

**POWER TRANSMISSION SYSTEM LOSSES AND COST  
MINIMIZATION BY USING ANTLION OPTIMIZATION ALGORITHM**

A report submitted in particular fulfillment of the requirements for the award

of the degree of

**BACHELOR OF TECHNOLOGY**

in

**ELECTRICAL AND ELECTRONICS ENGINEERING**

Submitted By

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**(16BQ5A0209)**

*Under the Esteemed guidance of*

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**VASIREDDY VENKATADRI INSTITUTE OF TECHNOLOGY**

**Accredited by NBA, Approved by AICTE, Permanently Affiliated to JNTUK,**

**NAAC Accredited with 'A' Grade, ISO 9001:2008 Certified,**

**Nambur (V), Pedakakani (M), Guntur (Dt.), Andhra Pradesh – 522 508**

**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**

**2015 BATCH**

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## **CERTIFICATE**

This is to certify that the project work titled **“POWER TRANSMISSION SYSTEM LOSSES AND COST MINIMIZATION BY USING ANTLION OPTIMIZATION ALGORITHM”** is being submitted by **CH. NARAYANA REDDY (16BQ5A0209)** during the academic year 2018 – 2019 under the guidance of **I.LUKE JOHN BAKTHA SINGH** in partial fulfillment for the award of the degree of Bachelor of Technology in Electrical & Electronics Engineering to Jawaharlal Nehru Technological University Kakinada.

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## **DECLARATION**

The thesis entitled is “**POWER TRANSMISSION SYSTEM LOSSES AND COST MINIMIZATION BY USING ANTLION OPTIMIZATION ALGORITHM**” a record of bonafide work carried out by us and submitted in partial fulfillment for the award of **Bachelor of Technology** in **Electrical and Electronics Engineering** to the Jawaharlal Nehru Technological University, Kakinada.

The results embodied in this thesis have not been submitted to any other university or institute for the award of any degree or diploma.

Signature of student

CH. NARAYANA REDDY (16BQ5A0209)

# ACKNOWLEDGMENT

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CH. NARAYANA REDDY (16BQ5A0209)

## **ABSTRACT**

Electric transmission system is the intermediate stage in the transfer of electrical power from the central generation station to the consumers. Transfer of electric energy from the source of generation to the customer via the transmission and distribution networks is accompanied by losses. Minimization of active power loss is one of the essential aims for any electrical utility, due to its importance in improvement of system properties towards minimum production cost and to support increased load requirement. It is widely recognized that placement of shunt capacitors on the distribution system can lead to a reduction in power losses.

In this Project, a novel optimization technique called Ant lion optimizer (ALO) is used to define optimal size and allocation of capacitors to be installed. The Ant Lion optimizer was produced in 2015 by SeyedaliMirjalili inspired from intelligence behavior of antlion's larvae in hunting ants. Multi objective antlion optimization is employed to determine the optimal generated VARs capacity and locations of FCs in order to minimize the total power loss and the total annual cost so that the power quality of transmission systems is increased. Because of its accuracy, and simplicity, forward or backward sweep method is used in this paper to calculate power flow analysis of given system.

The Numerical results illustrate that the Ant lion optimizer (ALO) offer optimal solutions properly better than many other reporter heuristic algorithms. The performance of the proposed method was investigated on distribution systems consisting of 57& 33 buses and it was found that a significant loss saving can be achieved by placing optimal capacitors in the system.

