

TABLE OF CONTENTS

TITLE PAGE	i
VALIDATION PAGE.....	ii
DECLARATION PAGE.....	iii
QUESTION PAGE	iv
MOTTO.....	v
ACKNOWLEDGEMENT.....	vi
ABSTRACT.....	vii
PREFACE.....	viii
TABLE OF CONTENTS	x
PICTURE LIST.....	xii
TABLE LIST.....	xiv
NOTATION LIST.....	xv

BAB I PREFACE

1. 1. Problem Background	1
1. 2. Groups of Materials Handling Equipments.....	2
1. 3. Choice of Materials Handling Equipment.....	3
1. 4. Problem Limitation.....	4
1. 5. The Benefits of Tower Crane.....	5

BAB II TOWER CRANE

2. 1. The Tower Crane.....	6
2. 2. Main Movement of Tower Crane.....	6
2. 2. 1. Hoisting movement.....	7
2. 2. 2. Carrying movement.....	7
2. 2. 2. 1. Trolleying movement (rail travelling)	7
2. 2. 2. 2. Slewing movement.....	7
2. 2. 2. 3. Travelling movement.....	7



TOWER CRANE

Mufti Aji Wibowo, Ir. Gregorius Harjanto

Universitas Gadjah Mada, 2007 | Diunduh dari <http://etd.repository.ugm.ac.id/>

2. 3. Kind of Tower Crane	7
2. 3. 1. Based on tower configurations	7
2. 3. 2. Based on jib configurations	9
2. 4. Main Tower Crane Component	12
2. 4. 1. Hoisting Mechanism	12
2. 4. 2. Rails travelling mechanism	14
2. 4. 3. Slewing mechanism	15
2. 4. 4. Crane frame structures	15
2. 5. Crane specifications	16

BAB III MAIN PARTS AND CALCULATIONS

3. 1. Hoisting Mechanism	17
3. 1. 1. Hoisting movement	17
3. 1. 2. Design steel wires ropes	20
3. 1. 3. Design of Drum and Pulleys	24
3. 1. 4. Choosing electric motor	33
3. 1. 5. Design of gear transmission	34
3. 1. 6. Brakes design	65
3. 2. Rail Traveling Mechanism	72
3. 2. 1. Design of crane trolley	72
3. 2. 2. Design of steel wire ropes	75
3. 2. 3. Choosing electric motor	78
3. 2. 4. Design of Drum and Pulley	80
3. 2. 5. Design of gear transmission	87
3. 2. 6. Brakes design	112
3. 3. Slewing Mechanism	118
3. 3. 1. Total moment of resistance	118
3. 3. 2. Choosing electric motor	120
3. 3. 3. Transmission design	122
3. 3. 4. Brakes design	158



BAB IV CRANE FRAMES STRUCTURES

4. 1. Stability of The Crane.....	164
4. 1. 1. Full load condition.....	164
4. 1. 2. No load condition.....	165
4. 2. Crane Frame Structures.....	165
4. 2. 1. Mast structures.....	165
4. 2. 2. Jib structures.....	166
4. 2. 3. Counter jib structures.....	166
4. 2. 4. Top mast structures.....	167

BAB V OPERATION AND MAINTENANCE

5. 1. Operation.....	168
5. 1. 1. Tower crane installations.....	168
5. 1. 2. Tower crane dismantling.....	173
5. 1. 3. Transporting crane.....	175
5. 1. 4. Operation control.....	176
5. 1. 5. Safety features during the operation.....	177
5. 2. Maintenance.....	181
5. 2. 1. Frequent inspections.....	182
5. 2. 2. Monthly inspections.....	184
5. 2. 3. Yearly inspections.....	185

BAB VI CONCLUSION..... 188

REFERENCES..... 191

APPENDIXES..... 192