

# CONTENTS

1	The Project Engineer	1
<b>Part 1</b>	<b>MAJOR STEPS IN PLANT DESIGN</b>	<b>5</b>
2	Plant Location	7
3	Preliminary Data for Construction Projects	26
4	Process Engineering	43
5	Flow Diagrams	64
6	Plot Plans	80
7	Scheduling the Project	85
8	Engineering Design and Drafting	101
<b>Part 2</b>	<b>BUSINESS AND LEGAL PROCEDURES</b>	<b>118</b>
9	Procurement Operations	121
10	Office Procedure	136
11	Contracts and Contractors	156
<b>Part 3</b>	<b>DETAILS OF ENGINEERING DESIGN AND EQUIPMENT SELECTION</b>	<b>184</b>
12	Vessels	187
13	Heat Exchangers	214

14	Process Pumps	248
15	Compressors and Vacuum Pumps	297
16	Motors and Turbines	348
17	Other Process Equipment	373
18	Piping Design	394
19	Thermal Insulation	473
20	Process Instruments	497
21	Plant Utilities	545
22	Foundations	584
23	Structures and Buildings	618
24	Safety in Plant Design	632
<b>Part 4</b>	<b>CONSTRUCTION OF THE PLANT</b>	<b>650</b>
25	Construction	653