

**EXPANSION POWER SYSTEM TRANSMISSION USING ANT  
COLONY OPTIMIZATION**

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## **ABSTRACT**

This thesis presents an application of ant colony optimization (ACO) to optimization the expansion transmission in power system. The main objective of this research is to find the lowest investment total cost in transmission network. This analysis are using at 24 bus reliability test system (RTS) for transmission expansion analysis, the results show, the ant colony optimization is capable to deliver a good solutions for relatively in large systems[1]. Ant colony optimization represent the behaviour of ant, when the ants come out of their nest to find food, ants will leave their pheromone. Pheromone intended to make such as a track to came back again at nest[2], after take a long distance of trail the pheromone going evaporation with ambient temperature its make ants not interested to use that trail. Behaviour of ant only attract and more interested at track have high pheromone intensity, high pheromone happen when too many ants through that trail [3] and high pheromone occurs at short distance of trail.

Keywords-Ant colony optimization (ACO), reliability test system (RTS)

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# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 INTRODUCTION**

Issues that are important for the planning system is the transmission network expansion planning (TNEP). To get generation planning scheme for electricity generation planning schemes principles need to find the optimal configuration, Things that is important enough to deliver electricity, safely and economically over the planning period. Transmission network expansion handle optimization problems in power systems, transmission expansion model can be categorized as static and dynamic according to the study treatment period.

Static also known as single horizontal single stage planning and answering the questions of what also where new types of equipment to be installed in the optimal way beside that lowest the installation and cost of operating furthermore planning stage or multiple dynamic is obtained generalization considers the separation of planning horizon into several stages and answers questions that appear, from what, where and when to install additional network [1].

The development of growth and opening of a new populated place civilization of that expected in most countries have created the higher demand of Electricity Bill in order to supply large number of buildings and house area. However, the generation of electricity