# DESIGN AND CONSTRUCTION OF A TRANSFORMER TRAINER

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# INTRODUCTION

- Engineering students with less practical knowledge, often find it difficult to cope with the industrial environment after graduation. As a technologist, it is highly necessary to pursue practical training of what you are learning in the theoretical class.
- Hence, there is need of the inclusion of more practical learning in tertiary institutions, to help students gain job experiences that are needed for employment.
- A transformer trainer is a self contained set of Electrical circuits that can be interlinked by students to create a multifunctional trainer instructional aid to demonstrate connection & accurately measure electrical parameters

# PROBLEM STATEMENT

There is need for practical experience to consolidate the theoretical knowledge gained in class. These problems have given rise to the need for more trainers in the department's laboratory to help bridge the gap between theory and practice alongside ensuring that every student can actively participate during practical session.

# AIM OF THE PROJECT

- To design and construct a transformer trainer

# OBJECTIVES

- To develop a reliable transformer trainer that facilitates a range of experiments on transformer principles, characteristics, and testing.
- To construct a multifunctional energy meter module to accurately measure electrical parameters
- To design and construct a device that can perform experiments on:

✓ short circuit test to determine the loss of the transformer

✓ open circuit test to determine the iron loss of the transformer

✓ polarity test to determine the direction of current flow

✓ on-load test to evaluate a transformer performance under working conditions by connecting a load to its secondary side

- To develop a manual for the conduct of practicals related to the project topic in the laboratory

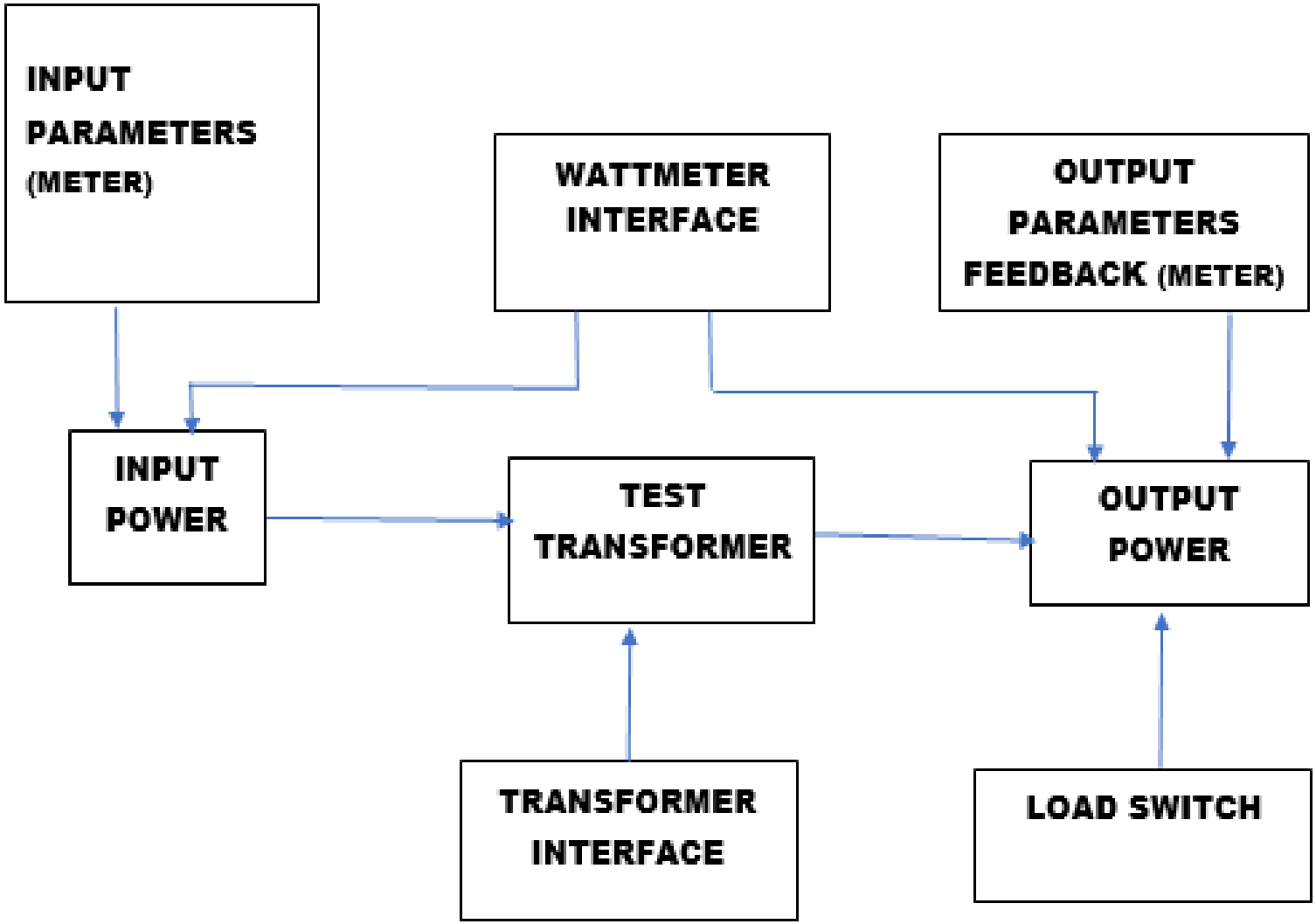
# SIGNIFICANCE OF THE STUDY

- This project will be constructed to deliver practical aspects of a transformer and to demonstrate hands-on experience on transformer principles and application

# METHODOLOGY

The project work will involve the following stages:

- Input parameter (Meter)
- Input power
- Watt meter interface
- Test transformer:
- Output power
- Output parameter feedback (Meter)
- Transformer interface




# Block diagram of a transformer trainer

# Ctnue Methodology

1. Input Parameter (Meter): this consists of the analog voltmeter and ammeter used to monitor the input voltage and current
2. Input Power: this is the point where power is introduced to the transformer and houses also the miniature circuit breaker
3. Wattmeter Interface: a point where the analog watt meter is connected to monitor both Input and output power. It has also a selector switch
4. Test Transformer: this is where the transformer under investigation terminates

# Ctnue Methodology

5. Output Power: this block provides a point where the output parameters of the transformer Is obtained
6. Output Parameters (Meter): consists of the analog voltmeter and ammeter to measure the output parameters of the transformer
7. Transformer Interface: a point where the test transformer is connected to for interface
8. Load Switch: used to engage the test load

Thanks for listening