HIGHER TECHNICAL INSTITUTE

# MECHANICAL ENGINEERING COURSE

**DIPLOMA PROJECT** 

## **REPAIR AND MAINTENANCE OF A STEAM POWER PLANT**

M/682

PPALIS XENIOS PPALIS ELEFTHERIOS

### **JUNE 1994**

 PROJECT NO

234V

Project report Submitted by

#### PPALIS XENIOS

### PPALIS ELEFTHERIOS

in part satisfaction of the award of Diploma of

Technician Engineering in Mechanical Engineering of the Higher Technical Institute, Cyprus.

## **Project Supervisor: MR A. LOIZIDES**

External Assesor:

Type of Project:

Individual



Исчер	
TECHNIC/L	and
INSTITUTE	2344

#### <u>SUMMARY</u>

The objectives of this project were to identify all the repairs and maintenance work needed on the plant, and to carry out all necessary repairs and maintenance work, to study and learn the main parts of the turbine and finally to operate the plant.

Firstly all the parts of the turbine were disassembled from the unit. The problems due to corrosion, rust and due to the old solidified oil appeared on the throttle valve, blades, governors, emergency governors which were removed by cleaning with anticorrosioning sprays.

Secondly, the whole system was lubricated with new oil. Thirstly the whole plant was assemblied. Unfortunately we didn't manage to operate the plant because the boiler feed water system was dismantled by the workshop instructor in his effort to modify the arrangement of the marine workshop where the steam power plant is installed.

### **CONTENTS**

	Page
Acknowledgements	I
Contents	II
List of Figures	III
Nomenclature	IIII
Abstract	V
Indroduction	VI
Summary	VII
CHAPTER I - Steam turbines	1-12
1.1. General description of turbines	1
1.2. Princible of operations	2
1.3. Types of turbines	2 -10
1.4. Cycle of operation	11 -12
CHAPTER II - HTI marine steam turbine	13 -23
2.1. General description of H.T.I marine turbine	13 -14
2.2. Specifications	15 -16
2.3. Cycle of operation of H.T.I marine steam turbine	17-23

CHA	PTER III -	Starting and stopping procedure of a	
		steam turbine	24- 29
3.1.	General instr	uctions for starting and stopping	24
	the turbine		
3.2	Starting the H	I.T.I marine steam turbine	25-26
3.3.	Stopping the	H.T.I marine steam turbine	27
CHAI	PTER IV -	Oil system - steam supply of turbine	
		& condenser	30- 42
4.1.	Oil system of	fturbine	30- 33
4.2.	Steam supply	to turbine	34- 35
4.3.	Condensers		36- 42
CHAI	PTER V -	General description and maintenance of the main	parts of a
steam	turbine.		43- 59
5.1.	Introduction		43
5.2.	Governor		44- 45
5.3.	Emergency g	overnor	46- 47
5.4.	Emergency v	alve	48- 49
5.5.	Oil relay		50- 54
5.6.	Throttle valve	e	55- 56
5.7.	Pressure gaug	ge	57
5.8.	Vents		58
5.9.	Steam & Inbr	ricating pipe drains.	59

CHAPTER VI - Experiments

CHAP	TER VII - Work scheduling	74- 82
7.1.	Disassembly of the steam turbine	74- 75
7.2.	Reassembly of the steam turbine	76

CHAPTER VIII -	Preventive maintenance scheme suitable for the	
	plant.	83- 84

CHAPTER IX -	Conclusions	85

References	86

Appendices