

# *DCS integration and CCR solution*

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MEMBER OF MOL GROUP

# AGENDA



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## BACKGROUND

- History and location

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DCS upgrade vs. DCS replacement?

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## DCS integration

- Requirements and principles
- Risk points of integration
- Technical Solution

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## CCR solutions

- Control Room consolidation and centralization

# BACKGROUND



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- MTBE unit
  - Located at MOL Petrochemicals in Tiszaújváros
  - Methyl tert-butyl ether production
  - Gasoline additive used as oxygenate and for octane number raising
  - Feed is from SC-1 unit
  - Hydrogenated C4 fraction and methanol
  - Operating since 1982
  - Honeywell DCS application installed in 1991



# PROCESS CONTROL APPLICATIONS IN MTBE UNIT



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- ✔ Honeywell TDC 3000 was installed in 1991
  - ✔ UCN hardware elements PM controllers, FTAs and IOPs
  - ✔ LCN hardware elements
  - ✔ Universal Station
- ✔ ~ 420 I/O signal
- ✔ 10 SIF loop
- ✔ No Safety Instrumented ESD System was used
- ✔ Honeywell DE protocol
  - ✔ ~ 20 transmitters



# DCS UPGRADE VS. DCS REPLACEMENT



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## Upgrade options

- Honeywell TDC → TPS → Experion
- Emerson DeltaV migration
- Advantage: Shorter lead time, lower CAPEX
- Disadvantage: Not a finalized solution

## Full replacement

- Advantage: Complete system modernization
- Disadvantages: Higher CAPEX, longer lead time

# DCS INTEGRATION



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- Intention for Control Room Centralization
- Objective: Centralized Control Room for Extraction Asset
  - Location: Butadiene unit control room
  - App. 4 km distance from MTBE unit
  - Flare unit is 800 meter from MTBE
  - BDE DCS application Emerson DeltaV with ProPlus servers
  - Safety and Security System integration is essential!

# RISK POINTS OF INTEGRATION



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From Operation Side:

- Operation from distance has a great risk!
- Operator interface has to be standardized
- Safety and Security Systems need to be installed in CCR!
- Site checking in every shift is necessary
- New DCS aka new operator interface
- Operation philosophy must change

# RISK POINTS OF INTEGRATION



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From Technical Side:

- MTBE DCS connection to BDE Emerson
- MTBE Safety Instrumented System connection
- Optical network possibilities for ESD?
- Optical network possibilities for FDS, GDS and CCTV?
- BDE system firmware updates
- **DURING MAIN UNIT OPERATION!**



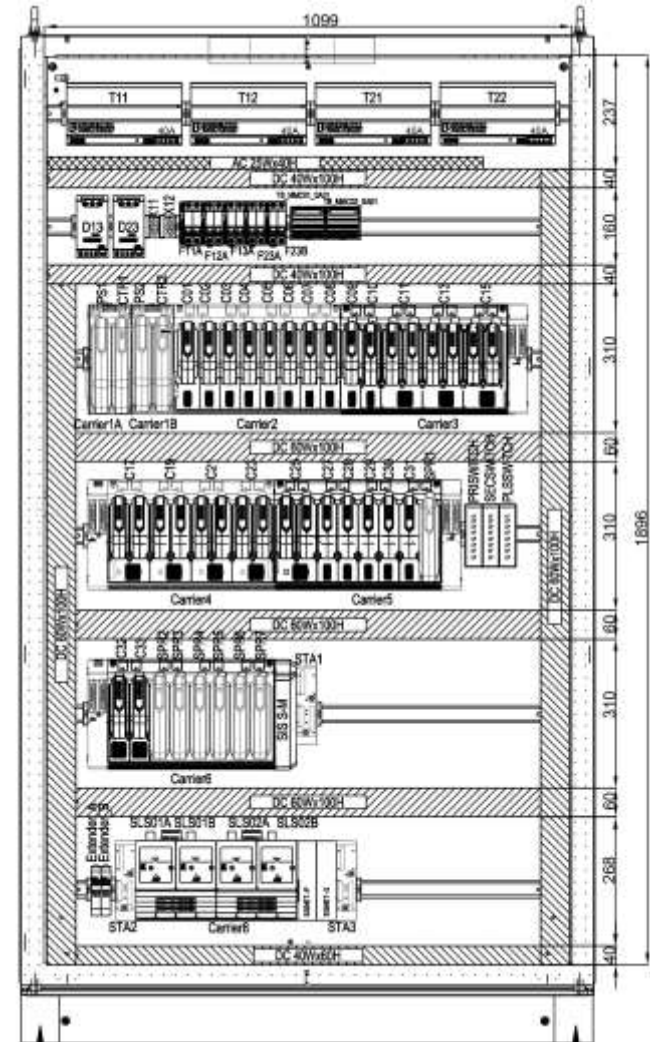


# TECHNICAL SOLUTION

- MTBE unit is app. 420 signals and 10 SIF
- Emerson scope:
  - Online version change on DeltaV system
  - Extension of Emerson SIS ring and CN
  - DCS controllers firmware update
  - SIS controllers firmware update
  - Optical cable connection to SLS at BDE
- Integrating ESD-SIS systems between BDE & MTBE (SIL 3 capability on fiber optic)
- 4 red. fiber optic cable (inc. FDS)
- MOL Group engineering involved for DCS SW implementation



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# TECHNICAL SOLUTION



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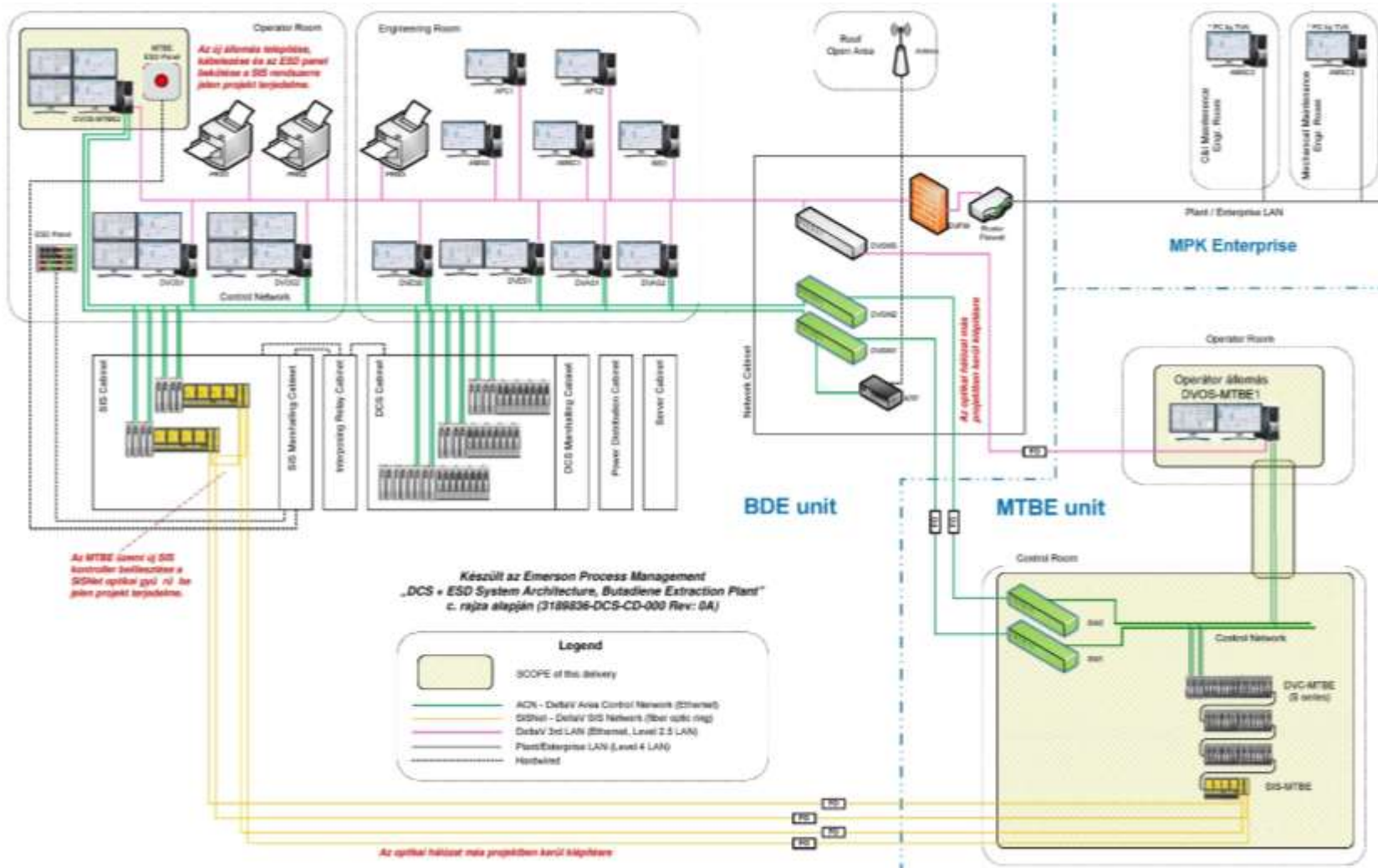
- Flare system DCS application integrated
- Safety systems integrated
- Schrack Seconet System implemented
  - Over 3 km of flameproof fiber optic and tray
  - Over 4,5 km fiber optic laid underground
  - According to OTSZ (National Fire Codes and Standard)
  - Connection to Dispatcher and Company Firefighter services
- Gas detection system (Sieger 57) integrated into company ring system
- MTBE CCTV displayed at BDE unit
- Public Addressing System intercom station installed at BDE (Industronic)



# MTBE-BDE SYSTEM STRUCTURE



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# CCR SOLUTION AND PRINCIPLES



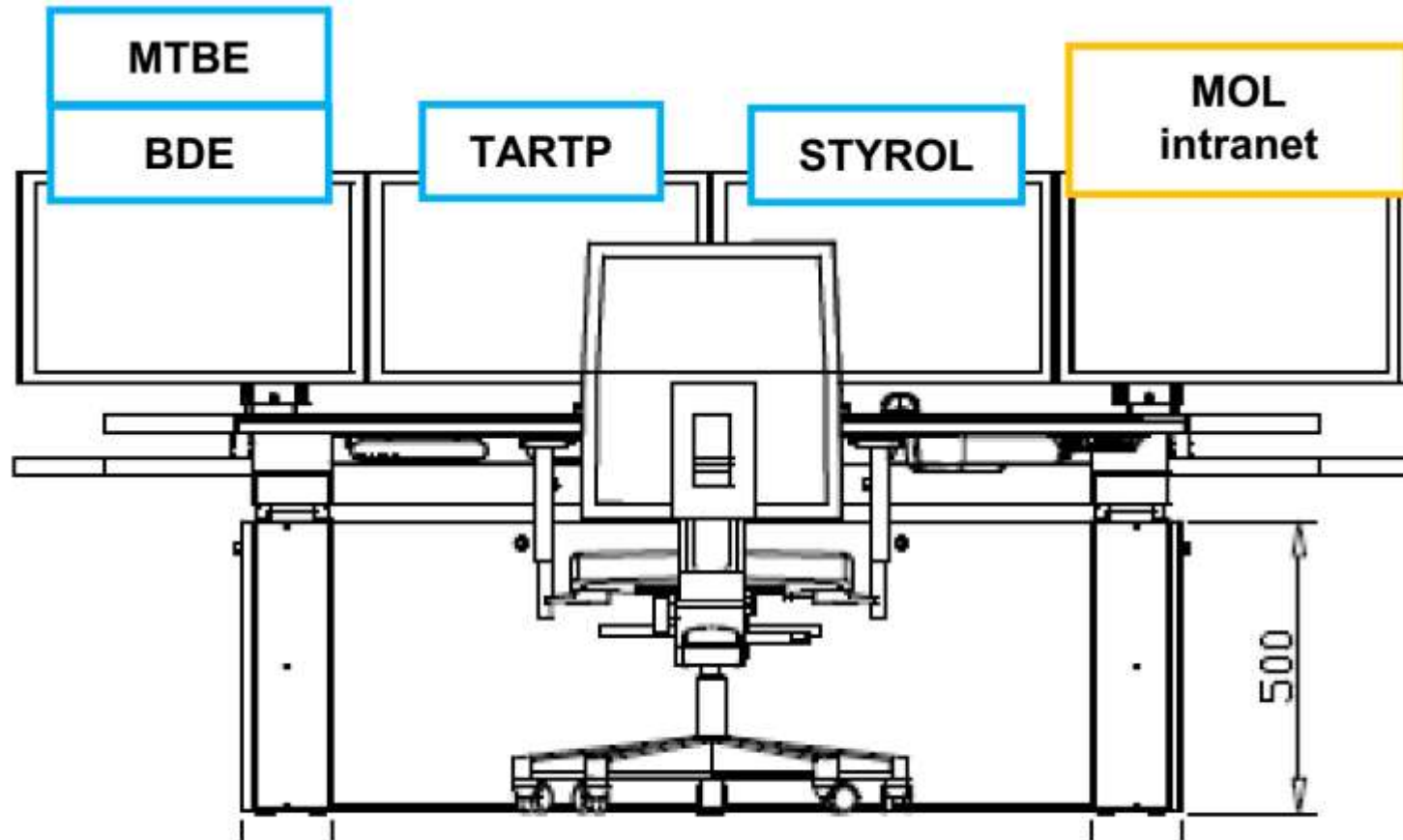
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- ISO 11064 Ergonomic design of Control Centers
- Homogeneous interface
  - DCS technology images from L1 to L4 (Layer)
  - Video camera system images
  - Fire and/or gas monitoring system information
  - MOL intranet data
  - MOL industrial network data (PI, vibration monitoring, AMS)
- Standardized monitor interface (for all DCS vendors)
- Ergonomics of Operators (workstation)
- Workload of operators (150-200 control loops)

# CCR AND WORKSTATION EXAMPLES



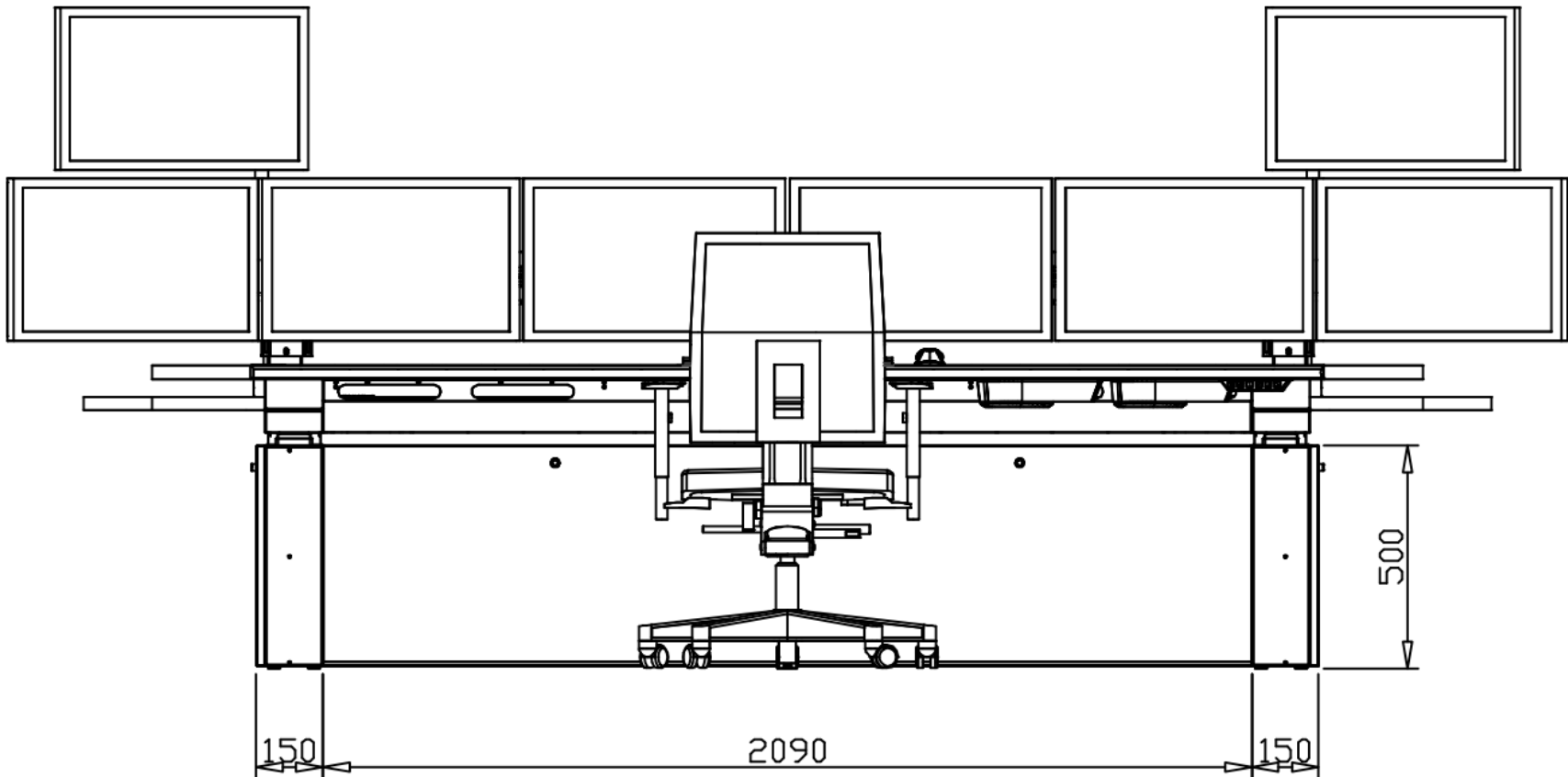
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# CCR AND WORKSTATION EXAMPLES



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