

**FINAL YEAR PROJECT REPORT
BACHELOR IN ENGINEERING (HONS) MECHANICAL
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SHAH ALAM**



**EXERGY EVALUATION OF SUPERCRITICAL
STEAM POWER PLANT GENERATION**

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Affandi Anak Rumpa and Dominic Anak Christopher Keli

f reface

Our project aims is to do exergy analysis, which concerned about the useful work potential of the energy. With the development of efficient use of energy resources, over the last dozen years, exergy principle has been used to enhance the understanding of thermal processes and to allow sources of inefficiency to be quantified. It is well known that the exergy balance can be used to determine the location, type, and true magnitude of exergy loss (or destruction), and thus can play an important role in developing strategies and in providing guidelines for more effective use of energy in the existing power plants. But a more important issue for improving the existing system is the origin of the exergy loss, and hence a clearer picture, instead of only the magnitude of exergy loss in each section, is required.

Referring to Sultan Salahuddin Abdul Aziz Power Station, Kapar uses the supercritical steam at 192 bar and 538.2°C including reheating, regenerating and condensing steam turbine. The steam turbine consist of high, intermediate and low-pressure turbine and there are eight stages extraction from the steam turbine provides steam for the regenerative feeding water heater. The extraction of steam from state of intermediate pressure also adds steam for the driving of boiler feedwater pump turbine.

The present project aims are to apply the concept of exergy analysis to real power plant to disclose detailed information on the exergy losses in each process and to identify the problems and potential of the steam turbine plant.

Through these measures and others, this we feels that the potential of exergy can come to be fully realized in the future. For the good of society, be it in an industrialized country or one with a developing economy, it is critical that the potential benefits of exergy be exploited.

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