

SISTEM OTOMATISASI RKU KH-IPSB3

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TTL : Jakarta, 15 Agustus 1986
Unit Kerja : DPFK –BRIN

Pendidikan:
DIV Teknofisika Nuklir STTN - BATAN

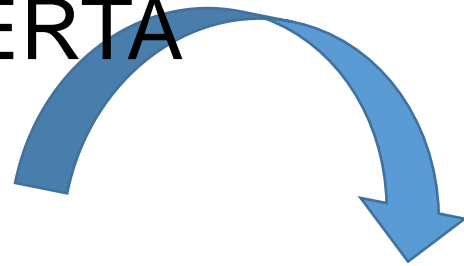
Penugasan:

1. Subbid SIK Reaktor RSG-GAS (2008 – 2021)
2. PF Subkoord Sistem Elektrik (2021 – 2022)
3. Subkoord Sistem Elektrik (2022 – sekarang)



LATAR BELAKANG

KOMPETENSI
PESERTA

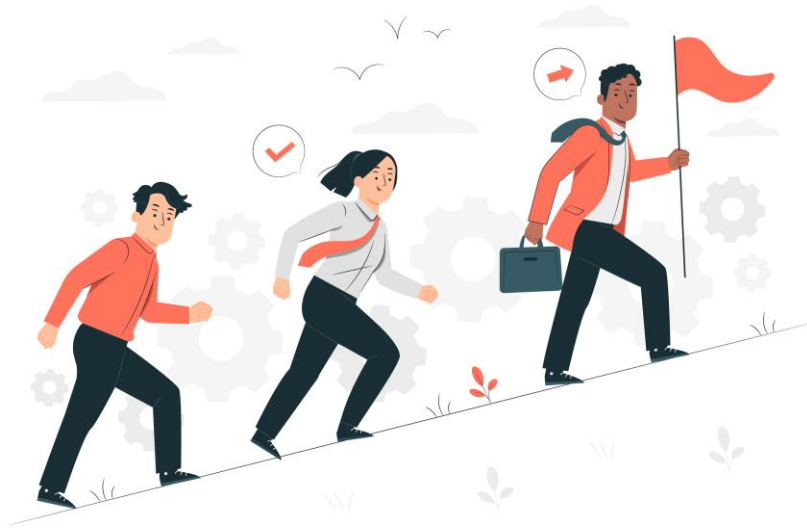


PENYEGARAN
PENGETAHUAN



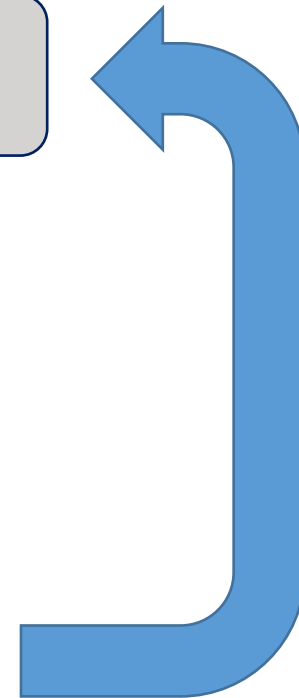
TUJUAN PEMBELAJARAN

MANFAAT



Kompetensi

**Pengetahuan Sistem Otomatisasi RKU –
KHIPSB3**



TUJUAN



Kompetensi Dasar :

Peserta mampu menjelaskan sistem otomatisasi RCU KH-IPSB3 beserta komponennya dengan baik

Indikator Keberhasilan :

1. Menyebutkan garis besar sistem kendali KH-IPSB3
2. Menjelaskan komponen sistem otomatisasi KH-IPSB3
3. Menjelaskan prosedur operasi sistem otomatisasi KH-IPSB3

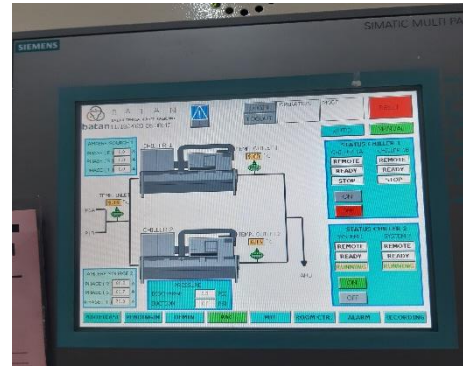
POKOK BAHASAN

1. *Programmable Logic Controller (PLC)*

3. Pengukuran instrumentasi

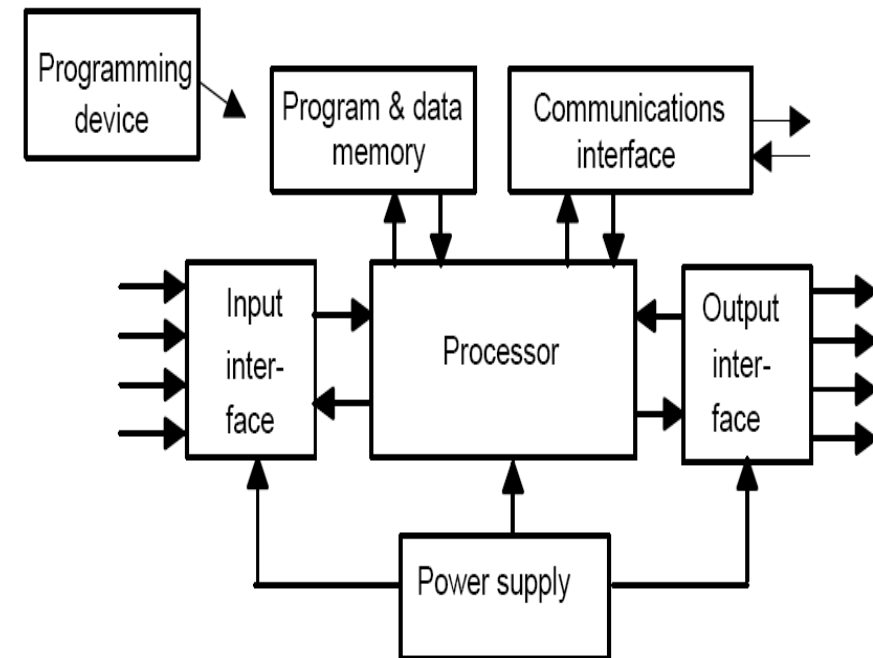
2. *Human Machine Interface (HMI)*

4. Operasional



1. *Programmable Logic Controller (PLC)*

- ❑ Suatu pengendali khusus berbasis mikroprosesor.
- ❑ Menggunakan memori untuk menyimpan instruksi dan untuk menerapkan fungsi-fungsi (logika, pewaktu, pencacah, aritmatika).
- ❑ PLC digunakan untuk mengoptimalkan tugas pengontrolan.

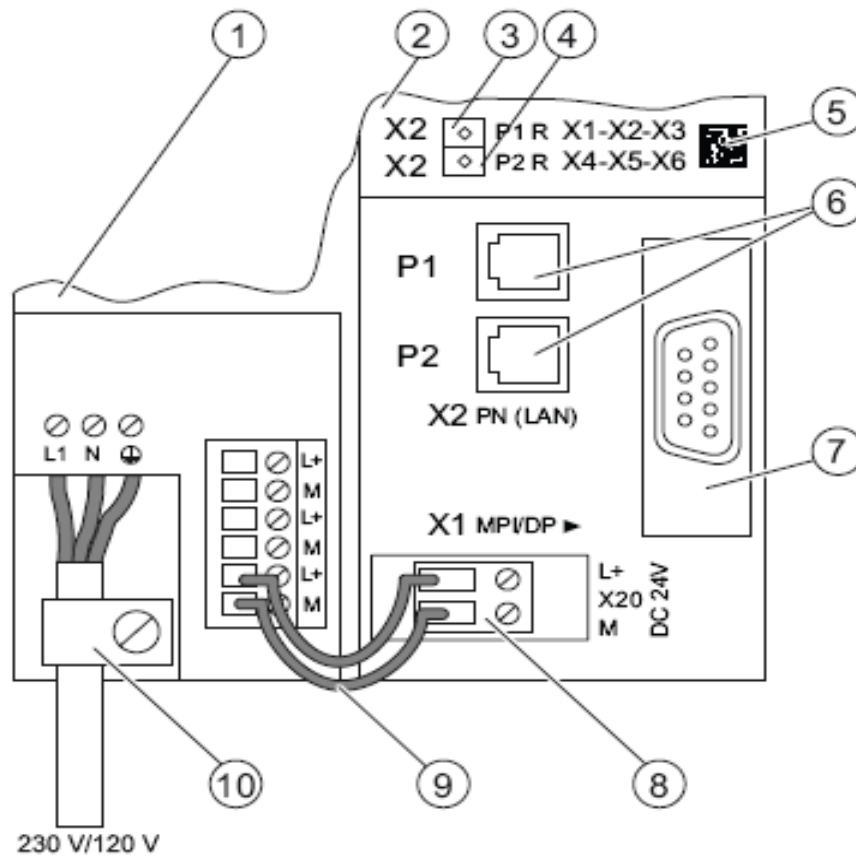


1. *Programmable Logic Controller (PLC)*

- ❑ Siemens adalah salah satu perusahaan otomasi memproduksi PLC
- ❑ Pada sistem otomatisasi RKU KH-IPSB3 menggunakan PLC Siemens S7-300 dengan modul *Central Processing Unit (CPU)* tipe 315-2 PN/DP yang dilengkapi fasilitas antarmuka PROFINET (LAN)



1. Programmable Logic Controller (PLC)



1. Programmable Logic Controller (PLC)



SIMATIC Manager - [RABBIT_Feb_2018 -- C:\Program Files (x86)\Siemens\Step7\S7Proj\RABBIT_F]

File Edit Insert PLC View Options Window Help

Object name	Symbolic name	Type	Size	Author	Last modified	Comment
Hardware	...	Station configuration	...		02/14/2018 11:27:14 AM	
CPU 315-2PN/DP	...	CPU	...		02/13/2018 09:56:55 AM	

SIMATIC Manager - [RABBIT_Feb_2018 -- C:\Program Files (x86)\Siemens\Step7\S7Proj\RABBIT_F]

File Edit Insert PLC View Options Window Help

HW Config - [SIMATIC 300 (Configuration) -- RABBIT_Feb_2018]

Station Edit Insert PLC View Options Window Help

Slot	Module
1	PS 307 10A
2	CPU 315-2
XT	MP1 DP
X2	PS 307 5A
X2 P1	PS 307 5A
X2 P2	PS 307 5A
3	
4	DI16/DO16
5	DI16/DO16
6	DI16/DO16
7	DI16/DO16
8	DI16/DO16
9	AI5/AO1

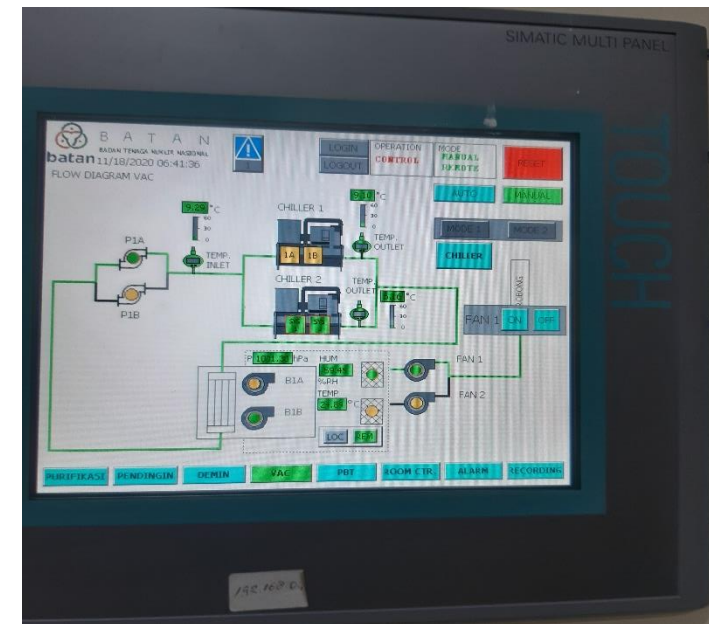
PROFIBUS(1): DP master system (1)

Address	Q address	Comment
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13	IB 3	

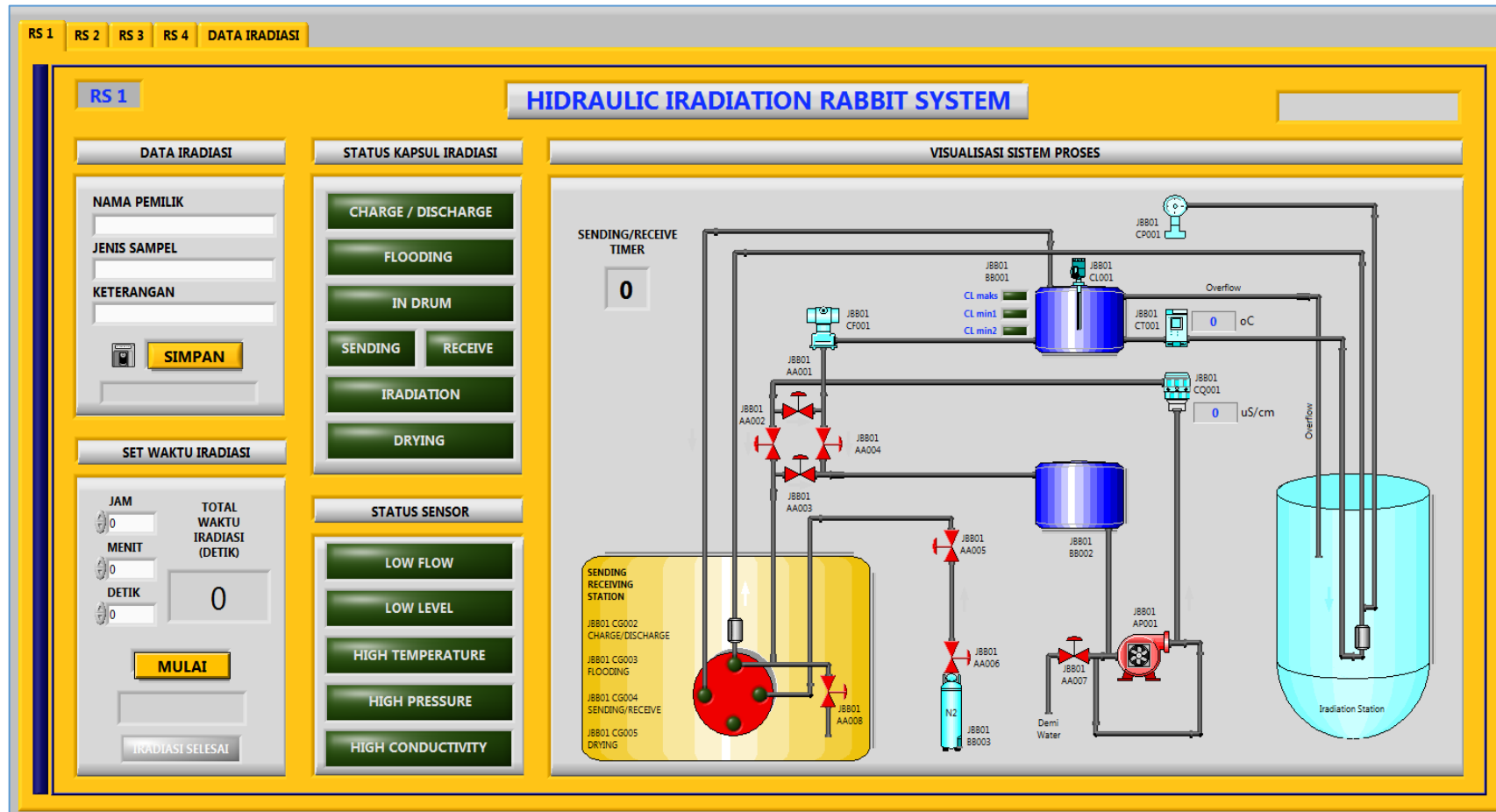
PROFIBUS-DP slaves for SIMATIC S7, M7, and C7 (distributed rack)

2. *Human Machine Interface (HMI)*

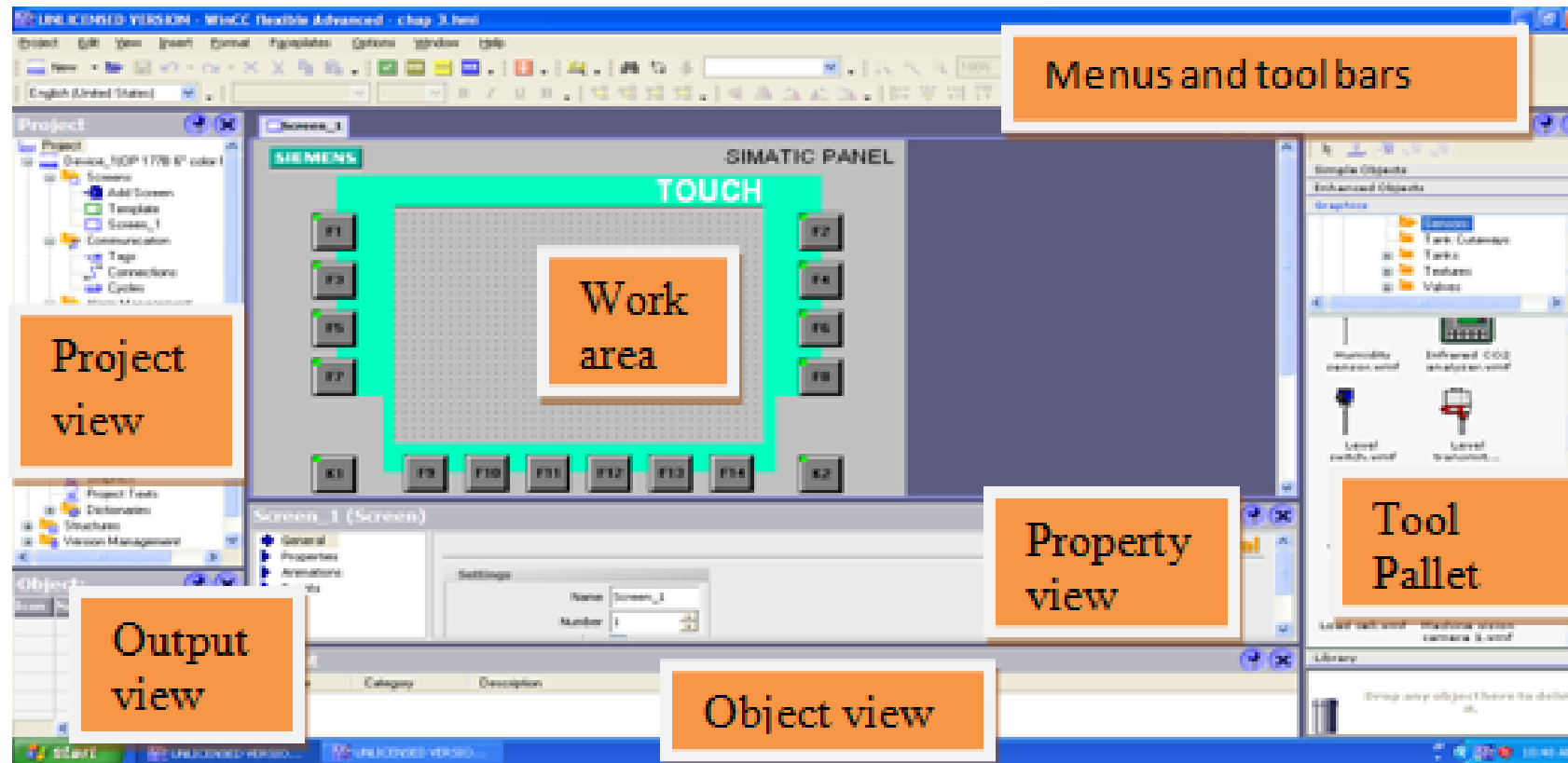
- ❑ HMI suatu ruang interaksi manusia dan mesin.
- ❑ Untuk memperoleh operasi, pengendalian, dan umpan balik dari perangkat agar efektif.
- ❑ KH-IPSB3 menggunakan WinCC pada *Simatic Multi Panel Touch*.
- ❑ Contoh lain : LabVIEW.



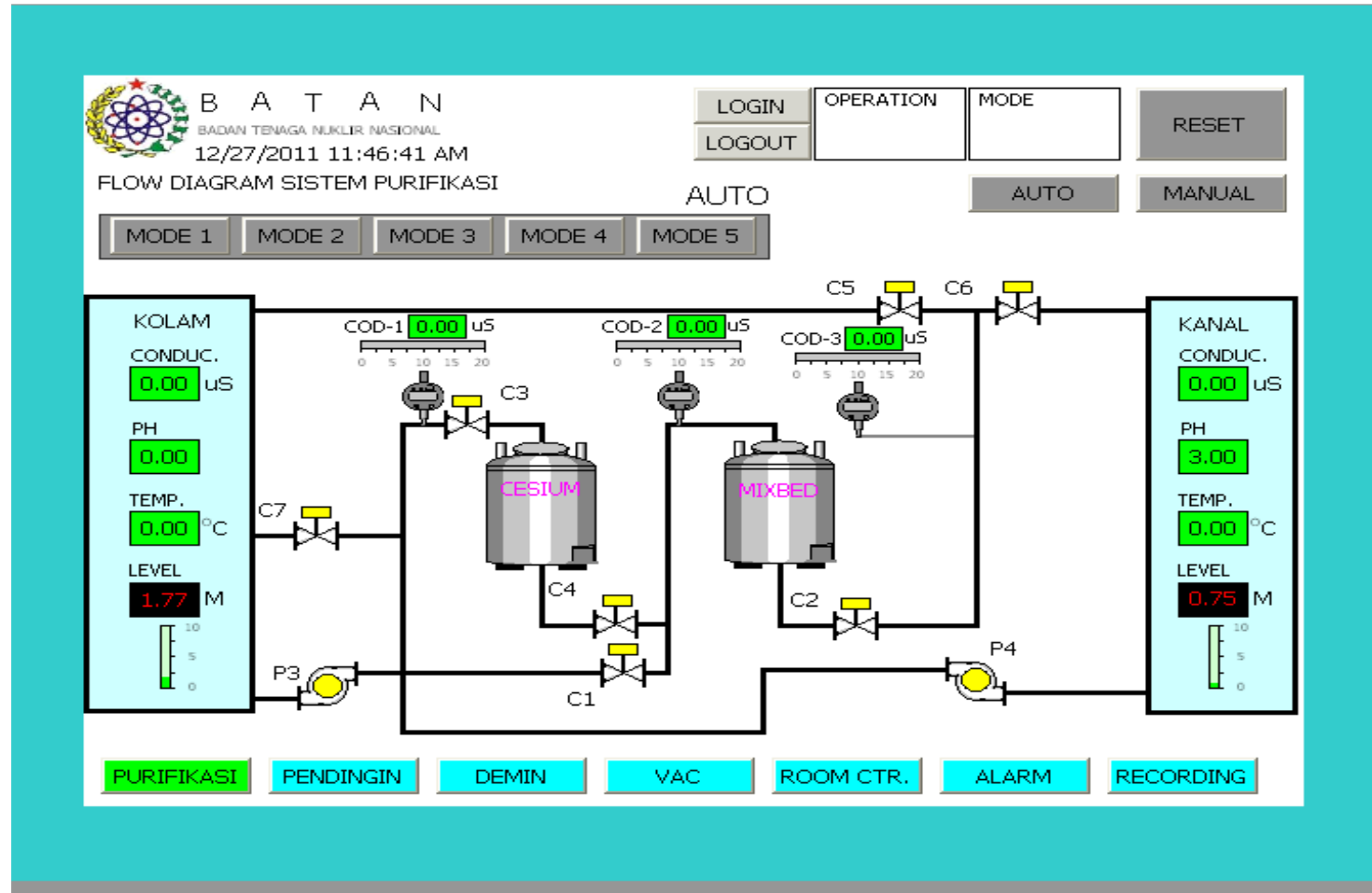
2. Human Machine Interface (HMI)



2. *Human Machine Interface (HMI)*



2. Human Machine Interface (HMI)



2. *Human Machine Interface (HMI)*

Transmission Control Protocol/Internet Protocol (TCP/IP)

- ❑ TCP/IP adalah gabungan TCP dan IP sebagai sekelompok protokol (*protocol suite*).
- ❑ Mengatur komunikasi data melalui jaringan *interconnection-networking* (internet).

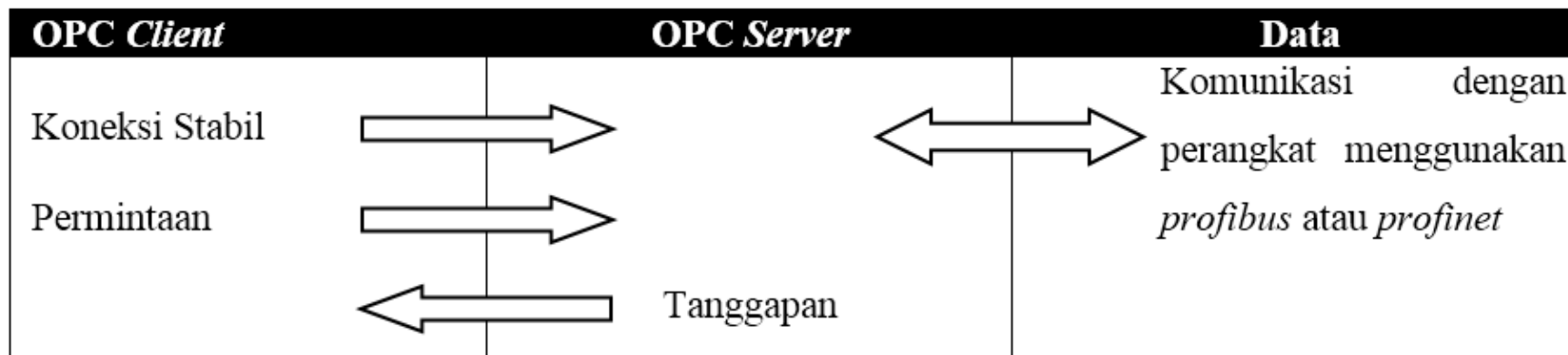
Lapisan aplikasi
Lapisan antar host
Lapisan internetwork
Lapisan antarmuka jaringan

RKU KH-IPSB3 memanfaatkan TCP/IP sebagai antarmuka jaringan untuk komunikasi antara PLC dengan pengguna menggunakan *OLE for Process Control (OPC)* melalui *Local Area Network (LAN)*.

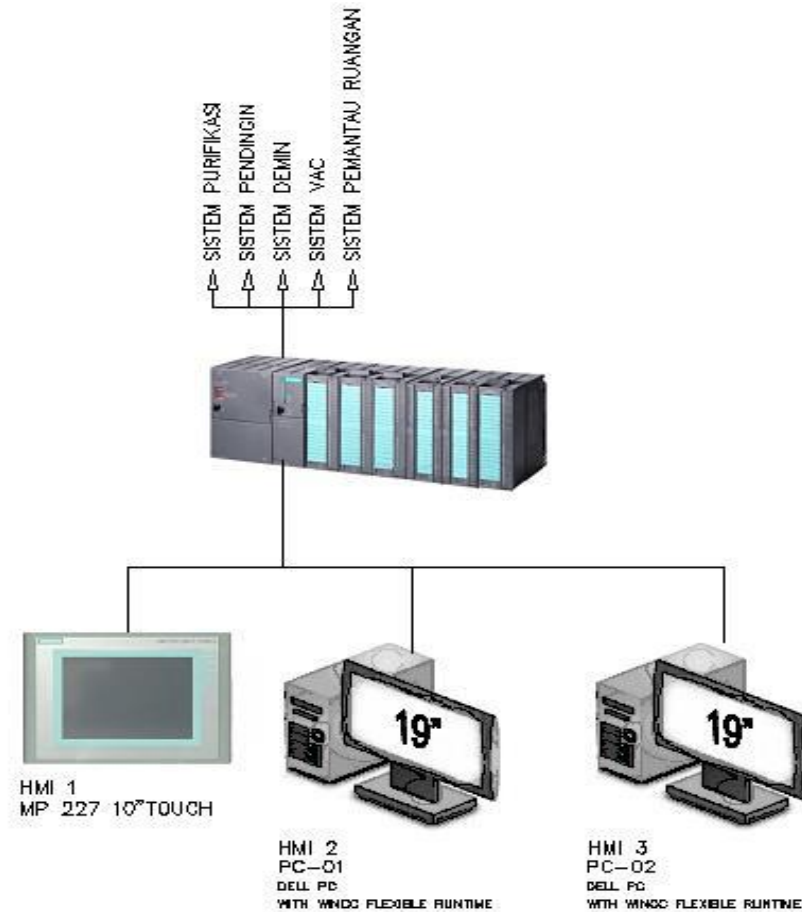
2. *Human Machine Interface (HMI)*

OLE for Process Control (OPC)

- ❑ OPC tahun 1996 (OPC DA).
- ❑ Perantara/antarmuka PLC dengan sistem HMI atau SCADA.
- ❑ Tukar menukar data melalui jaringan *ethernet*.



3. Pengukuran Instrumentasi

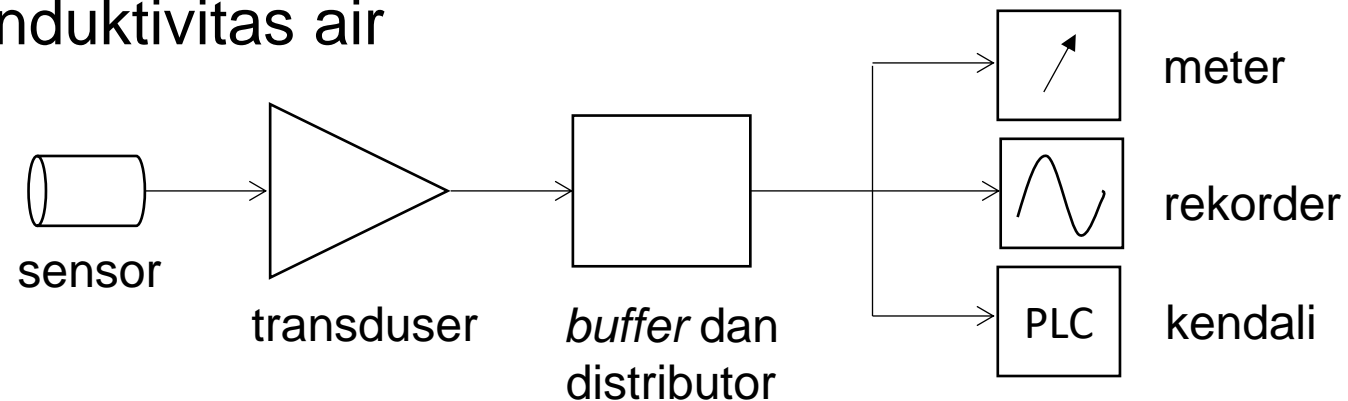


3. Pengukuran Instrumentasi

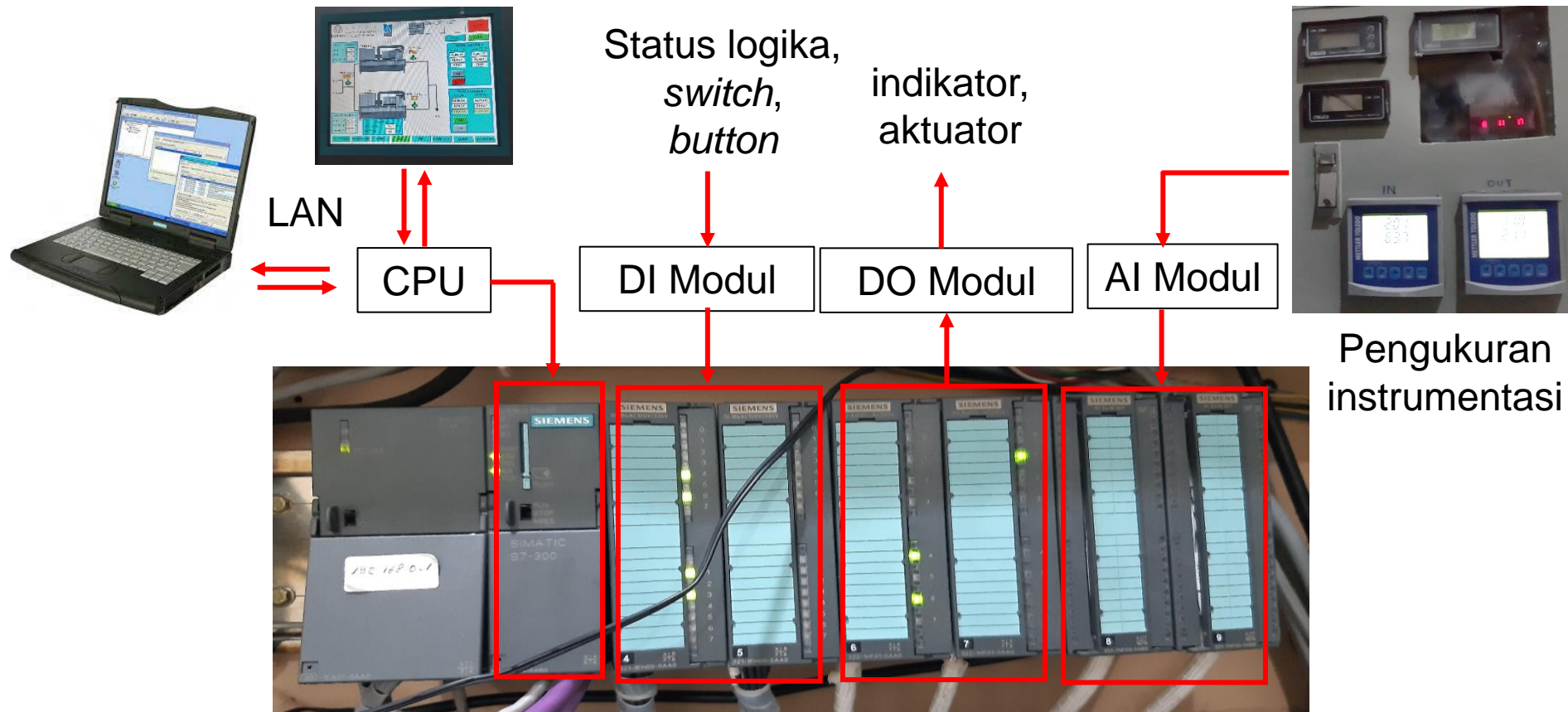
KH-IPSB3:

- Temperatur
- Ketinggian air (level)
- pH air
- Konduktivitas air

OPEN LOOP dan CLOSE LOOP
CONTROL SYSTEM



3. Pengukuran Instrumentasi



4. Operasional

Komponen Sistem:

- Input (*button modul Simatic MP Touch*)
- Kontroller (PLC Siemens S7-300)
- Output (Aktuator, indikator)



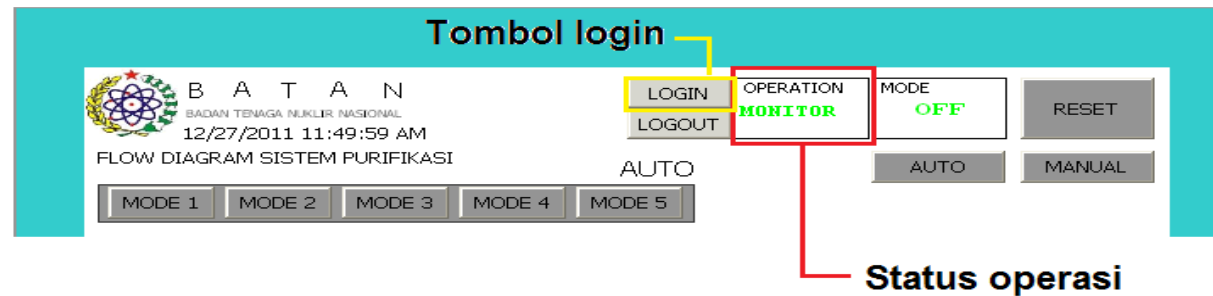
4. Operasional

Prosedur Operasi:

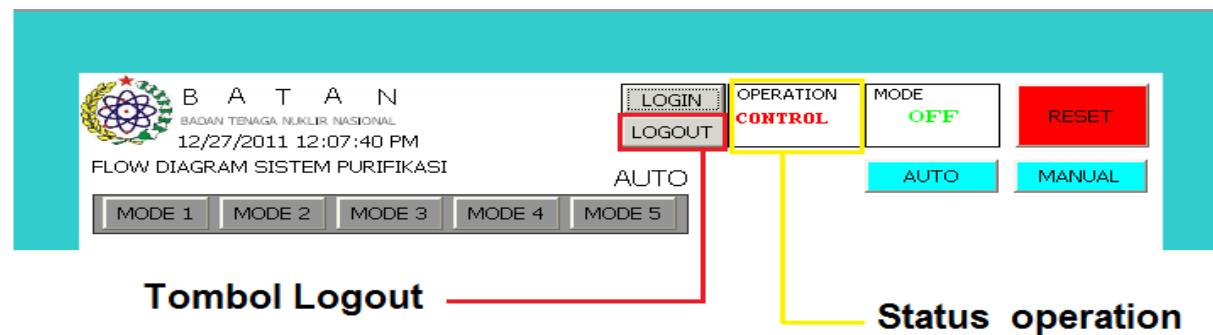
- Cek tegangan kerja komponen
- MCB 220 VAC panel kendali posisi ON
- Tegangan kerja panel purifikasi dan kolam ON
- Tegangan PLC dan HMI ON dan RUN
- Tegangan *switch hub* ON
- *MP Touch booting, connected*
- *PC 01, 02 booting, run time WinCC connected*

4. Operasional

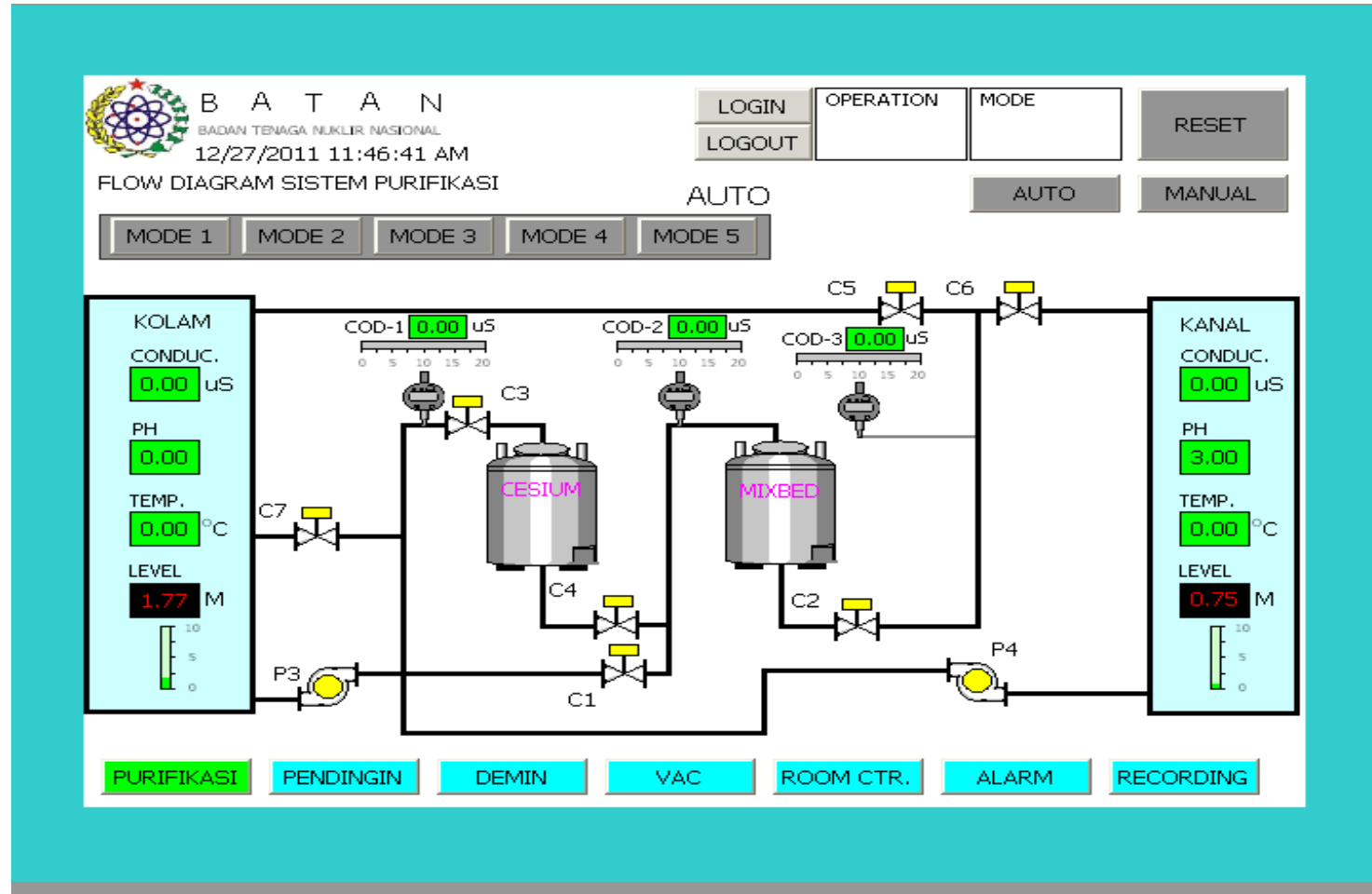
Operasi Sistem:



Login : Username dan Password



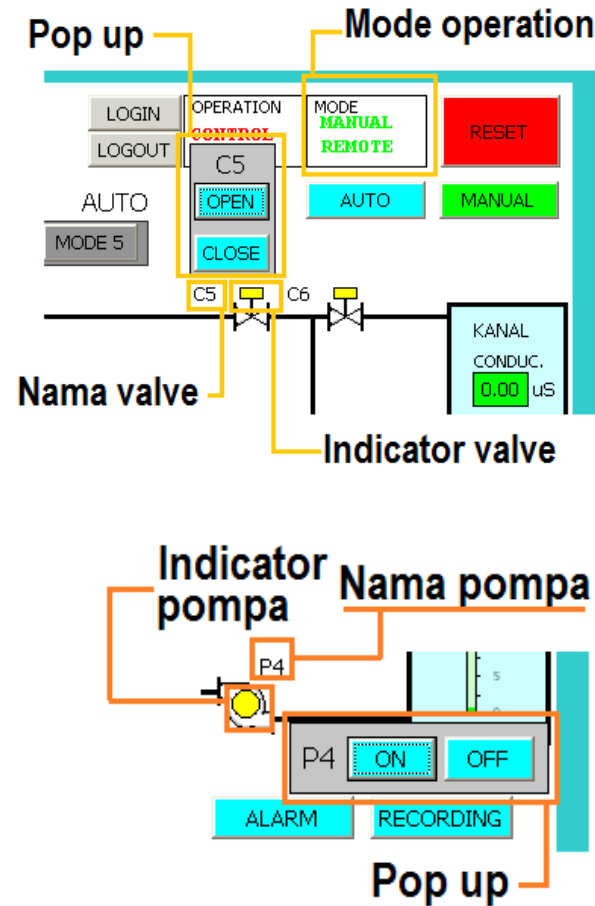
4. Operasional



4. Operasional

Operasi Sistem Purifikasi Manual Remote:

**Login
Klik
manual**



4. Operasional

Operasi Sistem Purifikasi Auto:

❑ Mode 1

Mode sirkulasi
Kolam >> *Mixed bed filter*
>> Kolam
(ON C1, C2, C5, P3)

❑ Mode 2

Mode sirkulasi
Kolam >> *Cesium filter* >>
Mixed bed filter >> Kolam
(ON C2, C3, C4, C5, P3)

❑ Mode 3

Mode resirkulasi
Kanal hubung >>
Kolam (ON C7, P4)

❑ Mode 4

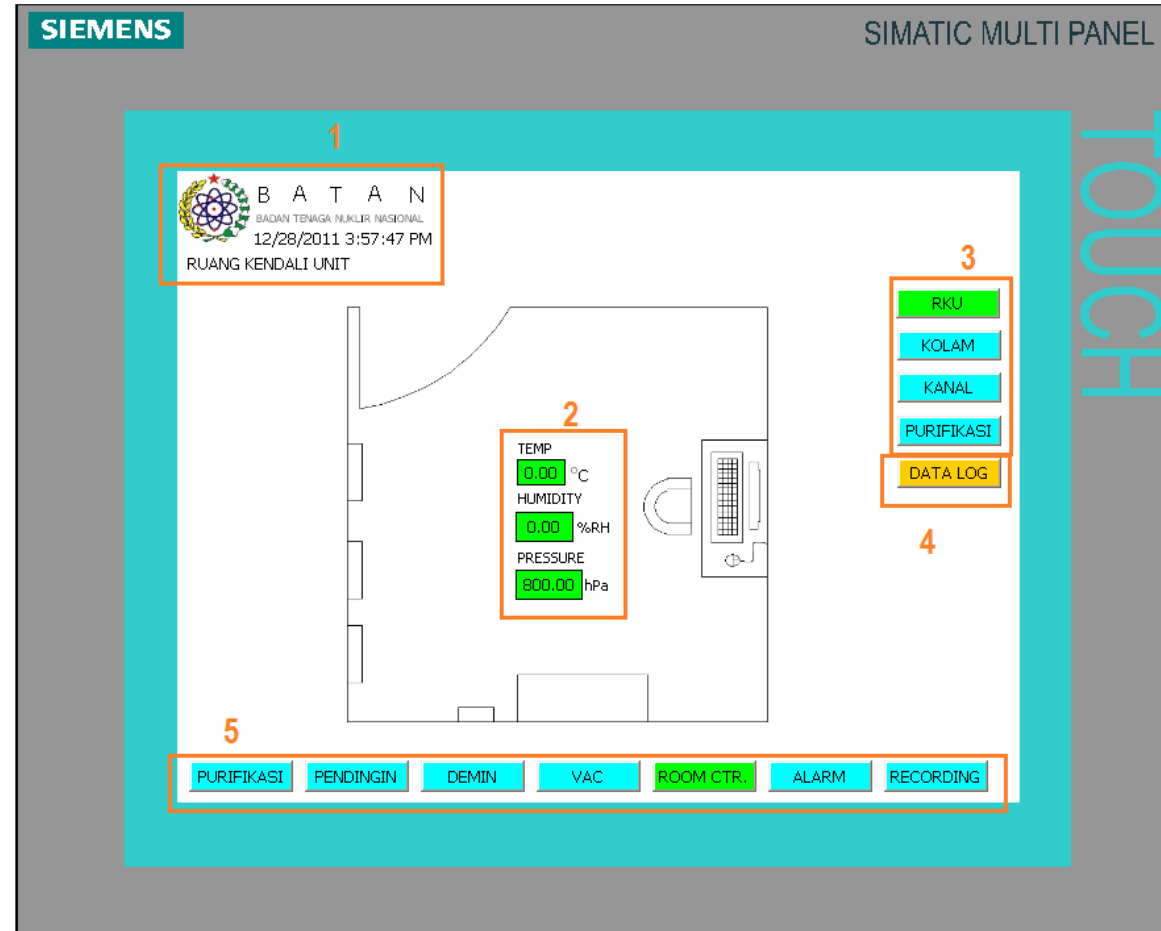
Mode sirkulasi
Kanal hubung >>
Mixed bed filter >>
Kanal hubung
(ON C1, C2, C6,
P4)

❑ Mode 5

Mode sirkulasi
Kanal hubung
>> *Cesium*
filter >> *Mixed*
bed filter >>
Kanal hubung
(ON C2, C3,
C4, C6, P3)

4. Operasional

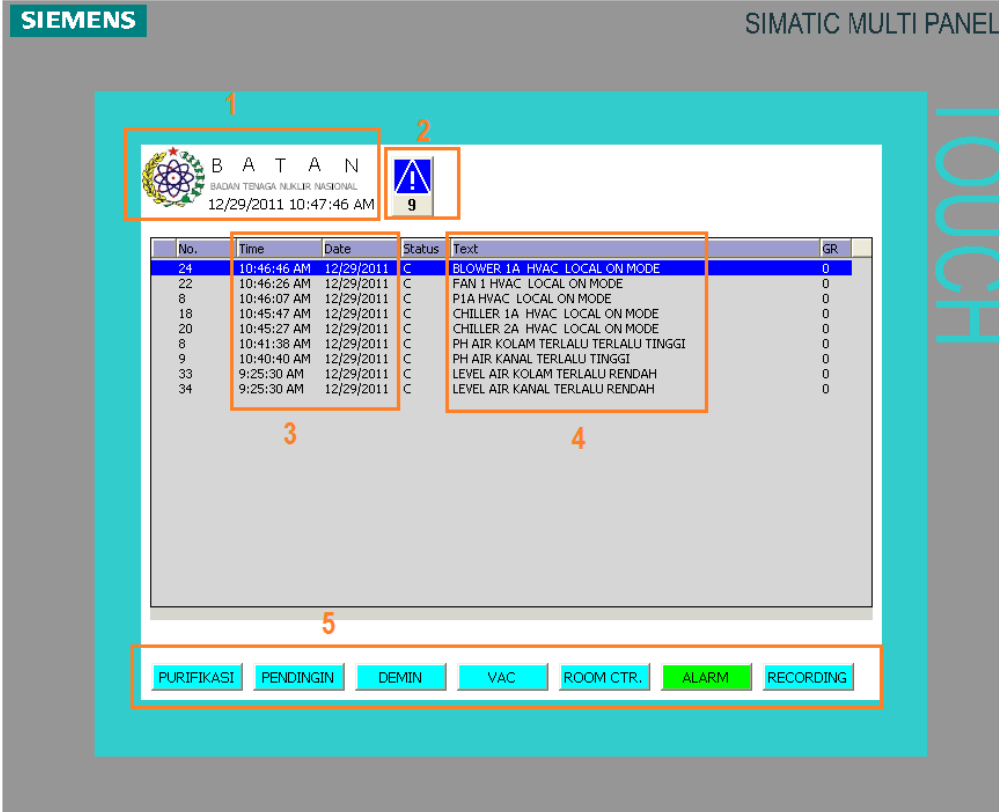
Sistem Pemantau Ruangan:



4. Operasional

Sistem Alarm:

SIEMENS SIMATIC MULTI PANEL TOUCH



1

2

3

4

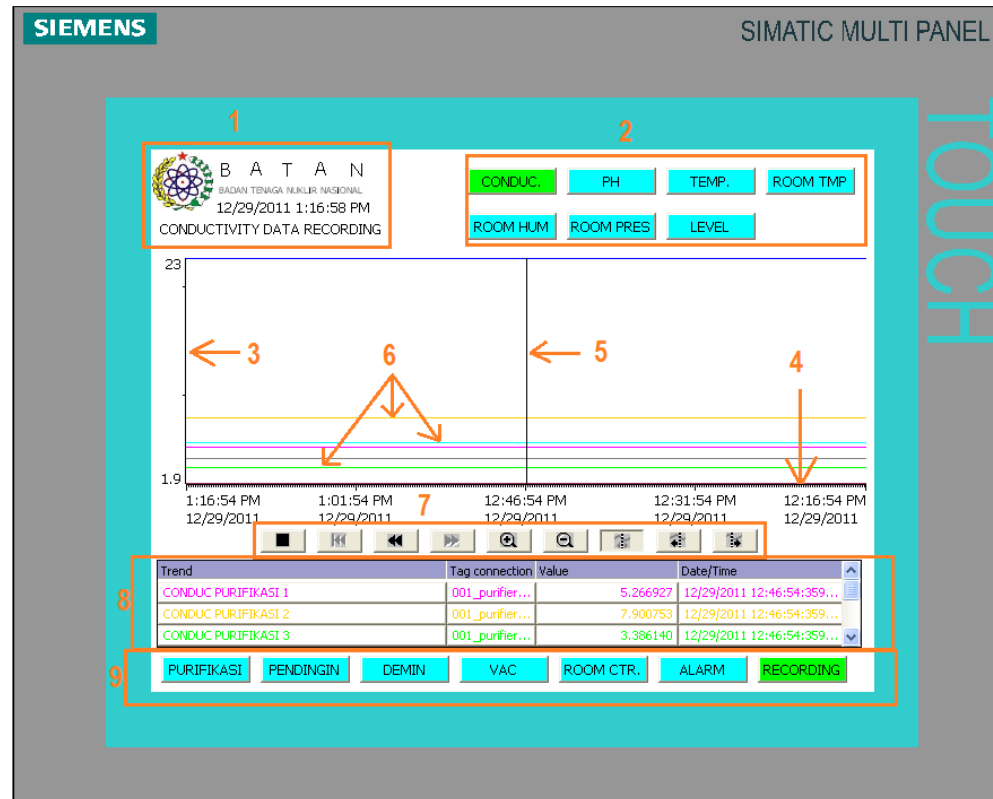
5

No.	Time	Date	Status	Text	GR
24	10:46:46 AM	12/29/2011	C	BLOWER 1A HVAC LOCAL ON MODE	0
22	10:46:26 AM	12/29/2011	C	FAN 1 HVAC LOCAL ON MODE	0
8	10:46:07 AM	12/29/2011	C	PIA HVAC LOCAL ON MODE	0
18	10:45:47 AM	12/29/2011	C	CHILLER 1A HVAC LOCAL ON MODE	0
20	10:45:27 AM	12/29/2011	C	CHILLER 2A HVAC LOCAL ON MODE	0
8	10:41:38 AM	12/29/2011	C	PH AIR KOLAM TERLALU TERLALU TINGGI	0
9	10:40:40 AM	12/29/2011	C	PH AIR KANAL TERLALU TINGGI	0
33	9:25:30 AM	12/29/2011	C	LEVEL AIR KOLAM TERLALU RENDAH	0
34	9:25:30 AM	12/29/2011	C	LEVEL AIR KANAL TERLALU RENDAH	0

PURIFIKASI PENDINGIN DEMIN VAC ROOM CTR. ALARM RECORDING

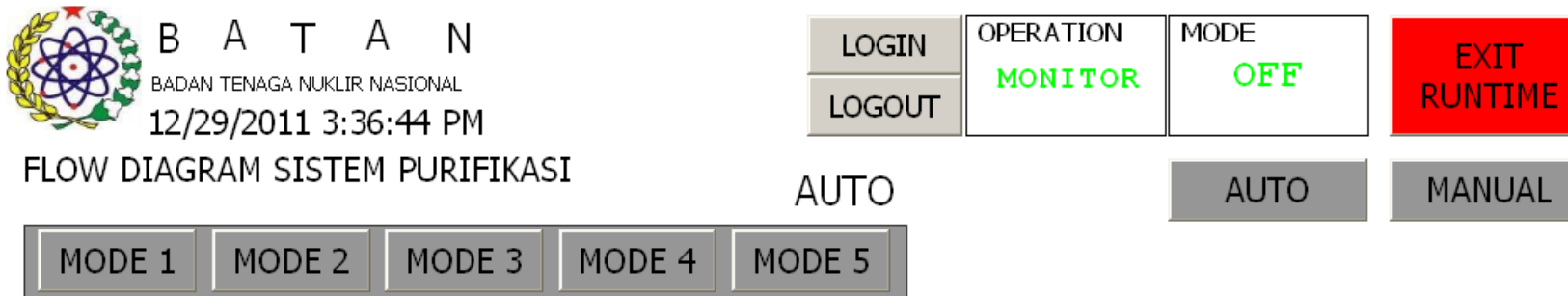
4. Operasional

Sistem Recording:



4. Operasional

Exit Runtime:



The screenshot displays the control interface for the purification system. On the left, the BATAN logo is shown with the text "BATAN BADAN TENAGA NUKLIR NASIONAL" and a timestamp "12/29/2011 3:36:44 PM". Below this is the title "FLOW DIAGRAM SISTEM PURIFIKASI". The main control area includes a row of buttons: "LOGIN", "LOGOUT", "OPERATION MONITOR" (with "MONITOR" in green), "MODE OFF" (with "OFF" in green), and a prominent red "EXIT RUNTIME" button. Below the "OPERATION MONITOR" and "MODE OFF" buttons are "AUTO" and "MANUAL" buttons. At the bottom, there is a row of five mode selection buttons: "MODE 1", "MODE 2", "MODE 3", "MODE 4", and "MODE 5".

TERIMA KASIH

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