

# FLUENT - Partially Premixed Combustion

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

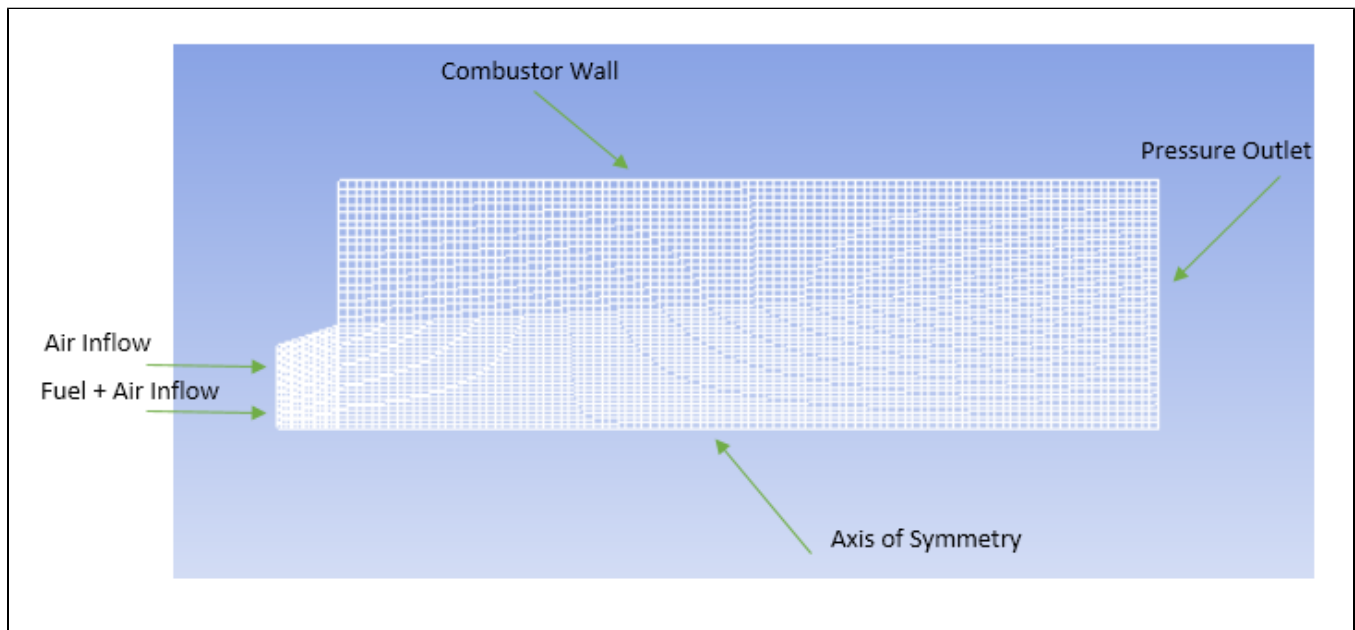
## Problem Specification

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 ( $\text{CH}_4$ ) 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  $50\text{m/s}$  and swirl velocity (direction) of  $30\text{m/s}$ . The air inflow is at  $T = 650\text{K}$  and is injected at  $10\text{m/s}$  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](#)