

## DAFTAR GAMBAR

Gambar II. 1 Elemen sistem otomatisasi : (1) Sumber tenaga, (2) Program instruksi, dan (3) Sistem pengendali.....	7
Gambar II. 2 <i>Push button</i> .....	9
Gambar II. 3 <i>Normally Open Contact</i> .....	9
Gambar II. 4 <i>Normally Closed Contact</i> .....	10
Gambar II. 5 <i>Changeover Contact</i> .....	10
Gambar II. 6 <i>Limit Switch</i> .....	10
Gambar II. 7 <i>Programmable Logic Controller (PLC)</i> .....	12
Gambar II. 8 <i>Relay</i> .....	13
Gambar II. 9 Simbol <i>Double-acting cylinder</i> .....	17
Gambar II. 10 Simbol <i>Single-acting cylinder</i> .....	17
Gambar II. 11 Simbol <i>Semi Rotary Actuator</i> .....	18
Gambar II. 12 <i>Piping and Instrumental Diagram (P&amp;ID)</i> .....	19
Gambar II. 13 <i>P&amp;I diagram of flow control loop</i> .....	20
Gambar II. 14 <i>Representation of signal types</i> .....	21
Gambar II. 15 <i>ISA letter codes for tag numbers</i> .....	22
Gambar II. 16 <i>Additional functions for use with tag numbers</i> .....	23
Gambar II. 17 <i>P&amp;I diagram symbols for computer-based systems</i> .....	23
Gambar II. 18 <i>Instrument Symbols</i> pada P&ID .....	24
Gambar II. 19 <i>Functional Symbols</i> .....	25
Gambar II. 20 Tangki Beserta Instrumennya.....	32
Gambar II. 21 Perancangan Desain Tangki .....	32
Gambar II. 22 Pompa Sentrifugal .....	35
Gambar II. 23 Pengaruh Viskositas Air Terhadap Suhu.....	38

Gambar II. 24 <i>Butterfly Valve</i> .....	40
Gambar III. 1 <i>Model Konseptual</i> .....	41
Gambar III. 2 <i>Sistematika Pemecahan Masalah</i> .....	44
Gambar IV.1 Skema Perancangan URS.....	48
Gambar IV. 1 Skenario Proses <i>Bottling Plant</i> Keseluruhan .....	511
Gambar IV. 2 <i>Workstation Filling</i> .....	522
Gambar IV. 3 Proses <i>Filling</i> .....	544
Gambar IV. 4 Proses <i>Capping</i> .....	555
Gambar IV. 5 <i>Workstation Sorting</i> .....	566
Gambar IV. 6 Proses <i>Sorting</i> .....	588
Gambar IV. 7 Proses <i>Labeling</i> .....	59
Gambar IV. 8 <i>Workstation Stacking</i> .....	61
Gambar IV. 9 Alamat PLC 1 (WS 1).....	66
Gambar IV. 10 Alamat PLC 2 (WS 2).....	66
Gambar IV. 11 Alamat PLC 3 (WS 3).....	67