Company Profile

MicroVerse automation pvt.ltd.

DCS | PLC | SHUT-DOWN SYSTEM | RTU | CUSTOM-BUILT-HARDWARE

Background

Microverse was formed in 1989 by a group of technocrats with a mission to indigenously develop automation systems which compare well in terms of features & performance to those available from giant MNCs for an affordable price.

During last 30 years of operation, Microverse has bagged several prestigious contracts in competition with Giant MNCs. This includes some of the systems with over 10,000 I/Os & features like triple redundancy for mission-critical applications.

MNCs — Large Process Plants / Refineries / Fertilizer Complex

MICROVERSE — Small & Medium size Process Plants

Small Product Manufacturers — Small Unit Operations, Molding M/c, SPMs etc.

Besides over 150 installations in India, Microverse has established excellent references in Bhutan, Oman, Bahrain, and DR Congo.

From our recent developments, Microverse is executing a major project for TOTAL Oil India Pvt. Ltd. (100% owned subsidiary of TOTAL Gaz, France) for a critical project of their LPG handling facility at Mangalore Terminal.

**We are proud to announce that
Hitachi Hitech Solutions Corporation, Japan
has partnered with Microverse to promote the
DCS in international markets**

Some of Our References

CAPTIVE POWER PLANTS
Boiler, Turbine, CHP, BOP

- **Department Of Atomic Energy – Heavy Water Facility (Manuguru)**

- **SARDA Energy & Minerals Ltd. (Raipur)**

- **Shyam Century Ferrous Ltd. (Byrnihat)**

- **Shyam Sel Ltd. (Mangalpur)**

- **Shyam DRI Power (Sambalpur)**

- **Shyam Sel Ltd. (Burdwan)**

- **Jai Balaji Ltd. (Durgapur)**

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Some of Our References

CHEMICAL + PHARMACEUTICAL (API) PLANTS

Reactor Automation, Batch & Continuous Distillations, Utility Monitoring and Dispensing, Endothermic & Exothermic Reactions for Hydrogenation, Nitration, Separation, Solvent Recovery, etc.

- **Deepak Nitrite Ltd. (Taloja, Vadodara, Roha)**

- **Apcotex Industries Ltd. (Taloja, Ankleshwar)**

- **Zydus-Takeda (Navi Mumbai)**

- **Cadila Pharma (Ankleshwar)**

- **Acmechem Pvt. Ltd. (Panoli)**

- **Diamines and Chemicals Ltd. (Vadodara)**

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Some of Our References

CHEMICAL + PHARMACEUTICAL (API) PLANTS (contd.)

- **Melog Specialty Chemicals Ltd. (Ambernath)**

- **Falcon Chemicals LLC (Dubai)**

- **Indofil Chemicals Ltd. (Mumbai)**

- **Department Of Atomic Energy Boron Enrichment Plant (Manuguru)**

- **Glaxo SmithKline Pharmaceuticals Ltd. (Thane)**

- **Advanced Fluorine Technologies Pvt. Ltd. (Hyderabad)**

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Some of Our References

OIL AND GAS

Oil and Gas Handling, Storage, and Terminal Automation

- **Total Oil India Pvt. Ltd. – A subsidiary of Total Gaz, France**

  - **LPG Blending system at Jetty**

  - **Monitoring of Cross Country Pipeline**

  - **Remote Monitoring System**

  - **Main plant automation for LPG storage, blending, dispensing**

  - **Automotive Gas Distribution**

- **Aegis Gas Ltd. Distribution Network Monitoring - Various**

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Some of Our References

OIL AND GAS

Oil and Gas Handling, Storage, and Terminal Automation

Some of Our References

FERRO ALLOY, SPONGE IRON & COPPER SMELTING PLANTS

Raw Material Handling, Weighing & Batching, Furnace Feeding,

Resistance / Current Controls, Electrode Slipping, Utilities

- **SARDA Energy & Minerals Ltd. (Raipur)**

- **Al Tamman Indsil Ferro Chrome LLC (Sohar, Oman)**

- **Rubamin SPRL (D R Congo)**

- **Somika (D R Congo)**

- **SWIL Ltd. (Bharuch)**

- **Indsil (Raipur)**

- **SAL Steel Ltd. (Gandhidham)**

- **Visa Bao Ltd. (Jajpur)**

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Some of Our References

FERRO ALLOY, SPONGE IRON & COPPER SMELTING PLANTS (contd.)

- Bahrain Alloys & Ferro Alloys Ltd. (Bahrain)

- Bhutan Carbide & Chemicals Ltd. (Bhutan)

- Druk Wang Ferro Alloys Ltd. (Bhutan)

- Druk Ferro Alloys Ltd. (Bhutan)

- Ugen Ferro Alloys Ltd. (Bhutan)

- Mangilal Rungta Ferro Alloys Ltd. (Dhenkanal)

- Stork Ferro Alloys Ltd. (Balasore)

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Some of Our References

SOME SPECIALTY PROJECTS

- **Terminal Automation Systems - Hindustan Zinc Ltd. (Chittorgarh)**

- **Automated Bridge Laying Systems For Tanks - DRDO (R & D Dighi)**

- **Automated Bridge Laying Systems For Amphibious Vehicles – DRDO (R & D Dighi)**

- **Automated Test Jig For Aircraft Power Transmission Components - Hindustan Aeronautics Ltd. (Koraput)**

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Our Sales and Support Centers

DUBAI

Vadodara

Raipur

SINGAPORE

Mumbai
Pune

Hyderabad

Chennai

Closer to the customer, always

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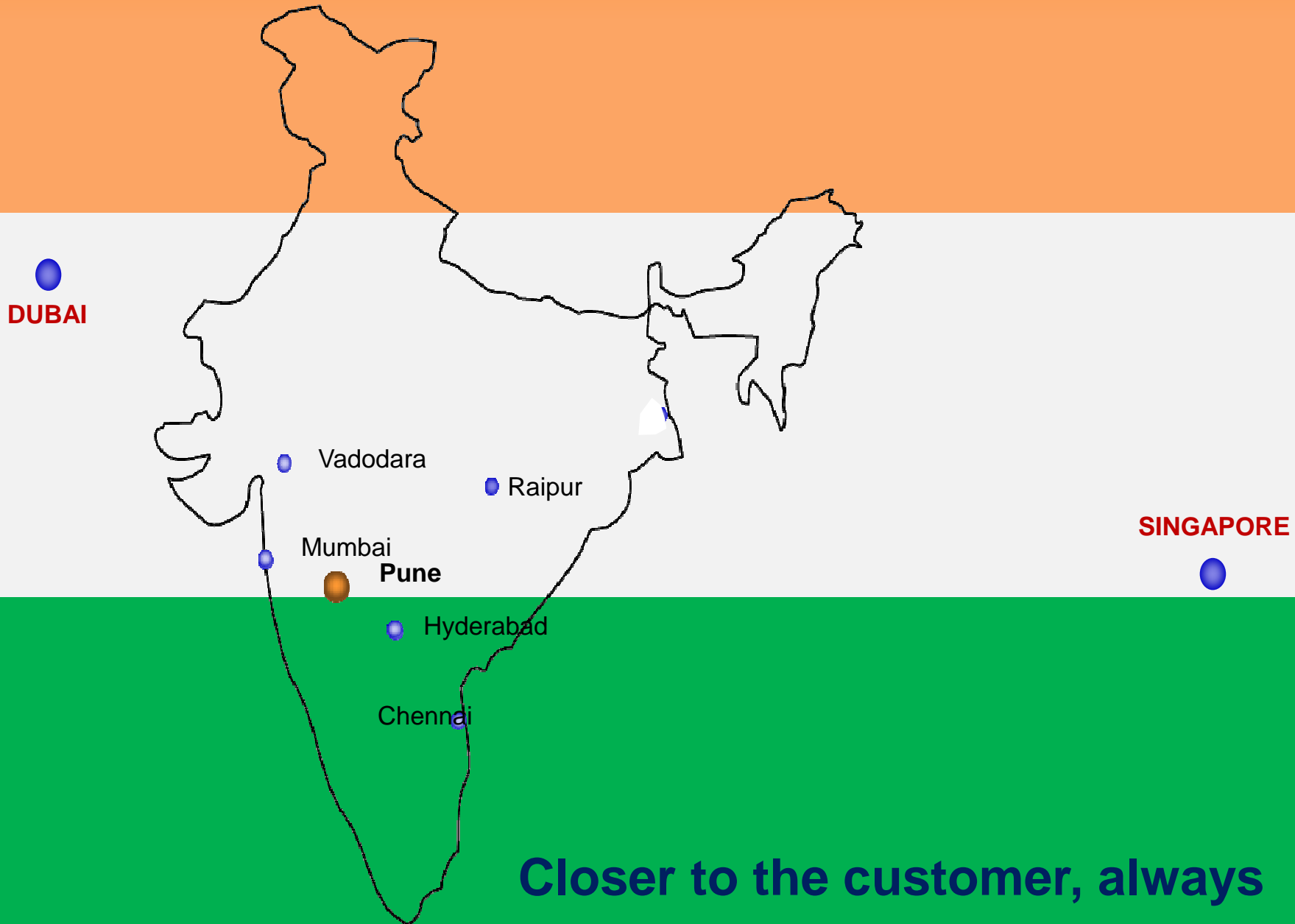
Product Range

DCS and PLC Systems

MICROSYS 3200E
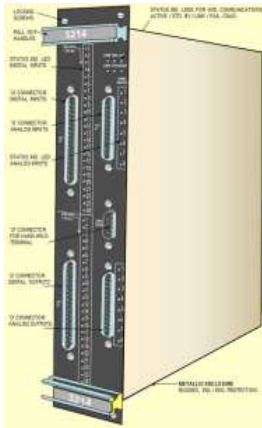
MICROSYS 3200ET

Allied Products

Signal Isolators

Terminal Automation Systems

Custom-designed Products

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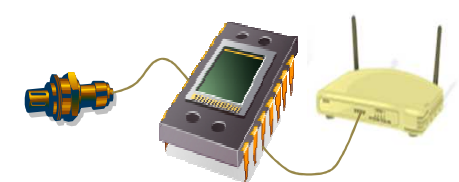
MICROSYS 3200 ET System Elements

Advanced, Compact, and a True DCS
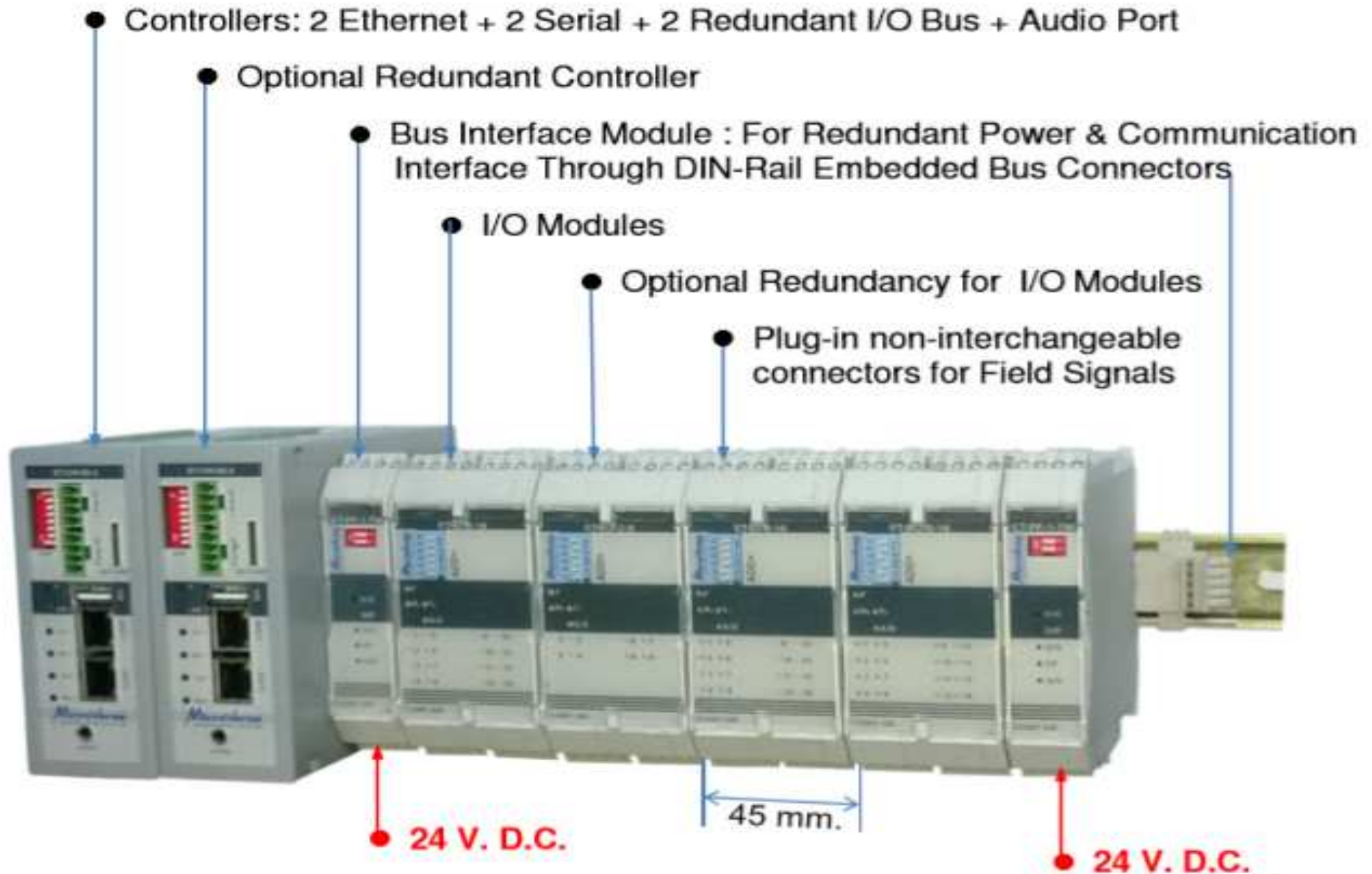
- Controllers: 2 Ethernet + 2 Serial + 2 Redundant I/O Bus + Audio Port
- Optional Redundant Controller
- Bus Interface Module : For Redundant Power & Communication Interface Through DIN-Rail Embedded Bus Connectors
- I/O Modules
- Optional Redundancy for I/O Modules
- Plug-in non-interchangeable connectors for Field Signals

45 mm.

24 V. D.C.

24 V. D.C.

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MICROSYS 3200 ET System Details

Some of the important features relevant to automation of Batch Processes

Software Features

- **Complete SOP defined and configured in the system with xl sheets**

- **Multiple Recipes can be configured for the same reactor**

- **Simultaneous operation of multiple recipes in multiple reactors**

- **Synchronization of steps among different reactors**

- **Individual Steps can be configured for Automatic / Manual / Semi Automatic**

- **Extensive library of Function Blocks like 'Time – Temperature Profile Curve'**

- **Simulation Tools for complete process control logic prior to actual implementation**

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MICROSYS 3200 ET System Details

Some of the important features relevant to automation of Batch Processes

Hardware Features

- Audio Output with Public Address Amplifier for Operator Guidance in the plant as well as in the Control Room

- Low power consumption, low temperature rise, system can be housed in enclosures close to individual reactors: Savings in cabling, easier maintenance

- All I/Os voltage and current limited to Haz Area Gr IIA / IIB / IIC specs

- SMS Alerts over Mobile Phones for Process Upsets

MICROSYS 3200 ET Configurations

Small Compact System with optional local HMI

Stand-alone system

Can be housed in flame-proof enclosure

for hazardous area applications

Typical Configuration with Less than 500 I/Os

Redundant communication links between Controller & OS/ES

Redundant Controllers

Event-based Audio Annunciation of pre-recorded messages

Redundant I/O Bus communication

Optional I/O Redundancy for critical channels

SMS Alerts over Mobile Phones

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MICROSYS 3200 ET Configurations – Typical Large Installation

USER INTERFACE ON SMART PHONES AND TABS

GPRS MODEM

ENGG STN

OPR STN

OPR STN

OPR STN

OPR STN
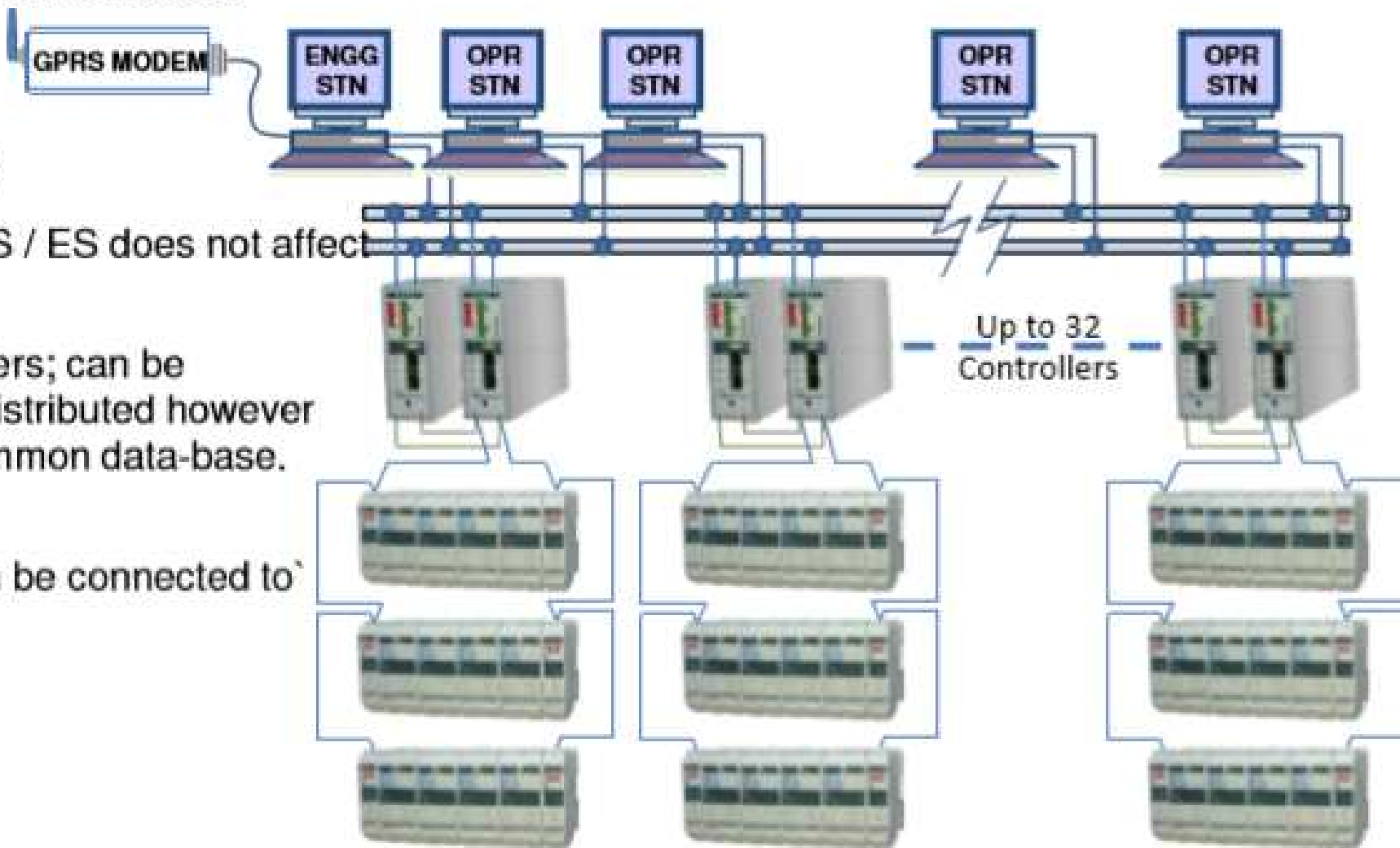
Multiple OS / ES

Failure of any OS / ES does not affect plant operation

Multiple Controllers; can be geographically distributed however operate on a common data-base. A true DCS.

Remote I/Os can be connected to Controllers

Up to 32 Controllers

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SCADA Screens From Some Of Our Installations

- CHEMICAL / API PROJECTS : HYDROGENATION, NITARTION, DISTILLATIONS, REACTOR AUTOMATION

- CAPTIVE POWER PLANTS

- FERRO ALLOYS

Reactor Automation

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Batch and Continuous Distillations

Nitration Process Control

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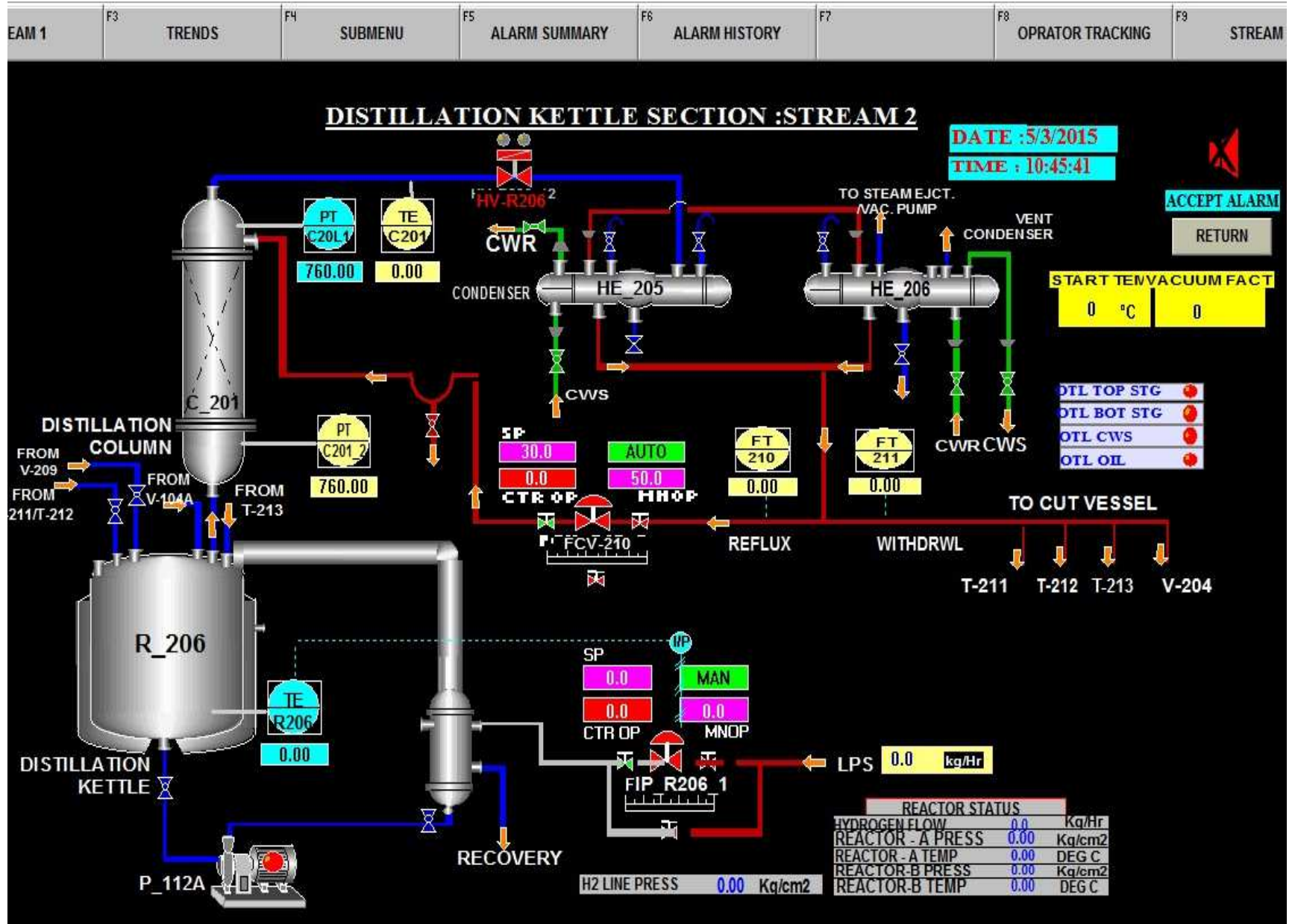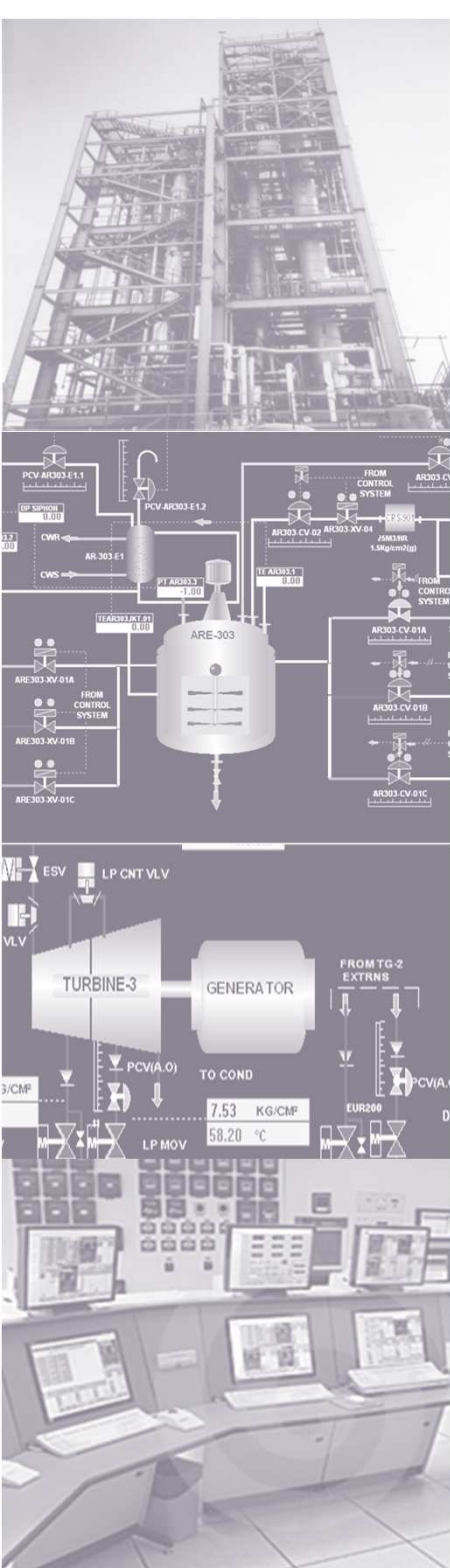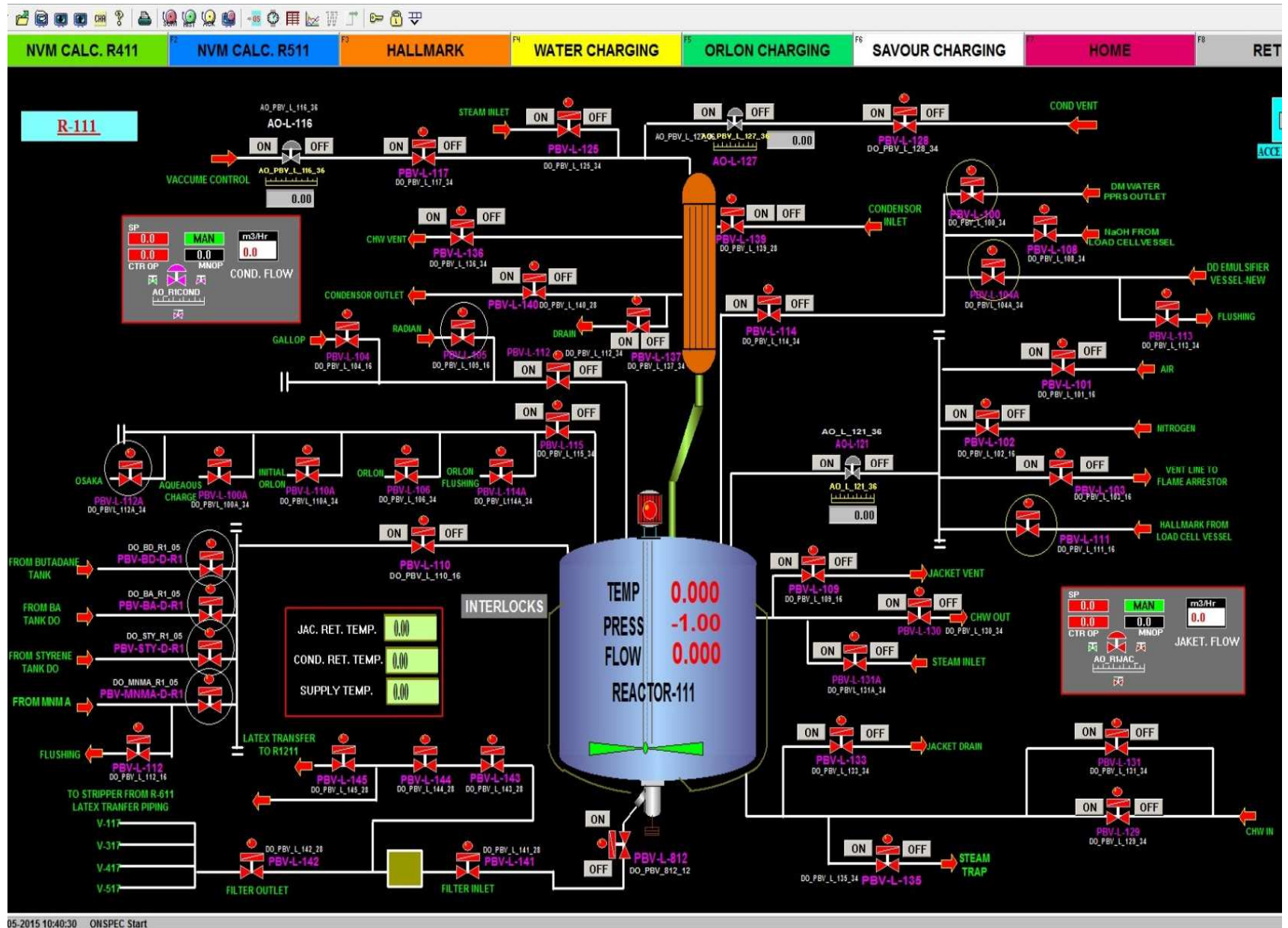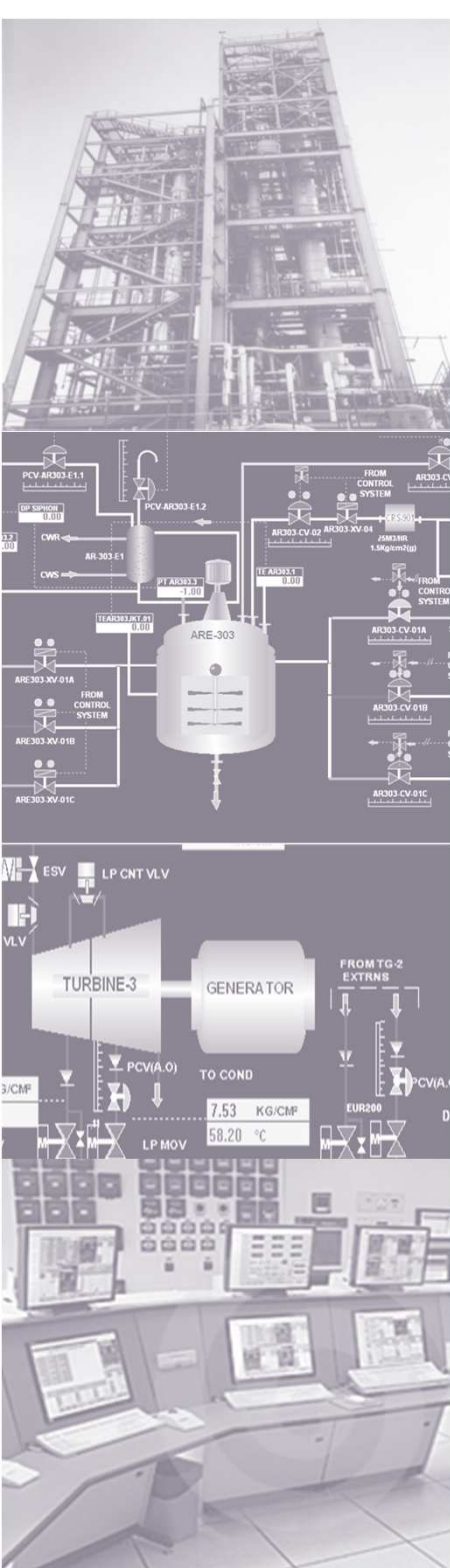
Polymerization Processes
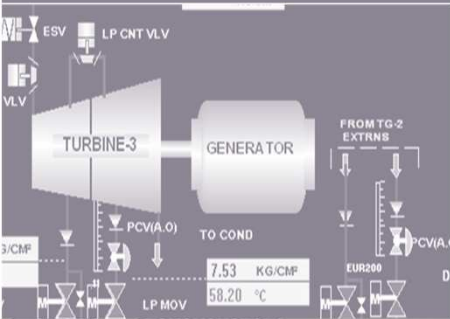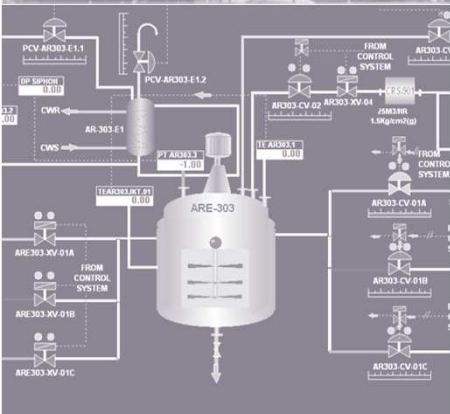
Hydrogenation Process Control

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Power Plant Automation – Turbine Control

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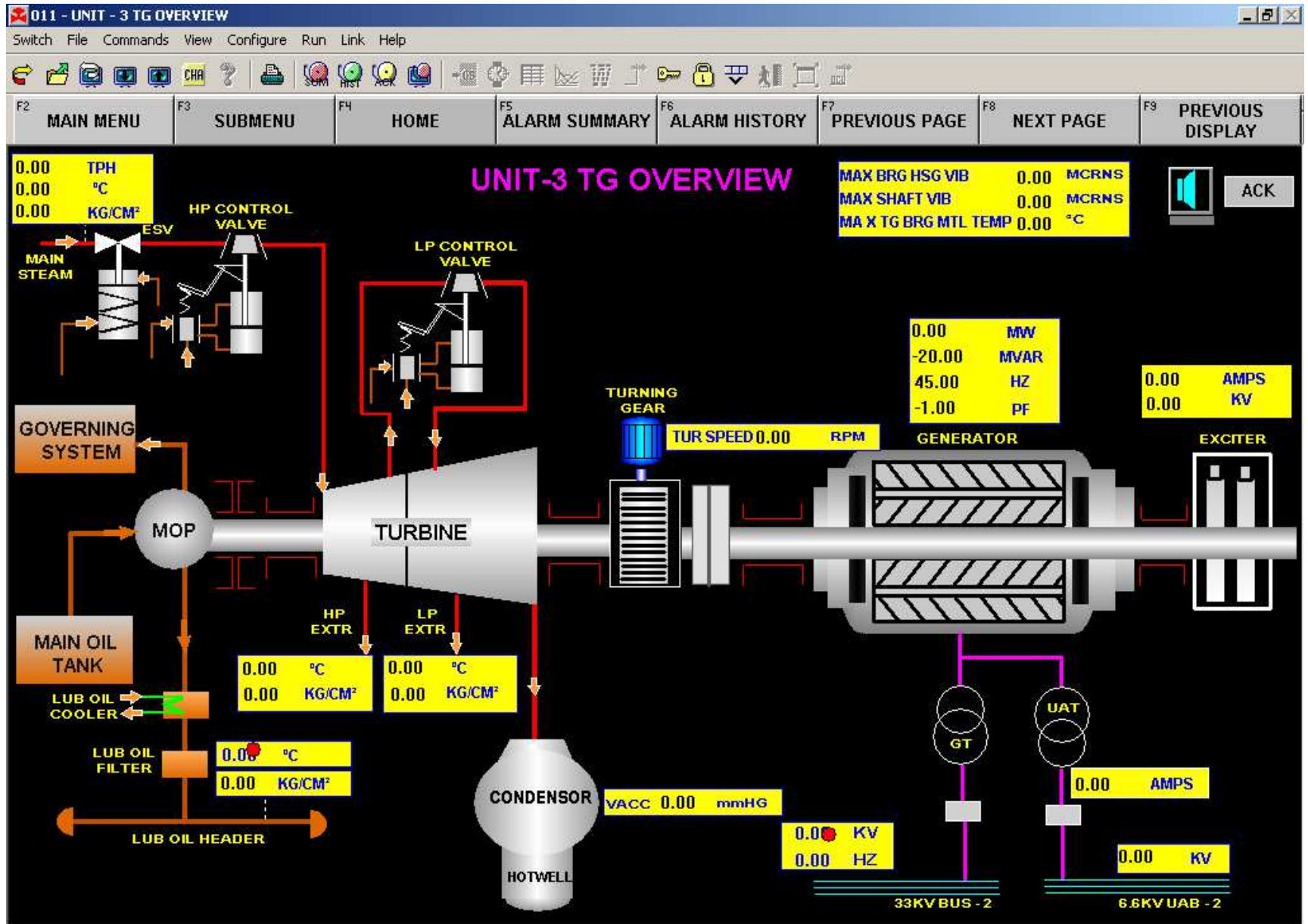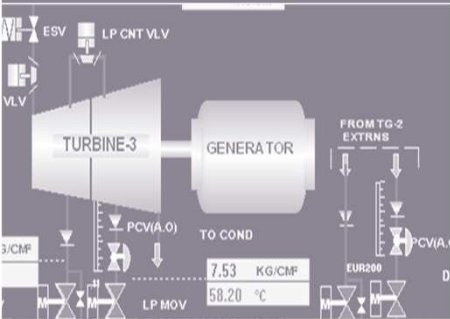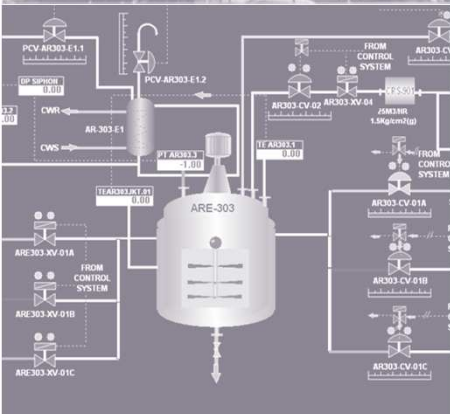
Power Plant Automation – Coal Handling Plant
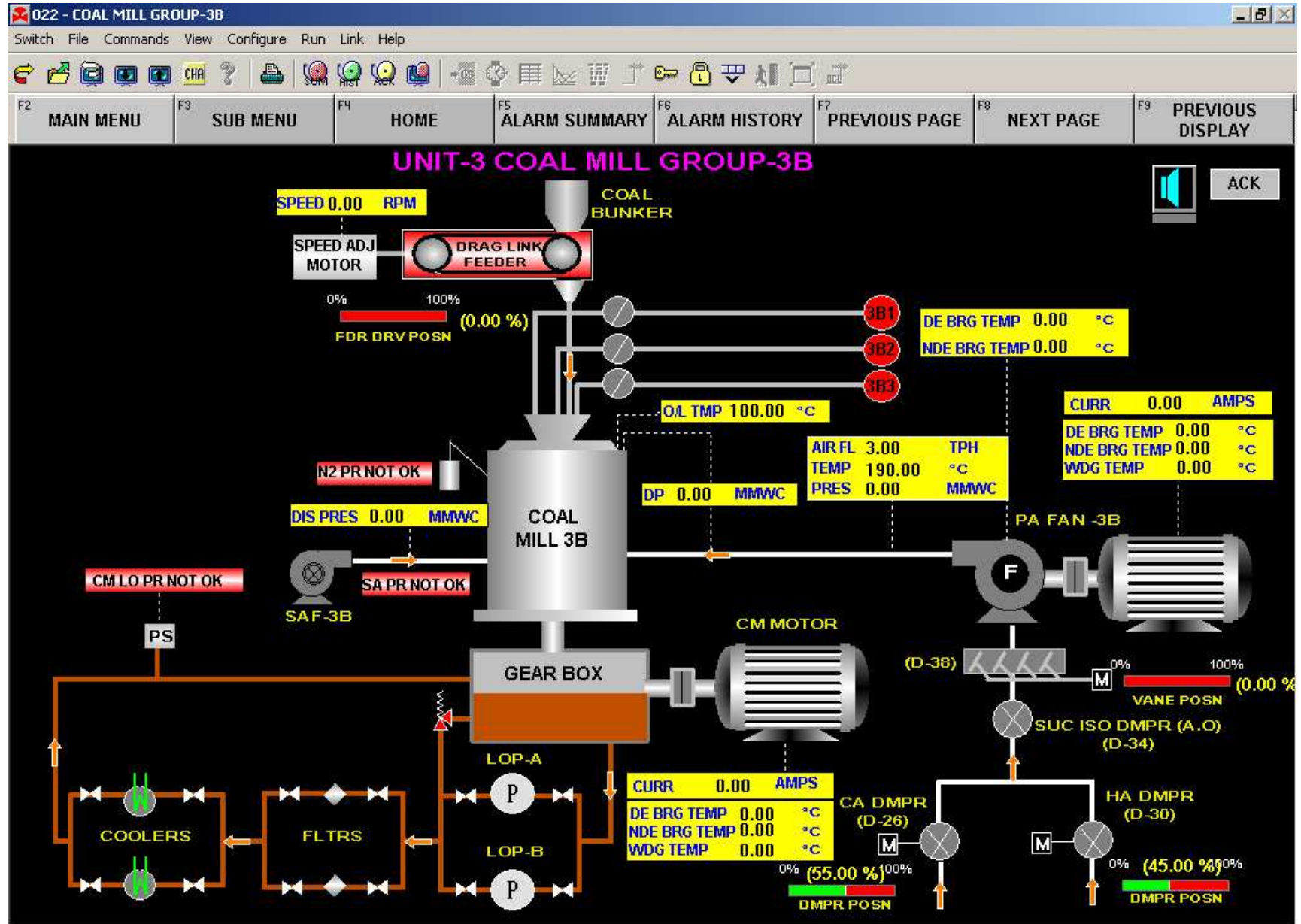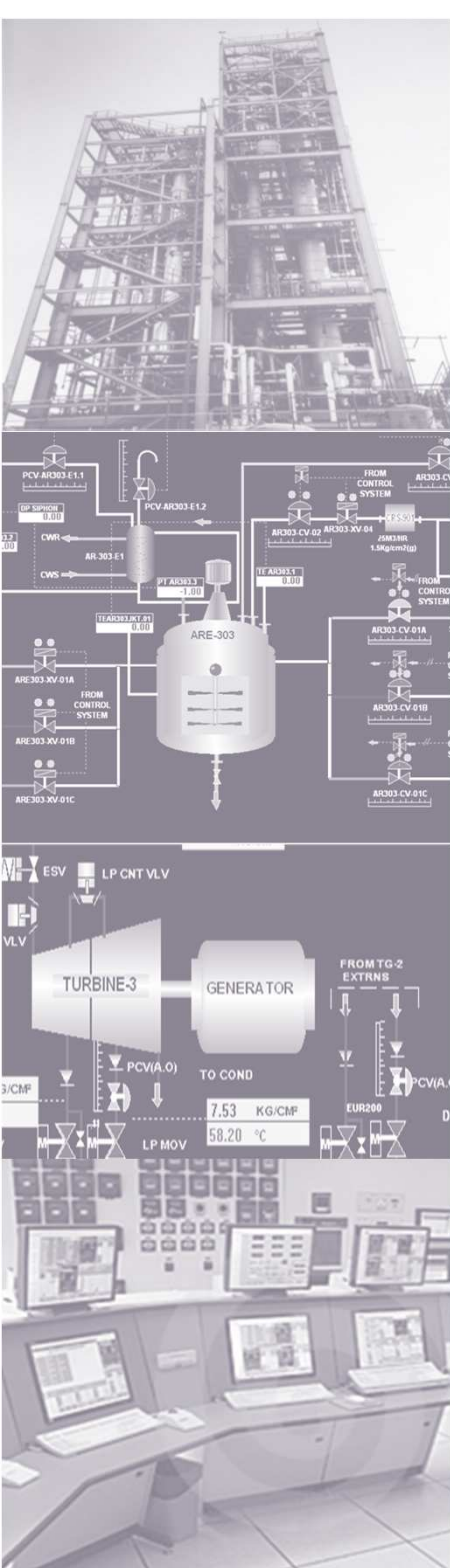
Ferro Alloy Plant Automation
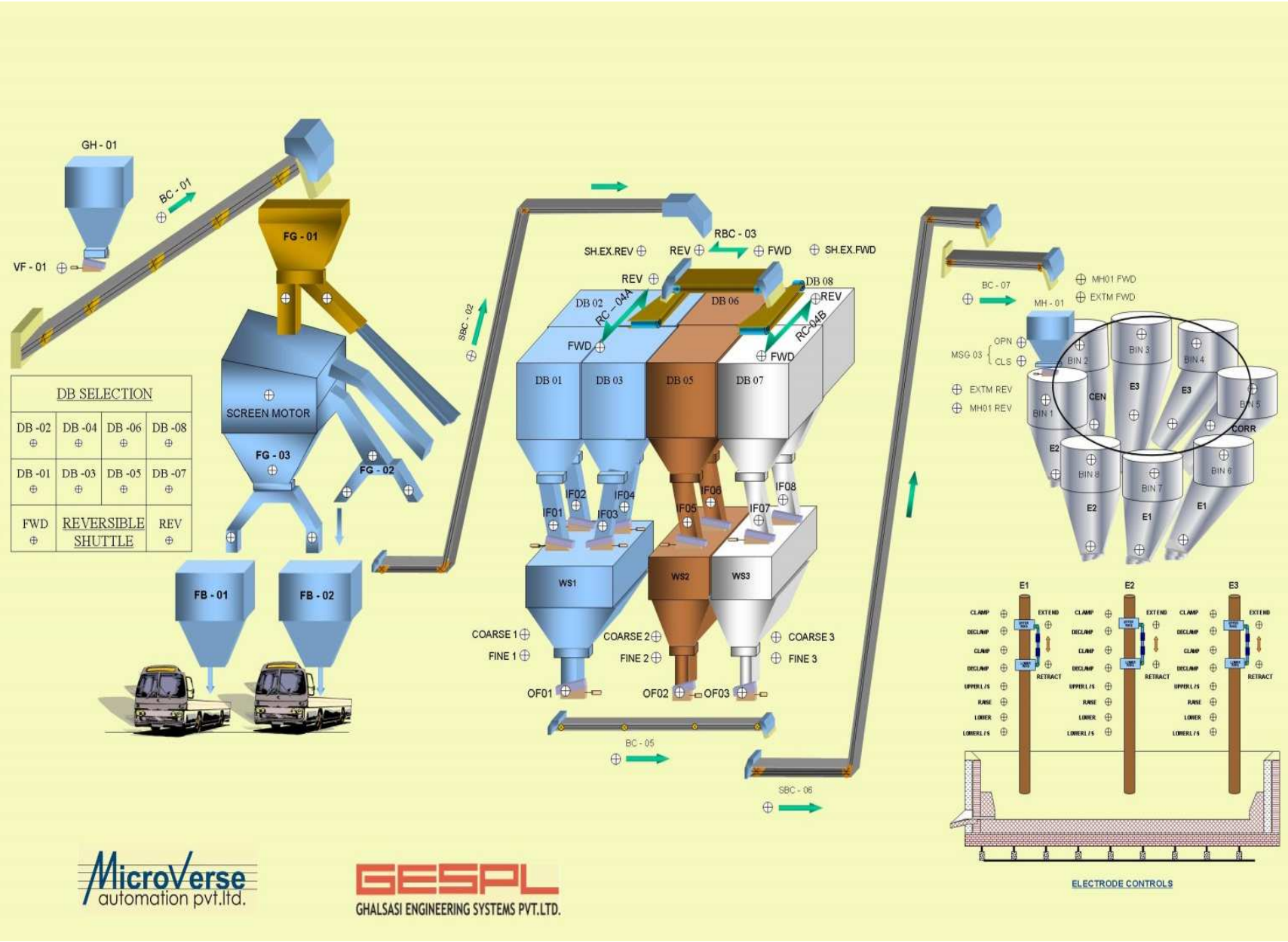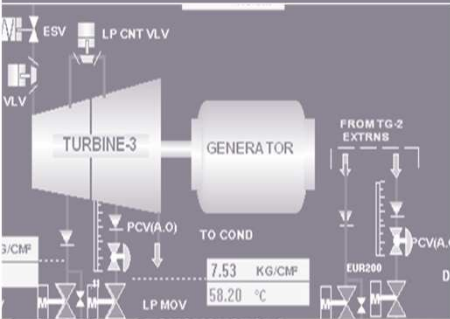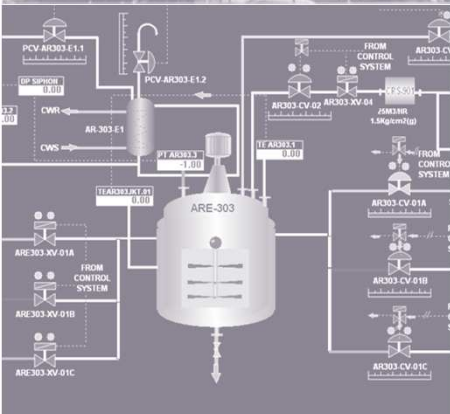
cGMP COMPLIANCE FOR PHARMA PLANTS

The V Model: With 21 CFR Part 11 For Handling Of Electronic Data

USER REQUIREMENTS ← **PQ TEST PLAN** ← PERFORMANCE QUALIFICATION

FUNCTIONAL DESIGN ← **OQ TEST PLAN** ← OPERATIONAL QUALIFICATION

DETAIL DESIGN ← **IQ TEST PLAN** ← INSTALLATION QUALIFICATION

IMPLEMENTATION
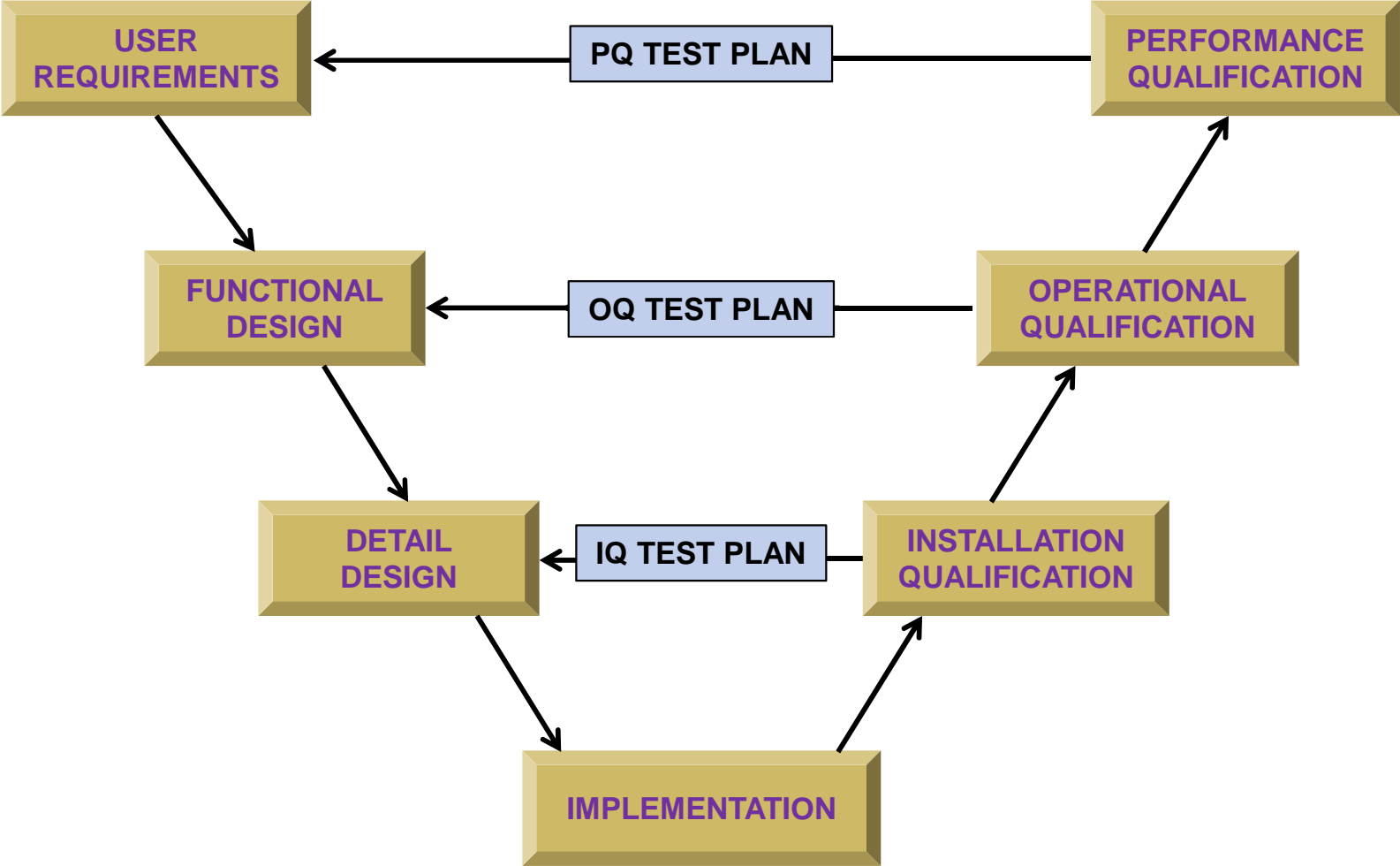
Certificate of Appreciation - Department of Atomic Energy, India

For a DCS system with Triple Redundancy

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Some of Our Interesting QAP Practices

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Place components in boiling water prior to assembly, recheck the components after cooling
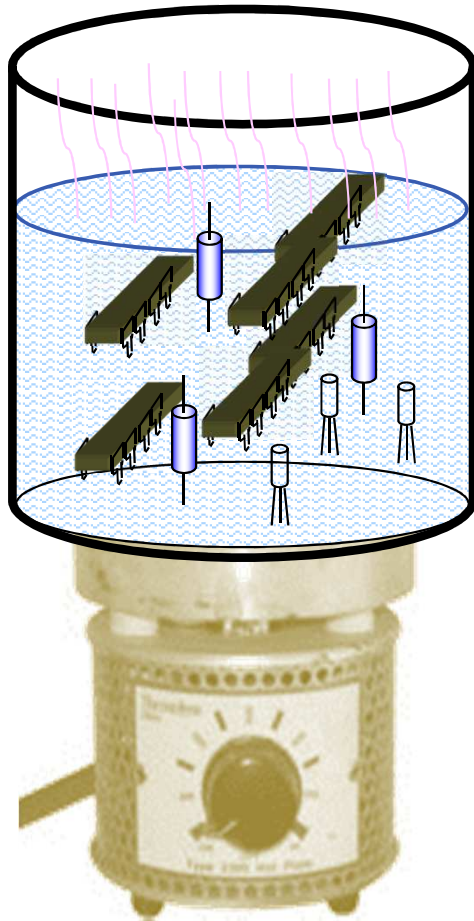
Sprinkle Carbon + Metal Dust on powered-up PCBs
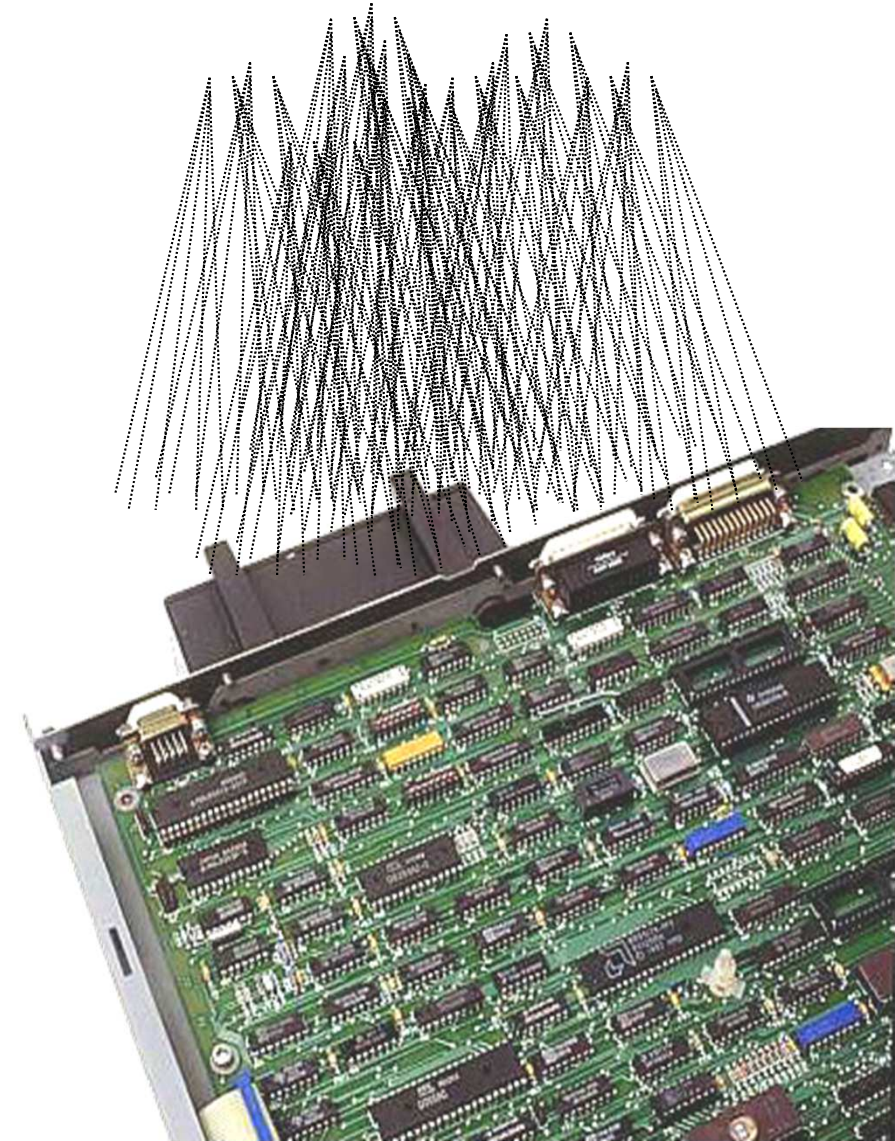
(QAP to emulate certain screening processes meant for MIL-grade devices.
Assured component reliability. Improved drift performance)

(QAP to emulate actual plant conditions)

Some of Our Interesting QAP Practices

- **3 Thermal Shocks : 10°C - 55°C; 30 minutes each**

- **Burn-in for 48 Hrs. @ 55°C in powered-up condition.**

Why Microverse?

✓ Proven Track Record

✓ Domain Expertise

✓ Experienced team trained in cross-disciplinary skills

✓ Excellent Pre / Post Sales / Post Warranty support.

✓ Transparency with the customer

✓ We are large-enough to organize appropriate resources, small-enough to remain flexible to meet customer-specific requirements.

✓ 100% Indigenous. WITH PRIDE!

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Thank You!

We look forward to a long-lasting association with you!

Appendix

Clients with CFR 21 Compliance

- **Zydus Takeda**

- **Cadila Pharma**

- **Cipla**

- **Orchid**

21 CFR Compliance Checklist

1.0	**Password policy**	
1.1	Password-protected individual user accounts	
1.2	Password and User ID policy (Individual unique ID and Password, minimum length and strength of ID and Password	
1.3	Automatically limit number of failed login attempts	
1.4	Automatically record unauthorized login attempts	
1.5	Electronically require users to change their passwords at regular intervals	
1.6	Automatically password protects computer systems when idle for short periods	
2.0	**User management system & Privileges**	
2.1	Ensure that the user level based on functionality and authority is defined. e.g. Analyst, reviewer, Lab manager, Administrator, etc.	
2.2	Ensure that the privileges like delete, copy, cut, paste, rename, overwrite etc. shall not be allowed to Analyst & reviewer level.	
3.0	**Electronic Data**	
3.1	Electronic data and report should be human readable and suitable for inspection and review	
3.2	Ensure the content: Performed by with date and time, Print by with date and time, Reviewed by with date and time, system and analysis parameter related information, etc.	
4.0	**Electronic data storage**	
4.1	Generated data should be store in protected drive	

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5.0	**Audit Trail**
5.1	System should track for all creations, modifications, and deletions performed in the system (All activity should be logged between login and log out) with time and date along with user details
5.2	All hardware related errors and warning should be logged in audit trail (System audit trail)
5.3	Maintain all entered data: Don't obscure original data when changes are made (shall maintain revision history for the changes made).
5.4	Time and date change automatically, it shall be locked and not editable unless performed by authorized user (shall be defined through user rights distribution)
5.5	Computer system shall be designed in a way that user to record reason for change through use of authorized login / password to go ahead with changes
5.6	Automatically record identity of individual who made change
5.7	System shall prevent to modify or delete audit trail
5.8	Audit trail documentation shall be retained for a period at least as long as that required for the subject electronic records and shall be available for agency review if required

21 CFR Compliance Checklist (contd.)

6.0	**Electronic Signature**	
6.1	Electronically signature documents have following content (Automatically generated)	
6.1.1	The printed name of the signer	
61.2	The date and time when the signature was executed	
6.1.3	The meaning (such as review, approval, responsibility, or authorship) associated with the signature	
6.1.4	The items identified in paragraphs 6.1.1, 6.1.2, and 6.1.3 of this section shall be subject to the same controls as for electronic records and shall be included as part of any human readable form of the electronic record (such as electronic display or printout)	
6.2	The unique ID and Password for electronic signature	
6.3	Electronic signatures and handwritten signatures executed to electronic records shall be linked to their respective electronic records to ensure that the signatures cannot be excised, copied, or otherwise transferred to falsify an electronic record by ordinary means	
6.4	Each process of electronic signature should be electronically logged in audit trail with time and date and user ID	
6.5	Uniqueness to be maintained between password and ID, both being same is not accepted by system	

21 CFR Compliance Checklist (contd.)

7.0	**Data Backup**
7.1	Software shall have facility for auto data back-up to any client or connected central server
8.0	**Other**
8.1	User shall not be able to save or relocate the result files, it should be controlled through software only
8.2	User shall not have rights to create folders or project in software. These rights shall be with administrator.