Faculty:	FACULTY OF ELECTRICAL ENGINEERING		
Subject	: **Specialized 3rd Year Laboratory**	Review	: 1
Subject Code	: **SKEE 3742**	Release Date	: 2 **Feb 2020**
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UTM FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MALAYSIA

SKEE3742
ADVANCED POWER LABORATORY

PROBLEM
Power Factor Correction

Prepared by:		Approved by:	**Programme Director**
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Date:	22/3/2023	Date:	

Problem:

The manufacturing facility of Textile Family Sdn. Bhd. has been installed with a capacitor to avoid a low power factor penalty from TNB. However, the company was again charged a penalty for a low power factor in April and May of that year. The following months show a fluctuation of a power factor charge. An investigation executed by the Energy Manager found that the company increased its production in April and May to fulfil the extra demands on the curtains and sheets. However, sales fluctuate from June onward due to consumers' demand and inconsistent prices of raw materials. As a facility engineer, you are assigned by the manager to investigate the issue. Thus, you and your team member are required to identify the cause and the possible solution to this problem. The proposed solution must be validated using available equipment in the laboratory.

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SKEE3742
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STUDENT PACK
Power Factor Correction

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Date:	22/3/2023	Date:	

1. Problem / Project Guide:

Students are expected to read and understand materials related to billing system, power factor correction method and load variation.

Questions That Can Help You Tackle the Problem

1. What is the billing system used by the company?
2. How to design power factor corrector?

The students have to accomplish their task within three weeks' time. As guide, students may follow the problem solving time-line as given in table below.

(a) **Problem-solving Time-line**

Activities	Week 1	Week 2	Week 3
1. Understand/Identify/Brainstorming (prepare group proposal, list material, allocate tasks).			
2. Submit individual report/Experiments and collect data			
3. Analyse and interpret data			

Assessment criteria are standardized for all laboratories and will generally be the same for all laboratories. For further understanding about the assessment criteria, please refer to PBL Third-year Laboratory Assessment document.

Report Writing

Other than the *general guide* specified by the Laboratory Coordinator, the report must include:

- Experimental Procedures
- Experimental Data
- Photographs of the actual circuit construction
- Circuit diagram
- Photographs of your group members

2. Equipments list:

No	Equipment	Model No
1	Power Supply	72675
2	Power meter	727230
3	Variable Capacitor Bank	745095
4	Motor Load	
5	Fixed Capacitor Bank	733-11

3. Component list:

Connector cables, multimeters

4. Software

Cassy Lab Software

5. Additional Resources

6. References

1. Electrical Engineering: Principles and Applications, 5th Edition, Allan R. Hambley, Prentice Hall, 2011
2. Power System Analysis, 3rd Edition, Hadi Saadat, PSA Publishing, June 16, 2010
3. Hughes E, John Hiley, Keith Brown and Ian McKenzie, "Electrical and Electronic Technology", Pearson: Prentice Hall, 2012