

**MINIMIZING PENALTY IN INDUSTRIAL POWER  
CONSUMPTION BY ENGAGING APFC UNIT**

*A project report submitted in partial fulfillment of the requirements  
For the award of the degree of*

**BACHELOR OF TECHNOLOGY  
IN  
ELECTRICAL & ELECTRONICS ENGINEERING**

Submitted by

**B RAJA  
(15811A0202)**

**K GANGA BHAVANI  
(15811A0211)**

**N UDHVIN  
(15811A0217)**

**D JAIRAJU  
(16815A0205)**

**L SAILAKSHMI  
(16815A0212)**

Under the Esteemed Guidance of

**Mr P VARAHALA DORA**

**Assistant Professor**



**DEPARTMENT OF  
ELECTRICAL AND ELECTRONICS ENGINEERING**

**AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY**

(Permanently Affiliated to Jawaharlal Nehru Technological University, Kakinada, AP)

(An NAAC Accredited Institution)

Tamaram, Narsipatnam, Visakhapatnam-531113

**2018-2019**

**AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
(Permanently Affiliated to Jawaharlal Nehru Technological University, Kakinada, AP)  
(An NAAC Accredited Institution)  
Tamaram, Narsipatnam, Visakhapatnam-531113

**DEPARTMENT OF  
ELECTRICAL AND ELECTRONICS ENGINEERING**



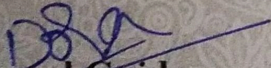
**CERTIFICATE**

This is certify that the project report entitled “MINIMZING PENALTY IN INDUSTRIAL POWER CONSUMPTION BY ENGAGING APFC UNIT” is a bonafide work submitted by **B RAJA, K GANGABHAVANI, N UDHVIN, D JAIRAJU, L SAILAKSHMI** in partial fulfillment of the requirements for the award of degree of

**BACHELOR OF TECHNOLOGY  
IN  
ELECTRICAL & ELECTRONICS ENGINEERING**

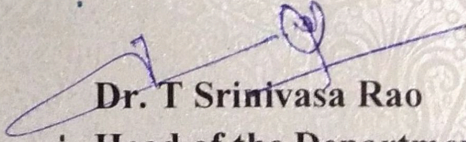
**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY,  
KAKINADA**

During the academic year  
**2018-2019**

  
**Internal Guide**

**Mr. P VARAHALA DORA**

Assistant. Professor  
Dept. of Electrical & Electronics Engg.  
AIET, Narsipatnam.

  
**Dr. T Srinivasa Rao**

**Head of the Department**

Dept. of Electrical & Electronics Engg.  
Avanthi Institute of Engg. & Tech.  
Narsipatnam.

## ABSTRACT

This project is designed to reduce the penalty in industries by power factor compensation through a number of shunt capacitors. This results in reduction in amount of electrical bill for industries and commercial establishments.

Efficient generation of power at present is crucial as wastage of power is a global concern. Power factor measures a system's power efficiency and is an important aspect in improving the quality of supply. In most power systems, a poor power factor resulting from an increasing use of inductive loads is often overlooked. A power factor correction unit would allow the system to restore its power factor close to unity for economical operation. The advantages of correcting power factor include reduced power system losses, increased load carrying capabilities, improved voltages and much more. The aim of this project is to build an Automatic Power Factor Correction (APFC) Unit, which is able to monitor the energy consumption of a system and automatically improve its power factor. An open source energy monitoring library was implemented in the design for accurate power calculation. The APFC device calculates the reactive power consumed by a system's inductive load and compensates the lagging power factor using capacitance from a capacitor bank.