Contents		CHAPTER (2)	83 3.2.3 All-Water Systems		147	3.16 Fan Performance and Operation Requirements	220	5.3 Selection of Cooling Towers	265	5.13.3 Mechanical Maintenance 344
CHAPTER (1)	1	2.0 Pumping Systems	83 3.3 Types of Fans and Their Per	rformances	148	Based on Singapore Standards		5.4 Optimization Strategies of Cooling Towers	266	5.13.4 Cooling Tower Performance Trouble shooting 348
		2.1 Types of Pumping Systems	85 3.4 Fan and System Characteris	stic Curves	150			5.5 Installation of Cooling Towers	271	5.13.5 Enhancing Tower Performance 351
1.0 Air-Conditioning Chilled Water System	1	2.2 System Characteristic Curves	87 3.5 Fan Sizing		160	CHAPTER (4)	224	5.6 Cooling Tower Performance Factors	275	5.14 Defining Cooling Tower Performance Requirements 355
1.1 Vapor-Compression Refrigeration Cycles	1	2.3 Pump Sizing	97 3.6 Fan Operating Point		164	4.0 Psychometrics of Air-Conditioning Processes	224	5.7 Basic Cooling Tower Configuration	277	5.14.1 Classification of Fans 356
1.2 Function of Main Components	3	2.4 Pump Characteristic Curves	101 3.7 Losses in Ducting Systems		171	4.1 Properties of Moist Air	224	5.8 Types of Cooling Towers	298	5.14.2 Construction 356
1.3 Types of Air-Conditioning Systems	4	2.5 Pump Operating Point	103 3.8 Affinity Laws		179	4.2 Determination of Moist Air Properties Using Psychometric Chart	230	5.8.1 Counter Flow Versus Crossflow	299	5.14.3 CTI Ratings and Performance Guarantees 357
1.4 Components and Layouts of Central Chilled Water System	12	2.6 Losses in Piping Systems	109 3.9 Constant and Variable Air V	Volume AHU Systems	182	4.3 Types of Heat Gain in Spaces	233	5.8.2 Size/Arrangement	300	5.15 Economic Evaluation of Alternative Cooling Tower Systems 357
1.5 Measurement and Calculation of Chilled Water System Performance	17	2.7 Affinity Laws	3.10 Losses in Filter and Cooling		185	4.4 Processes Involve in AHU and Spaces	234	5.8.3 Fan Horsepower/ Energy	300	5.15.1 First Cost 357
1.6 Measurement and Instrumentation Requirements	22		3.11 Air Flow Rate Optimization		191	4.4.1 Sensible Heating	234	5.8.4 Pump House Power/ Energy	301	5.15.2 Annual Recurring Costs 360
1.7 Chiller Performance Based on IPLV, NPLV and Singapore Standards	24	2.9 Optimization Strategies for Pumping Systems	123 3.12 Coil Face Velocity		193	4.4.2 Sensible Cooling	235	5.8.5 Mechanical Draft	301	5.15.3 Nonrecurring Repair and Replacement Costs 362
1.8 Optimization of Chilled Water System	28	2.10 System Serving Multiple Buildings	132 3.13 Fan Efficiency	The state of the s	196	4.4.3 Mixing of Two Air Streams	237	5.8.6 Temperature Range & Approach	302	5.15.4 Total Owning and Operating Cost Comparison 362
1.8.1 Air-Cooled to Water-Cooled Chiller	29	2.11 Reset of Pump Set-point	3.14 Reset of Fan Set-Point		197	4.4.4 Cooling and Dehumidification of Air	242	5.8.7 Chiller/ Cooling Tower Configuration	303	5.16 Procurement Specifications 362
1.8.2 Chiller Efficiency and Life Cycle Costing	37	2.12 Pump Performance and Operation Requirements	136 3.15 Modified Air Handling Syst		199	4.4.5 Heat Loads for AHU	244	5.8.8 Tower Placement & Installation	306	5.16.1 Water Treatment Program Contracting 363
1.8.3 Chiller Sizing and Configuration	44	Based on Singapore Standards	3.15.1 Primary Air Handlir	ng Unit (PAU)	199	4.4.6 Ventilation Effects	245	5.9 Cooling Tower Piping	309	
1.8.4 Peak and Off-Peak Operation for Chillers	51		3.15.2 Duel Path AHU		201	4.4.7 Handling of Sensible and Latent Cooling Load of Spaces	250	5.10 Cooling Tower Controls	319	AND RESIDENCE OF THE PROPERTY OF THE PARTY O
1.8.5 Consolidation of Chilled Water Systems	54	CHAPTER (3)	3.15.3 Make-up Air Unit (I		203	4.5 Air-Conditioning Space Requirements Based on Singapore Standards	255	5.11 Condenser Water Treatment	329	THE RESIDENCE OF SHARE PARTY AND ADDRESS OF SHARE PARTY AND ADDRESS OF SHARE PARTY AND ADDRESS OF SHARE PARTY.
1.8.6 Chiller Sequencing Strategies	58	3.0 Air Handling Systems	139 3.15.4 AHU with Direct Ex		205			5.11.1 Deposition Control	329	
1.8.7 Chilled and Condenser Water Temperature Reset	63	3.1 Main Components				CHAPTER (5)	256	5.12 Water Treatment Control System	334	and the last of the second
1.8.8 Condenser Tube Cleaning and Water Treatment	68	3.2 Types of Air Handling Systems	139 3.15.6 AHU with Energy R	The state of the s	206	5.0 Cooling Tower Systems	256	5.13 Cooling Tower Operation & Maintenance	336	ATT. THE RESIDENCE OF THE PARTY
1.9 Thermal Energy Storage Systems	70	3.2.1 All-Air Systems	139 3.15.7 Displacement Vent			5.1 Configuration of Cooling Tower Systems	258	5.13.1 Cooling Tower Maintenance	341	PART TO THE PART OF THE PART O
1.10 District Cooling Systems	76	3.2.2 Air-Water Systems	3.15.8 Heat Pump System			5.2 Heat Transfer Processes in Cooling Towers	259	5.13.2 Water Treatment Management	341	