

HIGHER TECHNICAL INSTITUTE

MECHANICAL ENGINEERING COURSE

DIPLOMA PROJECT

SURVEY ON POLLUTION CONTROL METHODS

PANAYIOTIS SIMONIS

JUNE 1991

M/589



SURVEY ON POLLUTION CONTROL METHODS

Project report submitted by

PANAYIOTIS SIMONIS

in part satisfaction of the award
of Diploma of Technician Engineer in
Mechanical Engineering of the
Higher Technical Institute, Cyprus

Project supervisor: P. Tramountanellis
Lecturer in Mechanical
Engineering, H.T.I.

Type of project: Individual

JUNE 1991



SUMMARY

SURVEY ON POLLUTION CONTROL METHODS

This project is mainly a theoretical one and it conducts an investigation into the design constructional and operational features of the various systems and methods used to control the pollution of air and water.

The author, Mr Panayiotis Simonis also presents the instrumentation that is used to monitor air and water pollution.

The project consists of two main chapters. Air and Water. Each chapter is divided into topics i.e. vocabulary, monitoring equipment and control equipment for both air and water pollution control.

CONTENTS

	<u>PAGE</u>
<u>INTRODUCTION</u>	1
<u>CHAPTER A</u> : <u>AIR</u>	
Vocabulary	7
TOPIC A1 : MONITORING EQUIPMENT FOR AIR POLLUTION	16
TOPIC A2 : SYSTEMS AND METHODS USED TO CONTROL THE POLLUTION OF AIR	
Cyclones	41
Gravity and Inertial Separators	45
Wet Dedusters and Demisters	48
Electrostatic Precipitators	52
Fabric Filters	56
Deep Bed Filters	61
Particle Collection by Liquid Scrubbing	62
Combustion-Afterburner	68
Gravel Bed Filters	71
Activated Carbon Adsorber	73
<u>CHAPTER B</u> : <u>WATER</u>	
Vocabulary	75
TOPIC B1 : MONITORING EQUIPMENT FOR WATER POLLUTION	86
TOPIC B2 : SYSTEMS AND METHODS USED TO CONTROL THE POLLUTION OF WATER	
Important Wastewater Contaminants ..	98
Unit Operations for Wastewater Treatment	99
Screening	100
Primary Sedimentation	102
Stabilisation Ponds	103
Activated Sludge	105
Oxidation Ditch	107
Aeration	108
Filtration	110
Reverse Osmosis	113
Anaerobic Digestion	115
Ion Exchange	117
Treatment of Wet Effluents from Dust/Gas Collectors	121
<u>GENERAL CONCLUSIONS</u>	123
<u>APPENDICES and TABLES</u>	124
<u>REFERENCES</u>	