

Issue:-Obsolescence

Expectation

Issue:-Skill development and domain expertise:-

Expectations

Issue:-Standardization & Interoperability of the systems

Expectations

Skill development and domain expertise:-

Expectations

Conclusion

The technology should facilitate rather than complicate.

The C&I system implementer should select the technology that adds value to the over all process.

The closer interaction is needed between C&I system suppliers and OEM's of Boiler and Turbine so that control system can be utilized to its fullest potentials

The onus is on the suppliers, users, consultant and academicians to address the problems typically faced by the control and instrumentation implementer 's in power domain.

Control and Instrumentation will permeate hither-to un-touched arenas of power generation domain.

The forum's such as ISA,IEEE should take the lead and make synergy in the automation system delivery.

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NTPC



THANK YOU.....

**INNOVATIVE PRACTICES
IN
CONTROL AND AUTOMATION
- BY B. R. MEHTA**



Thirty years ago, what were we thinking?



- It was 1980
- Vinyl records
- Cricketers got paid for the first time.
- MySpace was my own, not shared with 100 million teenagers.
- No one knew what Microsoft was.
- Chat rooms included:
 - Dinner table
 - Verandah
 - Canteen



What Problems we had 30 years ago?



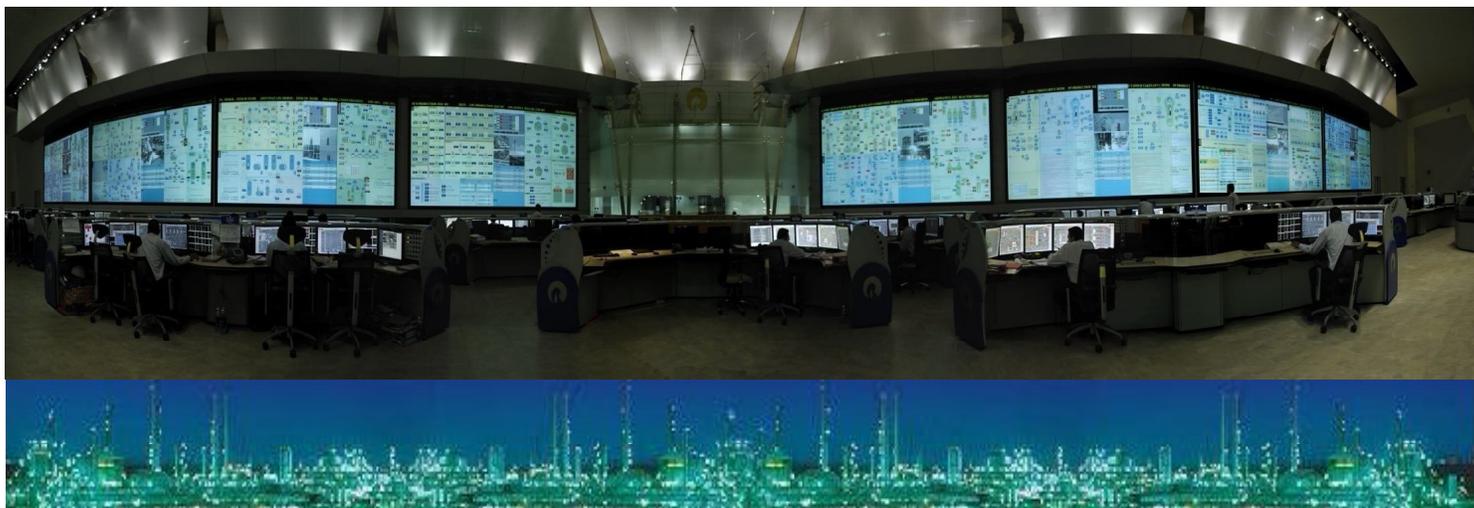
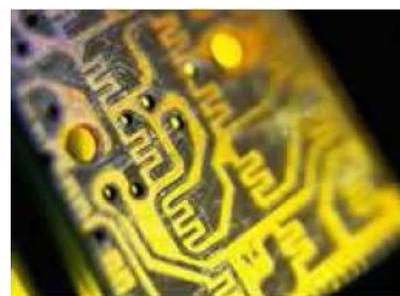
- Communication between plants and the home office.
- High inventories, no real time insight into the marketplace.
- Automation was limited, data from plant floor was hard to come by
- Energy costs.
- Discrete and process manufacturing operated on separate systems.



How did we solve these problems?



- More data.
- New technologies.
- New approaches to plant operations.
- A new breed of plant operators.



What problems do we have now?



- Less people
- Same or fewer assets
- Increased demand for:
 - more production
 - less waste
 - more efficiency
 - improved tracking
 - quality
- Standards
- Mix of equipment within a plant for process and discrete
- Energy costs
- Insight into front office and plant floor goals



Automation Control Challenges



- Reduce development and commissioning cost
 - Development, Engineering, Commissioning

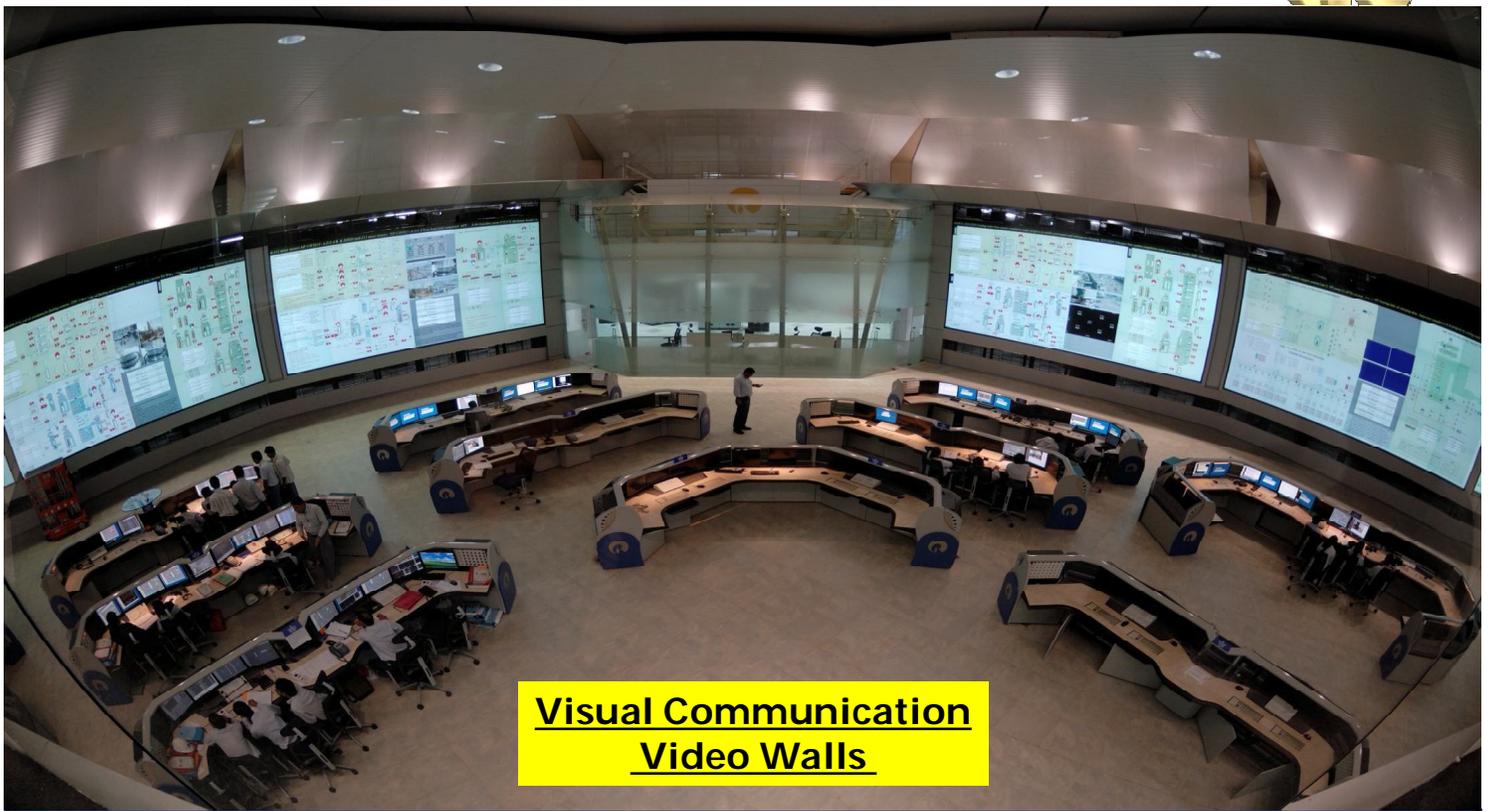
- Multi-disciplined control systems
 - Discrete, Motion, Process, Drives, Safety applications

- Improve machine performance
 - Increase uptime by reducing downtime

- Plant floor-to-enterprise connectivity
 - Integration with end user's information systems
 - Remote diagnostics, web access, e-mail



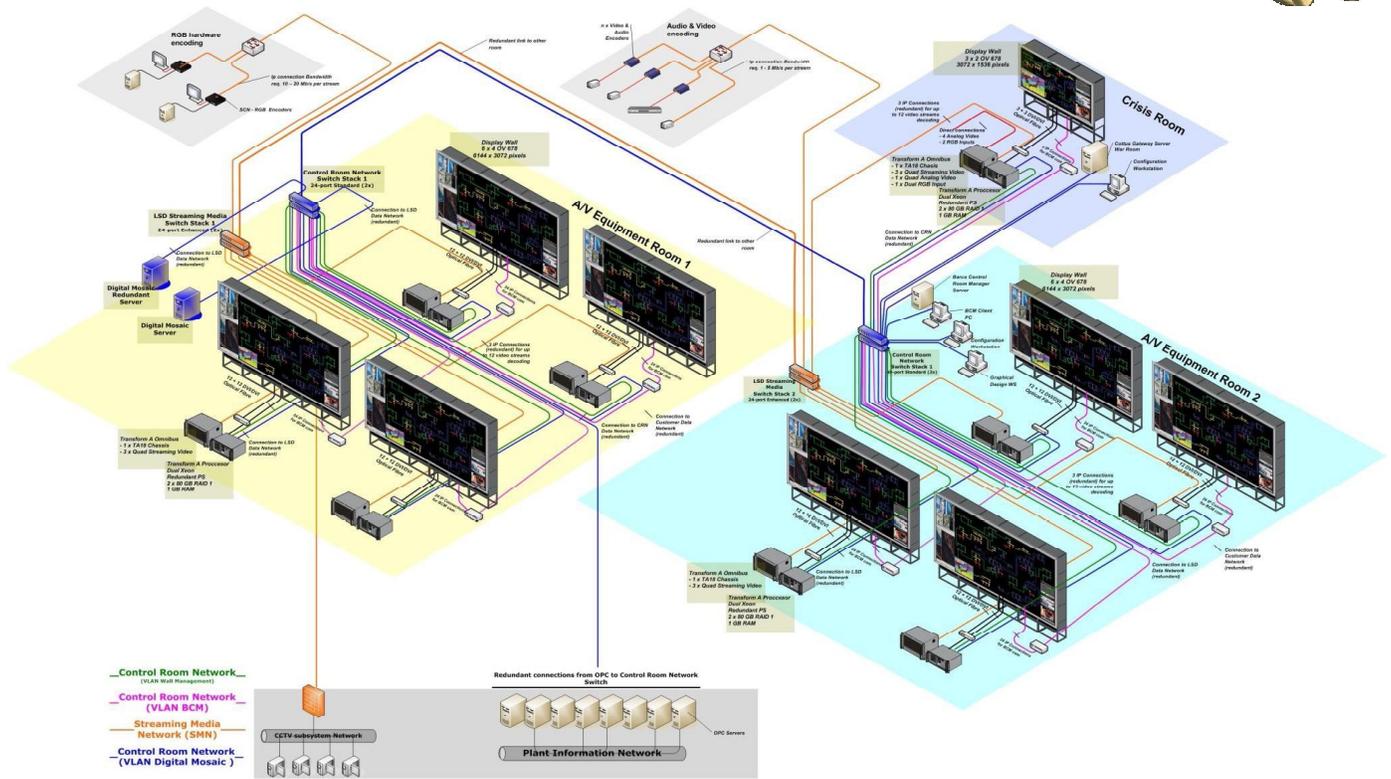
Collaborative Operations:



Visual Communication
Video Walls



Large Screen Display Unit :



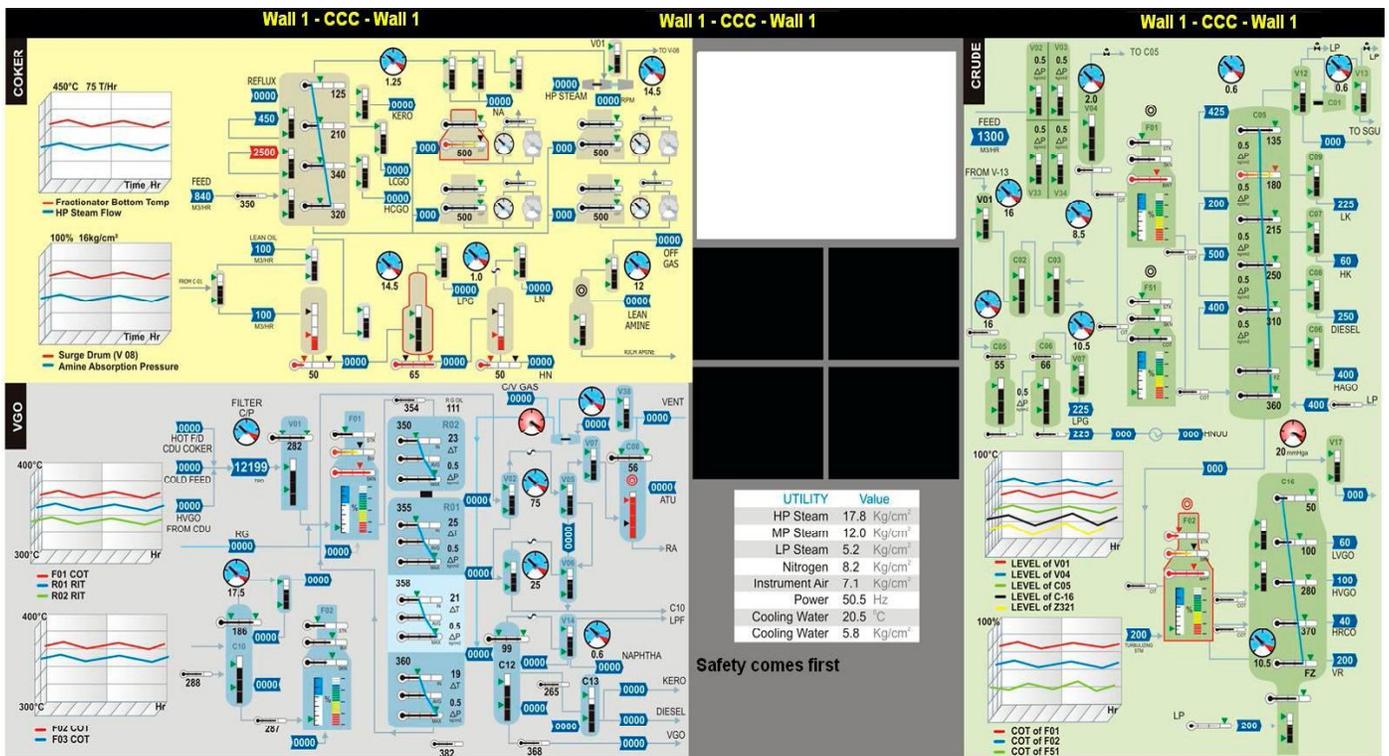
Operational excellence:



- Situation Awareness.
- Enable quick handling Plant upsets.
- Motivate Operations for Best Performance.



Typical start up layout:



Situation awareness:



- Critical information of upstream/downstream Units at glance
- Dependency related information within a cluster and with the outside world.
- Broadcast of latest status/abnormal events
- Quality/E-Log book information
- Constraints associated with feed and product



Typical Steady state Layout :



Wall 1 - CCC - Wall 1

COKER

Upstream and Down Stream: VR Yield, CCR, VR Stock, Pr Flow, Asphalt, VR Flow, LPG, LCGO, FR Naphtha, HCGO, LCGO, HCGO, Interlock Bypassed (HTRS, CD, Z372, Others).

Equipment: Vapour Velcity, Plan, Actual, B01, B02, B03, B04.

Throughput: Day, Rate, Rq Rate.

Quality: SMPL, Target, Actual. Feed Den, Feed Na, Feed Sul, FG H2S, LN Den, HN Den, Kero Den, LCGO 95, LCGO Den, HCGO Den, HCGO CCR, Coke Den.

Yield: FG, LPG, LN, HN, Kero, LCGO, HCGO, CUKE.

Secondary Flow, Cum Slop Procs, Cum Sludge Procs, Energy Index, FG Consmpth, Recycle Ratio, Debut RR, Naphtha Spltr RR.

Fuel and Loss: Cumulative, Anti Surge.

Wall 1 - CCC - Wall 1

Wall 1 - CCC - Wall 1

CRUDE 1

Upstream: Crude, Desalter, V02, V03, V33, V34, API, Sulphr, TAN.

Efficiency %: F01, F02, F51.

Yield: Off Gas, LPG, Naphtha, LK, HK, Diesel, HAGO, VGO, VR, Ejctr. Offgas.

Quality: SMPL, Target, Actual. C3 Ln Gas, LPG Wethr, Naphtha FBP, LK Flash, LK Sulphr, Diesel 95%, 360-nRCCO, HVGO 95%, 565-nVR.

Energy Index, F01 Duty, F51 Duty, F02 Duty, Ovr Fish.

Interlock Bypass: S, SGCU.

VGO 1

Up Stream: LVGO, HVGO, HCGO, HAGO, HOT FEED, COLD FEED, H2 FLOW.

Quality: SMPL, Target, Actual. F-VGO Sul, F-UOPK, NP-FBP, P-VGO Sul.

Yield: VGO, Diesel, Kero, Naphtha.

Energy Index, Catalyst Usage, Dew Point, Anti Surge, Interlock Bypass.

Wall 1 - CCC - Wall 1

VGO 2

Up Stream: LVGO, HVGO, HCGO, HAGO, HOT FEED, COLD FEED, H2 FLOW.

Quality: SMPL, Target, Actual. F-VGO Sul, F-UOPK, NP-FBP, P-VGO Sul.

Yield: VGO, Diesel, Kero, Naphtha.

Energy Index, Catalyst Usage, Dew Point, Anti Surge, Interlock Bypass.

UTILITY	Value
HP Steam	17.8 Kg/cm ²
MP Steam	12.0 Kg/cm ²
LP Steam	5.2 Kg/cm ²
Nitrogen	8.2 Kg/cm ²
Instrument Air	7.1 Kg/cm ²
Power	50.5 Hz
Cooling Water	20.5 °C
Cooling Water	5.8 Kg/cm ²

Safety comes first

CRUDE 2

Upstream: Crude, Desalter, V02, V03, V33, V34, API, Sulphr, TAN.

Efficiency %: F01, F02, F51.

Yield: Off Gas, LPG, Naphtha, LK, HK, Diesel, HAGO, VGO, VR, Ejctr. Offgas.

Quality: SMPL, Target, Actual. C3 Ln Gas, LPG Wethr, Naphtha FBP, LK Flash, LK Sulphr, Diesel 95%, 360-nRCCO, HVGO 95%, 565-nVR.

Energy Index, F01 Duty, F51 Duty, F02 Duty, Ovr Fish.

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