A collaborative LaTeX document

Class of ID2090, Third Trimester of 2021 batch

June 14, 2022

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1 Introduction

This file includes tex files from the folders of each student. The students are expected to update the file named after their roll number and place any images in the same folder. Students do not have to edit this master document. Once the student has sent a pull request which is accepted and processed successfully, his/her assignment submission is deemed to be complete.

You are also welcome to add references and cite them. Examples on how to do that are on the course repository [**?**].

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27.1 Thermodynamics of a Control Volume

Calculations of thermodynamic variables in a "control volume" (i.e., a system that has a constant volume but might have varying mass and energy contained in it) involve the equation of energy conservation as follows:

$$\dot{Q} - \dot{W} = \frac{dE}{dt} + \dot{m}_e(h_e + gz_e + \frac{1}{2}v_e^2) - \dot{m}_i(h_i + gz_i + \frac{1}{2}v_i^2)$$

[?]. [?].

Here the i and e subscripts denote inlet and exit values, respectively.

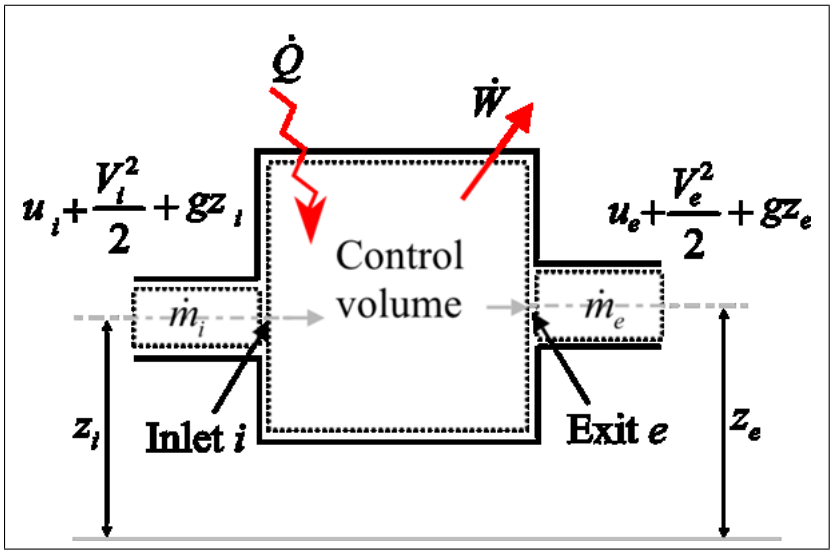

Figure 1: The diagram of a control volume. Credits: Chegg.com.

Table 1: Key of symbols

Sl No.	Symbol	Explanation
1	Q	Heat interaction of the system
2	W	Work interaction of the system
3	E	Total energy of the system
4	t	Time
5	m	Mass
6	h	Specific enthalpy
7	g	Acceleration due to gravity
8	z	Height from a reference height
9	v	Velocity

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44 Conclusions

If this master tex file could be compiled successfully, it means that the class has learnt the concepts of Git as well as LaTeX properly.

45 References

References

[1] Repository for id2090 course. `https://github.com/gphanikumar/mm2090`. Accessed: 2022-06-13.

[2] Pennsylvania State University. The energy equation for control volumes.

[3] Simon Fraser University. The first law of thermodynamics: Control volumes.