

**ENHANCEMENT OF PERFORMANCE OF LONG  
TRANSMISSION LINE USING SHUNT COMPENSATION**

*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 PESALAYA  
(17811A0203)**

**M SHIVA KUMAR  
(17811A0209)**

**P BHASKARRAO  
(17811A0211)**

**P SIVA DURGA ANIL KUMAR  
(18815A0225)**

**V DILEEP KUMAR  
(18815A0233)**

Under the Esteemed Guidance of

**Mr. K DURGA RAO**

**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

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**DEPARTMENT OF  
ELECTRICAL AND ELECTRONICS ENGINEERING**



**CERTIFICATE**

This is certify that the project report entitled "ENHANCEMENT OF PERFORMANCE OF LONG TRANSMISSION LINE USING SHUNT COMPENSATION" is a bonafide work submitted by B PESALAYA, M SHIVA KUMAR, P BHASKARRAO, P SIVA DURGA ANIL KUMAR and V DILEEP KUMAR in partial fulfillment of the requirements for the award of degree of

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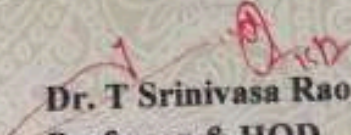
During the academic year

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**Internal Guide**

**Mr. K Durga Rao**

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

  
**Dr. T Srinivasa Rao**  
**Professor & HOD**

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

## ABSTRACT

In industrial sector or process continuity plant the continuity of the industrial processes becomes a more important factor for the organization profit and economical balance. But sometime its get interrupted due to electrical faults, low voltage supply, voltage sag some mechanical faults or man made mistakes. Out of it voltage sag is one of the most persisting factors to be taken in to account, starting high power loads like induction motors or heavy loads draws a very large amount of current then the system rated specified voltages. So these sags gets detected by the under voltage relays or over current relays and consequently act in opening up of the breaker and hence brings distortion in the process continuity of the plants working processes. And further the cost of restarting the process again and delay in the order supply acts more to the damage done. So, it's really necessary to compensate for the reactive power or the voltage sag occurred during this time.

So one of the available alternative is the modern generation FACT controller like STATCOM which is a shunt operated reactive power compensating device or reactive power exchanging device for improving the voltage system profile of the system, so here in this thesis report we will try to investigate the operation of the STATCOM. Its device characteristics, its constructional details and take a special model in the MATLAB simulation to show the compensating ability of the STATCOM and its benefits and con will be figured out. Here we will also find out some of the other ways to improve the voltage sag improvement and theirs features. Little focus will be also on the reactive power analysis, how it affects the system and its necessity will be discussed in brief. Little light will also be given to the FACTS class of the device its modern trends and its benefits to the electrical engineering sector. Here in the STATCOM circuit which comes across the FACT device class will be using a voltage source PWM operated inverter circuits for its operation. The facts technology is mainly based upon implementing power electronics technology in the field of power system dynamics for its stability and

improvement of the various important contributing part of the power system like reactive power compensation, improvement of the stability of the system.

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