MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE GWALIOR

Department of Mechanical Engineering

REPORT OF SKILL BASED MINI PROJECT

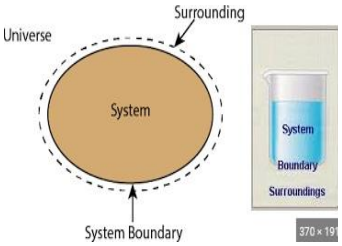
Heat and Mass Transfer (190513)

Title of Project: ENERGY INTERACTIONS BETWEEN SYSTEM AND SURROUNDINGS

Introduction: A **system**, as it is defined in physics or chemistry, is nothing more than a collection of objects (or smaller systems) that can be identified. Usually, the word "system" refers to a collection that makes thinking about a problem more convenient. The **surrounding** is everything else that is not the system defined. For example, if the system being studied is a house, the surrounding would be everything else that is not the house (other houses, the neighbourhood, the general environment around the house, etc.). Systems can be described in three different way-

1. **Isolated:** this is a system in which *no matter or energy* is being exchanged with the surroundings.
2. **Closed:** this is a system in which *only energy* is being exchanged with the surroundings.
3. **Open:** this is a system in which *both matter and energy* is being exchanged with the surroundings.

Description of Model



The part of the universe chosen for thermodynamic consideration is called a system. Surroundings -The remaining portion of the universe excluding the system is called surroundings. Some examples include transport systems; solar systems; telephone systems; the Dewey Decimal System; weapons systems; ecological systems; space systems; etc

Applications of Model

As the system identification relays on experimental data, concerns about the noise level need to be addressed as well as unmodeled system dynamics. The unmodeled system dynamics can become an important issue when the experimental data do not include all system modes during the system identification experiment or the assumed model structure does not allow for accommodating one or more particular dynamic characteristics.

What I Learned Through Project: We learned from this project is that part of the universe chosen for thermodynamic consideration is called a system. Surroundings : The remaining portion of the universe excluding the system is called surroundings. Universe = system + surroundings.

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