrical; rotated about the axis of symmetry. The outflow is the pressure outlet at atmospheric pressure.

[Go to Step 1: Pre-Analysis & Start-Up](#)

[Go to all FLUENT Learning Modules](#)