

OpenFOAM Community Christmas Competition

Submission by:

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From Politecnico di Milano

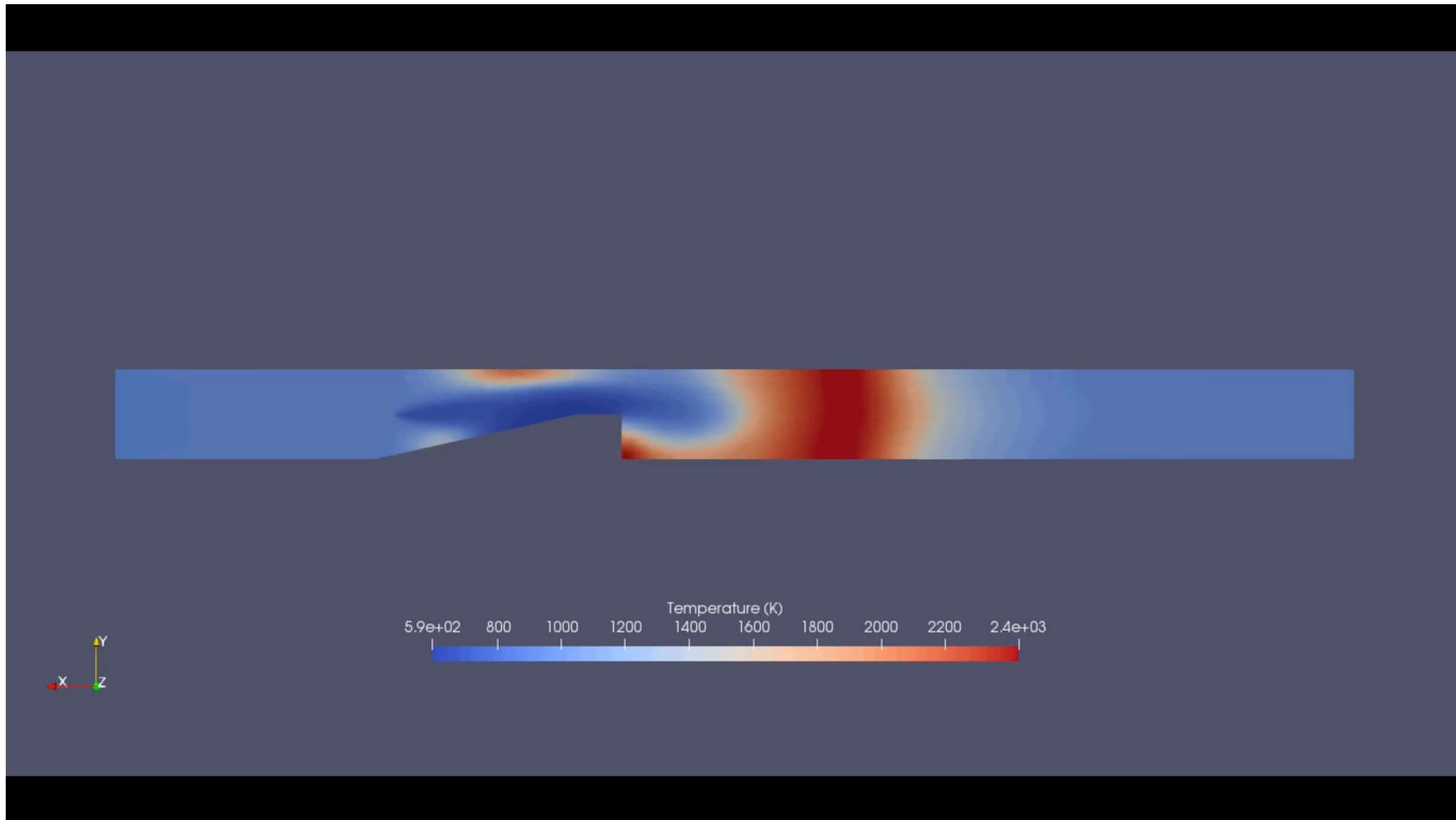
The logo of Politecnico di Milano, featuring a circular emblem with a line-art illustration of a group of people in classical attire, possibly representing the founding of the institution.

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Introduction

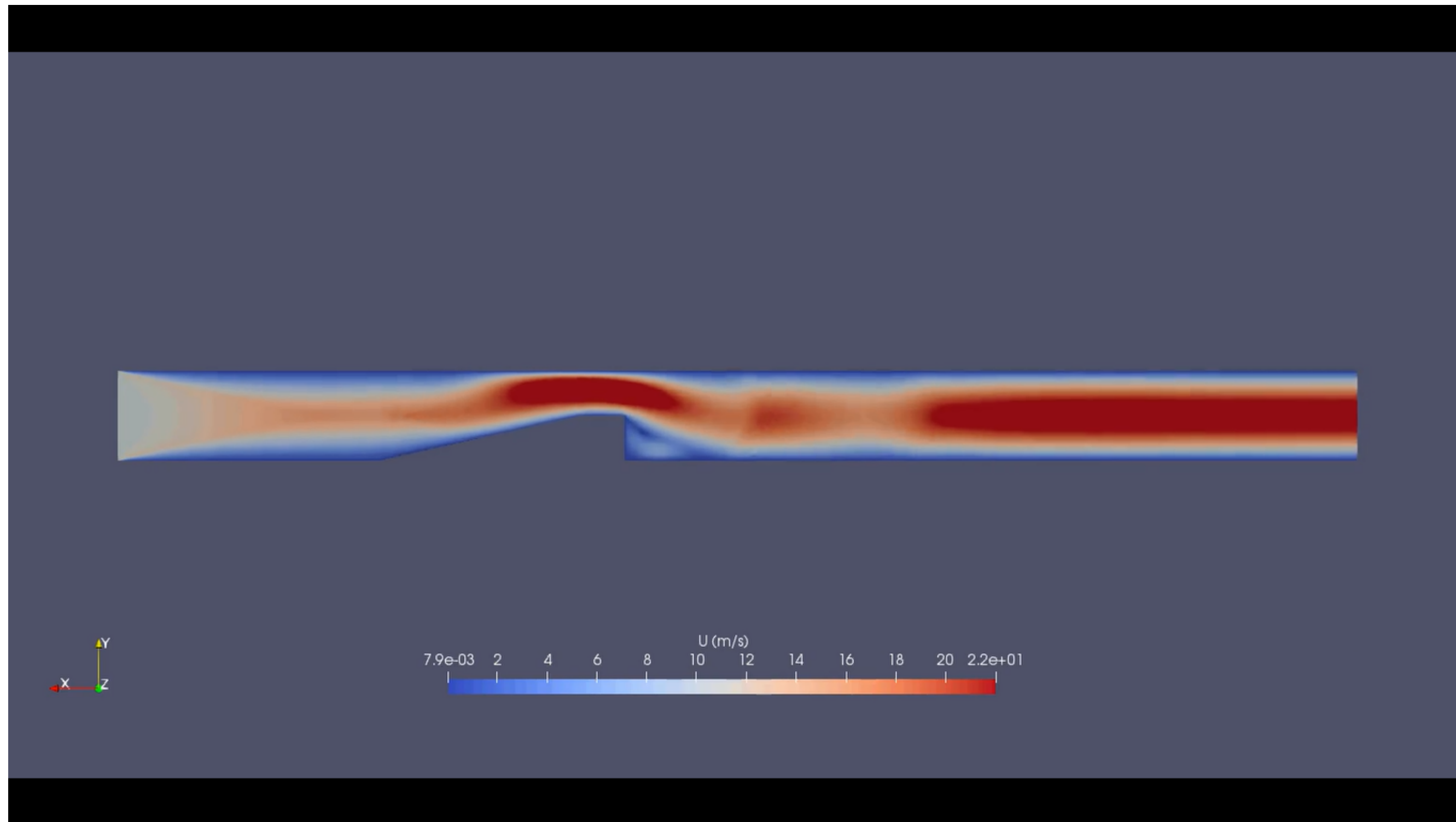
- **Reacting Flow Simulation** of n-Heptane combustion in air inside the reference combustion chamber geometry given in the original Pitz and Daily **Rearward Facing Step** experiments.
- In the original experiments, the study is being done in two parts: reacting and non reacting flow of propane.
- Our study only concerns the reacting flow. In addition, we have also tried to map combustion of said fuel in the reference geometry and have recreated the turbulence and recirculation model successfully.

Temperature Contours



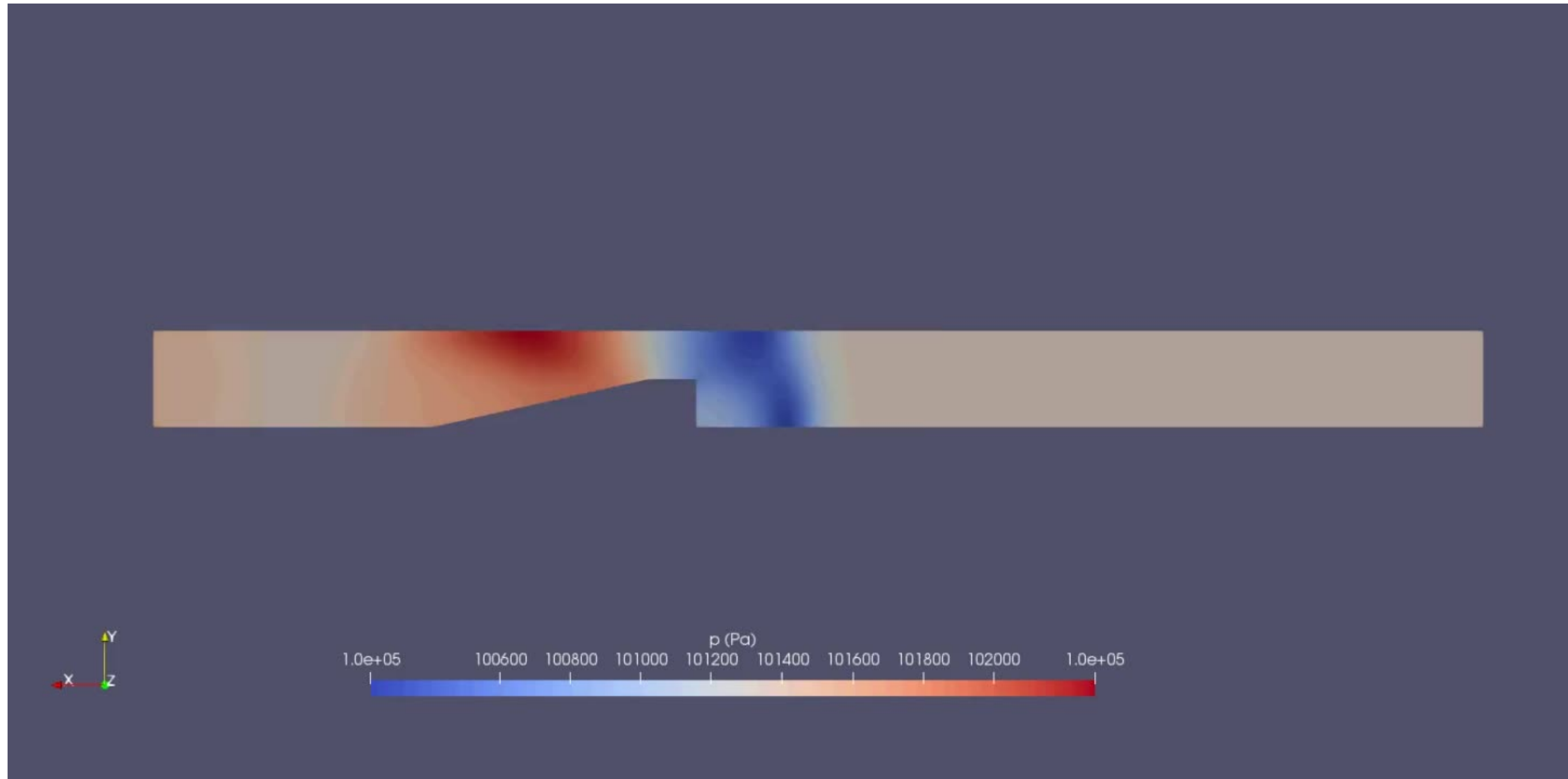
Please click the title to view the variation of temperature over time

Velocity Contours



Please click the title to view the variation of Flow Velocity over time

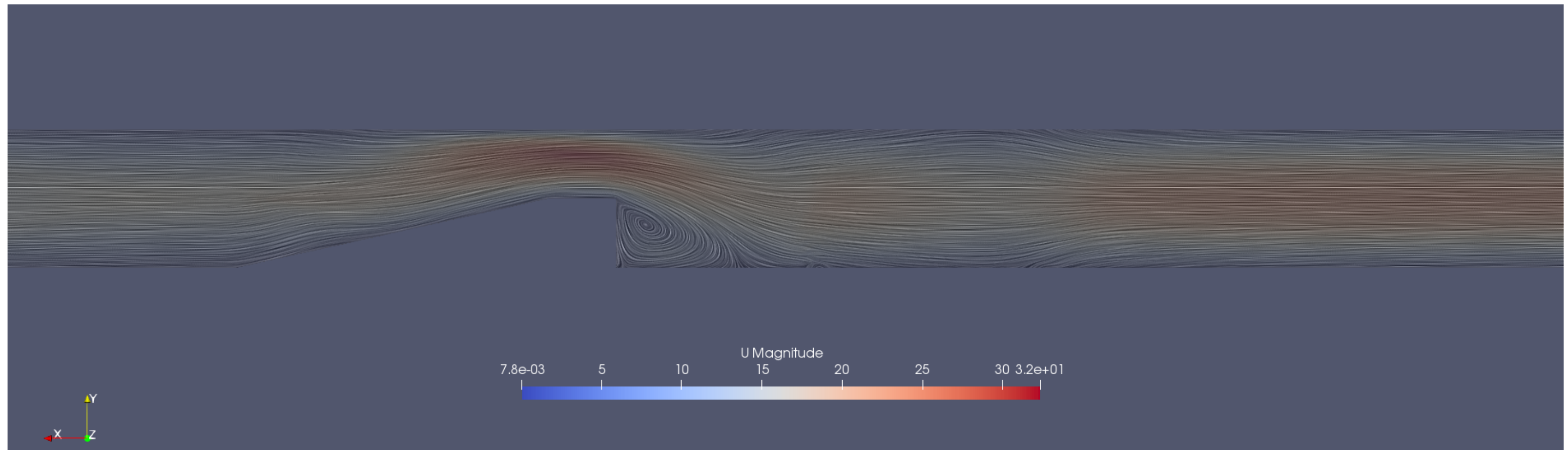
Pressure Contours



Please click the title to view the variation of pressure over time

Reattachment Length

- Using **Wall Shear Stress**, the Reattachment Length has been calculated to be **0.374m from the step** at the end of the simulation.
- As theoretically stipulated in the original journal, the reattachement length for reacting flow is much lesser than the one for non reacting flow.





Thank you!

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