SUMMARY OF THE THESIS

We can not think of our modern life without energy. But the generation of energy requires natural resources which are depleting day by day. On the other side, use of energy is increasing exponentially and damaging environment very badly. In developing nation like India, about 49% of total commercial energy is consumed in industries and in industries, the substantial share of energy resources is consumed in generation, distribution and utilization of electrical and thermal utilities. Hence, improving energy efficiency in industrial utilities is the very first step in Energy Management. Thus the need to improve and maintain energy efficiency in industrial utilities is strongly felt to survive in present scenario of rising energy costs and volatile energy markets and to gain competitive advantage.

Application of energy efficient technologies to improve energy efficiency (i.e., reductions in energy per unit of output) in industries is a key factor in gaining both economic and social benefits, also reducing the negative environmental effects of energy use. In many cases where climate change is not a concern; improvements in energy efficiency will pay for themselves through reductions in energy costs. Unfortunately, industries in developing countries like India are lagging behind in the adoption of energy efficient technologies and energy conservation measures thereby missing the benefits of their implementation.

This study aims at investigating the present level of energy management practices and application of energy efficient technologies in passenger cars manufacturing automobile industries in Pune to explore the possibilities for energy savings. It addresses all the critical aspects of energy management such as top management commitment, energy efficient technologies and barriers in their adoption, utility costing and performance assessment of major utility equipment, employee training and their involvement in the process of effective energy management. All these aspects are very vital in conducting a successful energy management program and may be used as a reference tool in managing plant level utilities and energy efficiency at the energy intensive plants.
This study was carried out using a structured questionnaire and personnel interview due to the explorative nature of the study. The respondents were asked describe the energy management practices used in their respective industries and then they were further asked to fill a structured questionnaire covering the various aspects of the study.

The results reveal that industries are lagging in effective application of energy efficient technologies in utilities and there is a gap in energy efficiency because of the low implementation energy efficiency measures. In addition, the study finds that inadequate training programs on energy management and lack of awareness about energy conservation among the employees are major barriers in implementation of cost effective energy efficient technologies in the surveyed industries. The study also finds that practice of calculating per unit cost of electrical and thermal utilities and energy performance assessment of major utility equipment with a standard procedure is rarely followed in the industries. The study further finds that there is gap between generation and demand of the utilities and scope for optimization is there. It also observes that training programs conducted on energy management are inadequate and industries need to conduct additional training programs to create awareness among the employees and improve their technical capabilities.

This report looks at how Efficient Energy Management could benefit industries and where it could fit into its day to day activities. It also suggests steps that should be taken in order to overcome the barriers to Energy Efficiency and provide recommendations on how industries can reduce energy consumption at plant level utilities by adopting energy efficient technologies. Researcher has developed procedure for “Energy performance Assessment of Utility Equipment” which will help industries to assess the energy performance of major utility equipment and to take corrective action against deficiency. Procedure developed to calculate the generation cost of utilities will definitely help industries to create awareness among the employees and to control the generation cost.
Chapter outline
This study is organized into five chapters with appendices.

Chapter 1, begins with an introduction to Energy Management followed by History of Energy management. The chapter also deals with need, motivation for Energy Management and further moves towards the overview of Indian energy sector and Government initiatives for Energy Conservation. Chapter ends with statement of research problem, scope, research objectives, research questions, followed by energy system of utilities and lastly energy management techniques are also outlined.

Chapter 2, the background and literature review are discussed first, this is followed by relationship between Energy and Environment, Economics and its social benefits. Then the concept of Energy Management, Energy Efficiency, Demand-Supply gap, Energy Efficiency Gap, Energy Efficient Technologies is introduced to show previous research done on Energy Management in industries. Barriers to Energy Efficiency, Utility Costing, Performance Assessment of Utility Equipment, Training needs on Energy management are also discussed. Finally, the chapter explains the theoretical background of energy efficient management of industrial utilities.

Chapter 3, begins with introduction to Automobile industries followed by historical evaluation, growth and challenges of these industries. The chapter further deals with an overview of Indian Automobile industries and their Energy Trends. The chapter ends with introduction to organizations under study.

Chapter 4, begins with an overview of the research methods, scope and procedure of questionnaire survey. The chapter discusses the method for collecting data and tests used to test the hypotheses. Finally, construction of research model and hypotheses are also highlighted.
Chapter 5, represents the results of the survey, hypotheses testing, and overall analysis of the research. The results of statistical analysis, which contains Binomial test, Chi-square test are also presented in this chapter.

Chapter 6, presents the conclusion and research summary. Empirical findings are summarized along with recommendations and suggestions of the study.

Annexures, represent limitations and contributions of the study, followed by future research and recommendation for further research on this topic. References and appendixes are provided at the end of the thesis.