

DAFTAR ISI

<i>ABSTRACT</i>	i
ABSTRAK	ii
KATA PENGANTAR	iii
DAFTAR ISI.....	vi
DAFTAR GAMBAR	x
DAFTAR TABEL.....	xi
DAFTAR PERSAMAAN	xii
DAFTAR LAMPIRAN.....	xiii
DAFTAR SINGKATAN	xiv
DAFTAR ISTILAH	xv
BAB I PENDAHULUAN.....	1
I.1 Latar Belakang	1
I.2 Perumusan Masalah	9
I.3 Tujuan Penelitian	10
I.4 Batasan Penelitian.....	10
I.5 Manfaat Penelitian	10
I.6 Sistematika Penulisan	11
BAB II LANDASAN TEORI	13
II.1 Pemilihan Metode	13
II.2 Studi Literatur	14
II.2.1 Perbandingan dengan Penelitian Sebelumnya	14
II.3 Konsep <i>Maintenance</i>	15
II.3.1 Perawatan Pencegahan (<i>Preventive Maintenance</i>)	17
II.3.1.1 <i>Time Directed Maintenance</i>	17

II.3.1.2	<i>Condition Based Maintenance</i>	18
II.3.1.3	<i>Failure Finding</i>	18
II.3.1.4	<i>Run to Failure</i>	18
II.3.2	Perawatan Perbaikan (<i>Corrective Maintenance</i>)	18
II.3.3	<i>Heat Exchanger Failures Type</i>	19
II.3.3.1	<i>Mechanical</i>	19
II.3.3.2	<i>Chemically Induced Corrosion</i>	20
II.3.3.3	<i>Mechanical and Chemical Corrosion</i>	22
II.3.3.4	Kerak, Lumpur dan <i>Algae Fouling</i>	22
II.4	Konsep <i>Risk Based Inspection</i> (RBI)	23
II.4.1	Jenis-Jenis <i>Risk Based Inspection</i>	24
II.5	<i>Corrosion Rate</i>	26
II.6	<i>Minimum allowable thickness</i>	27
II.7	<i>Remaining Life</i> (Sisa umur)	27
II.8	<i>Probability of Failure Using Weibull Distribution</i>	28
II.9	Konsekuensi Kegagalan (<i>Consequences of Failure</i>)	29
II.10	<i>Risk Matrix</i>	30
II.11	<i>Inspection Planning Based on Risk Analysis</i>	31
II.12	Deret Berkala dan Peramalan (<i>Forecasting</i>)	32
BAB III METODOLOGI PENELITIAN		35
III.1	Model Konseptual	35
III.2	Sistematika Pemecahan Masalah	37
III.2.1	Tahap Identifikasi Masalah	38
III.2.2	Tahap Pengumpulan Data	39
III.2.3	Tahap Pengolahan Data	39
III.2.4	Tahap Analisa dan Kesimpulan	40

BAB IV PENGUMPULAN DAN PENGOLAHAN DATA.....	42
IV.1 Pengumpulan Data	42
IV.1.1 Deskripsi Proses Amonia.....	42
IV.1.2 Deskripsi Umum <i>Coil Heat Exchanger</i>	44
IV.1.3 Kegiatan Inspeksi <i>Coil Heat Exchanger</i>	47
IV.1.3.1 Pengukuran <i>Wallthickness (thickness measurement)</i>	48
IV.1.3.1.1 Penentuan Lokasi Pengukuran.....	48
IV.1.3.1.2 Pengukuran <i>Actual Wallthickness</i>	50
IV.1.3.1.3 Penentuan <i>Minimum Allowable Thickness</i>	51
IV.1.4 Data <i>Probability of Failure</i>	54
IV.1.5 Data <i>Consequence of Failure</i>	56
IV.1.5.1 Data <i>Production Losses Cost</i>	57
IV.1.5.2 Data <i>Bundle Replacement Cost</i>	57
IV.1.5.2.1 <i>Elbow</i>	58
IV.1.5.2.2 <i>Horizontal Bare Tube</i>	58
IV.1.5.2.3 <i>Manifold (header)</i>	59
IV.1.5.3 Data <i>Maintenance Cost</i>	61
IV.1.6 Penentuan <i>Criticality Equipment</i>	63
IV.1.7 Pengolahan Data <i>Coil Heat Exchanger</i>	64
IV.1.7.1 Perhitungan <i>Corrosion Rate</i>	65
IV.1.7.2 Perhitungan <i>Remaining Life</i>	66
IV.1.8 Usulan Interval Inspeksi	69
IV.1.9 Perhitungan Biaya <i>Maintenance</i>	73
IV.1.9.1 Biaya Restorasi	73
IV.1.9.2 Rincian Biaya <i>Preventive Maintenance</i>	73
IV.1.9.2.1 Biaya <i>Preventive Maintenance Existing</i>	74

IV.9.2.2 Biaya <i>Preventive Maintenance</i> Usulan.....	76
IV.9.2.3 Perbandingan biaya PM <i>Existing</i> dan usulan.....	77
BAB V ANALISIS.....	81
V.1 Analisis Pengukuran <i>Wallthickness</i> (<i>thickness measurement</i>)	81
V.2 Analisis Hasil Pengukuran <i>Actual Wallthickness</i>	81
V.3 Analisis Hasil Penentuan <i>Minimum Allowable Thickness</i>	81
V.4 Analisis <i>Risk Matrix</i> PT Pupuk Kujang	86
V.5 Analisis <i>Probability of Failure</i>	88
V.6 Analisis <i>Consequence of Failure</i>	88
V.6.1 Analisis <i>Production Losses Cost</i>	88
V.6.2 Analisis <i>Environmental Cost</i>	89
V.6.3 Analisis <i>Bundle Replacement Cost</i>	89
V.6.3.1 <i>Elbow</i>	89
V.6.3.2 <i>Horizontal Bare Tube</i>	90
V.6.3.3 <i>Manifold (header)</i>	90
V.6.4 Analisis <i>Maintenance Cost</i>	90
V.7 Analisis <i>Risk assesment</i>	91
V.8 Analisis Hasil Perhitungan <i>Corrosion Rate</i>	91
V.9 Analisis Hasil Perhitungan <i>Remaining Life</i>	92
V.10 Analisis Pengaruh Level Risiko dan RL terhadap Jadwal inspeksi	93
V.11 Analisis Jadwal Inspeksi <i>Existing</i> dan Usulan.....	95
V.12 Analisis pengaruh biaya terhadap jadwal inspeksi	97
BAB VI KESIMPULAN DAN SARAN.....	99
VI.1 Kesimpulan	99
VI.2 Saran	100