بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

MANSOURA UNIVERSITY
FACULTY OF ENGINEERING
MECHANICAL POWER ENG. DEPT.

APPLICATION OF ABSORPTION COOLING SYSTEM FOR PERFORMANCE ENHANCEMENT OF HURGHADA GAS TURBINE POWER PLANT

A THESIS

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By

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Supervisors

Thesis title : Application of Absorption Cooling System for Performance Enhancement of Hurghada Gas Turbine Power Plant

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ABSTRACT

Because peak electric demand for many utilities occurs in the hot summer months, a traditional combustion turbine installation is at a disadvantage summer peak operation. When a utility needs electric generating capacity most, the combustion turbine's capacity is at its lowest level. However, high atmospheric temperatures cause reductions in net power output of gas turbine power plants.

In the present work, description and analysis of the use of absorption Li-Br cooling system to enhance the performance of the Hurghada gas turbine plant through the improvement of inlet parameter are carried out. Also, an economical evaluation for the proposed system has been carried out. The plant consists of five General Electric gas turbines, each of them has a rated power of 25 MW. In the proposed system, the cooling system is activated by heat recovered from the turbine exhaust.

A computer simulation that provides calculation of the performance of the plant is presented. Monthly values of the net power output, heat rate of the plant as well as performance of the cooling system are given with the corresponding weather conditions. When ambient air is cooled to the corresponding dew point temperature, power enhancement of about 10% can be realized in June.

Results of the simulation model show that the percentage enhancement of the power depends on the weather conditions. The results of the present analysis validated the advantages of the gas turbine cogeneration with absorption air cooling.

Results of the economical study show that a payout period of about 3.28 year is expected when absorption cooling system is applied for inlet air cooling purpose.

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