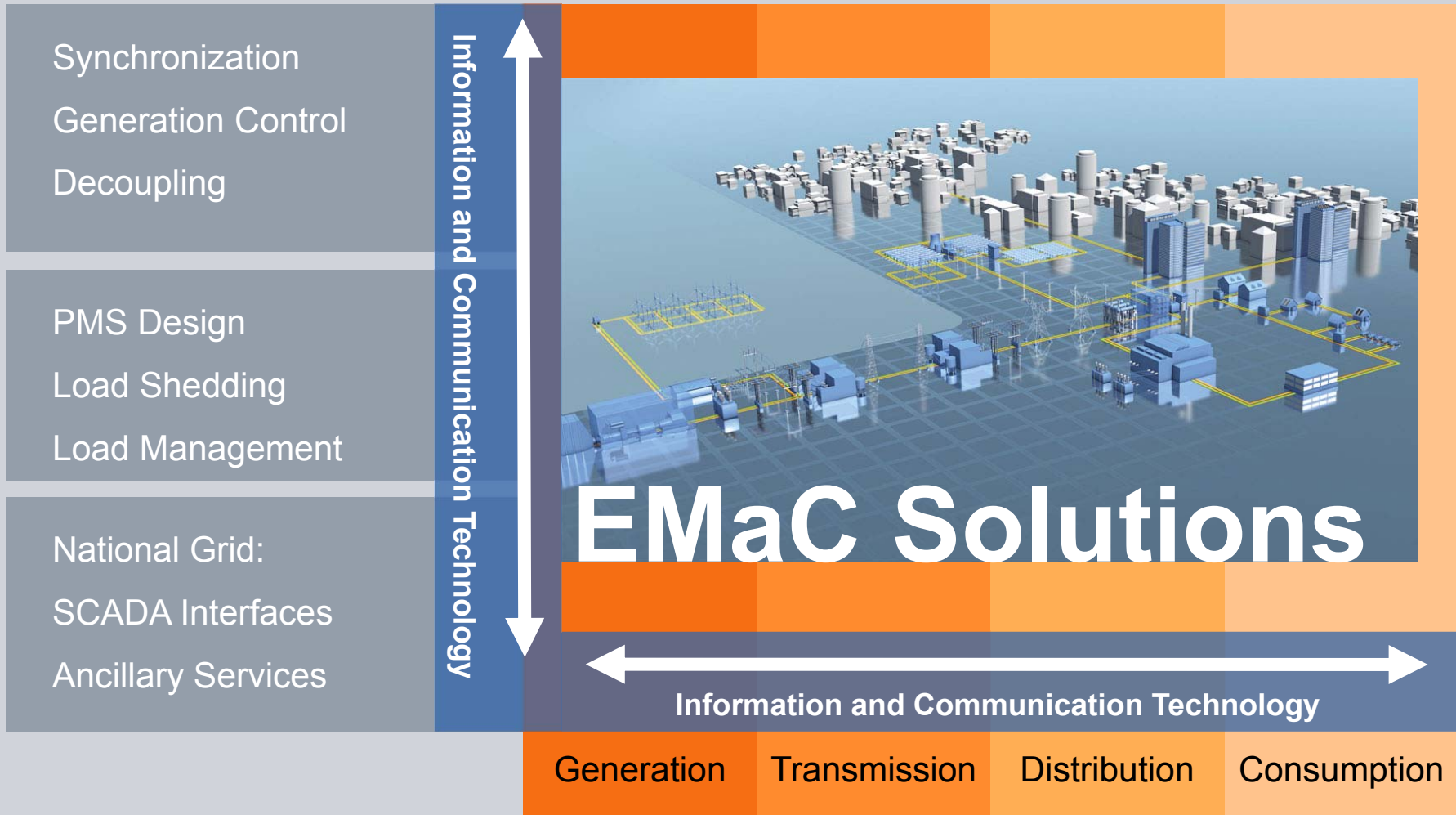


EmaC SCADA, RTU, PMS Solutions

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QAFCO-5 Qatar Fertilizer Company - Saipem



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Refinery Facts

QAFCO-5 Qatar Fertilizer Company Power Management System Project has been started in 2010 for the first time and completed in 2011.



Project Details

Solution

- Redundant PAS CC system with 2 of servers and 1 Client
- Fully Redundant 2 units of SICAM PAS
- Supply of 180 units of 7SJ64 Siprotec Relay
- Load Shedding system with S7-400 PLC for about 120 units of Load.

Initial Situation

- From 01.2010 until 2012
- Long operation times due to lack of remote control of the stations
- Faults mostly informed by customers, long reaction times

Value to customer

- Able to control plant from one location
- Able to see and analyze the faults with real-time time stamps
- Effective Load Management and full control for whole of Refinery

Now/Future

- System extensions with SICAM PAS
- Extension of Load Shedding because of addition units
- Extension of Client workstations for different location

West Qurna2 Power Management System 2012



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Refinery Facts

Power Management System:

- Electrical SCADA System by means of IEC61850 – 1ms accuracy
- Load Management of the (3x40MW) generators
 - Active Power Sharing
 - Reactive Power Sharing
 - Automatic Voltage Control
- Load Shedding System
- Emergency Diesel Generator Control



Project Details

Solution

- Redundant SICAM 230 system with 2 of servers, 2 of UI's.
- 1 units of Redundant SICAM AK 1703
- Load Shedding system with Redundant SICAM S7400 H for about ~ 40 feeders.
- Supply of 80 units of 7SJ64&7SD Siprotec Relay

Initial Situation

- Operating till 2012

Value to customer

- Able to control plant from one location
- Able to see and analyze the faults with real-time time stamps
- Effective Load Management and full control for whole of Refinery

TUPRAS ALIAGA Power Management System (PMS)



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Refinery Facts

TUPRAS has 4 refineries, three of them already use SIEMENS solution for Energy Automation. Tupras Aliaga refinery is the first refinery project for EA TRK.



Project Details

Solution

- Redundant SICAM WinCC with 4 Clients
- 13 units of SICAM SAS for various type of protection relay with different communication protocol (SIEMENS, ABB, Areva, GE) for about 450 feeders.
- Load Shedding system with S7-400 PLC for 380 units of Load
- 16 mt. length of Mosaic Panel
- Supply of 430 units of 7SJ63, 7SD, 7UT&7UM Siprotec relay totally.

Initial Situation

- From 08.2002 until 05.2008
- Old Russian system without any interface
- Many short circuit problems due to lower MV level
- No supervision system for whole refinery

Value to customer

- Able to control plant from one location
- Able to see and analyze the faults with real-time time stamps
- Effective Load Management and full control for whole site of Refinery

Now/Future

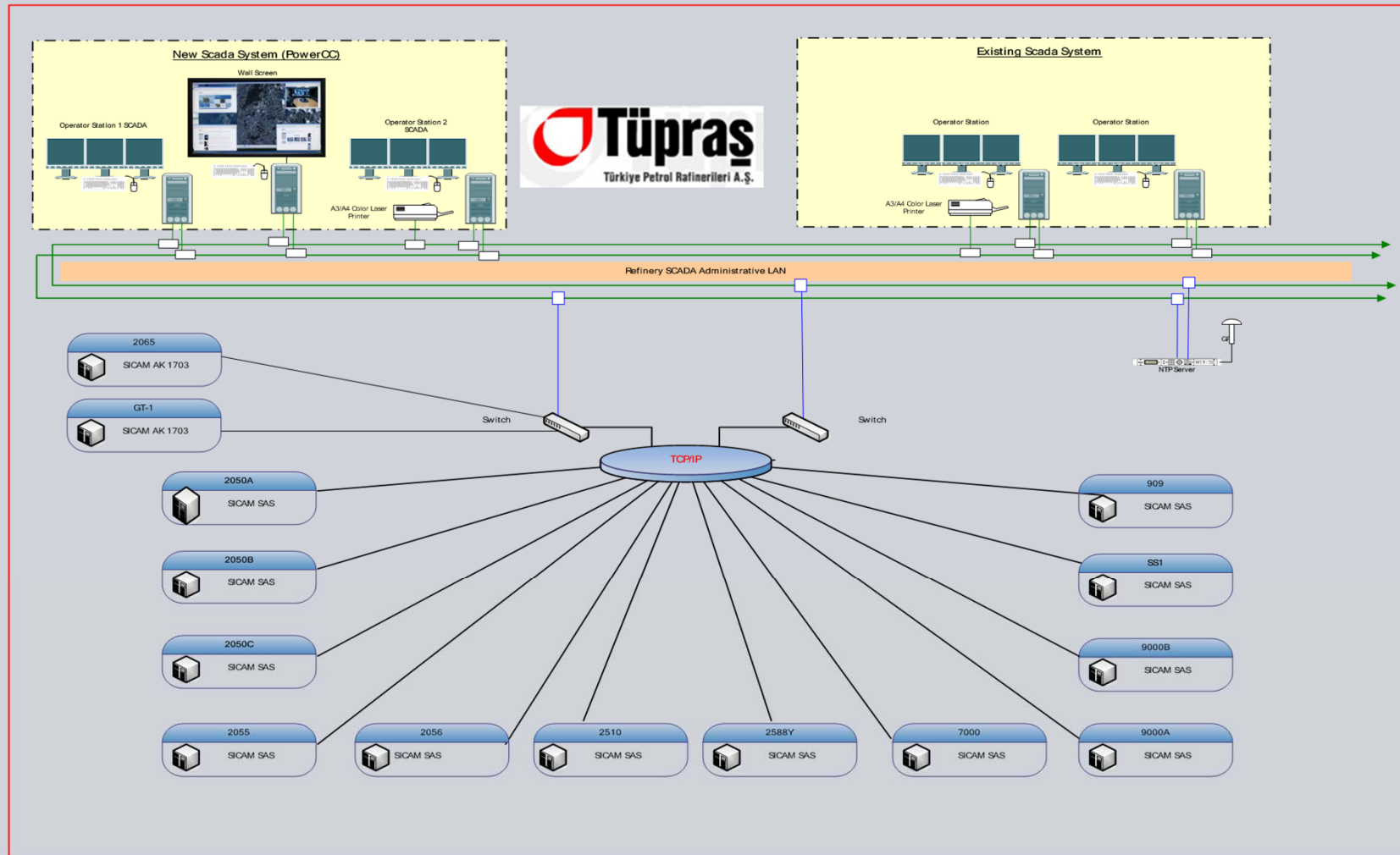
- System replacement with SICAM1703&SICAM POWERCC
- Extension of Load Shedding because of addition units
- Extension of Client workstations for different locations

TUPRAS ALIAGA Power Management System (PMS)



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TUPRAS IZMIT Power Management System (PMS)



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Refinery Facts

TUPRAS IZMIT Refinery Scada Project has been started in 2003 for the first time and activities are still continue by extension and modernization of old systems.



Project Details

Solution

- Redundant SICAM PowerCC system with 2 of servers, 4 of UI's and 2 of Web UI's
- 9 units of SICAM eRTU+7 units of SICAM AK 1703 for about 400 feeders.
- Supply of 194 units of 7SJ64 Siprotec Relay
- Load Shedding system with S7-400 PLC for about 350 units of Load.
- 3X2 mt. length of Barcovision system

Initial Situation

- From 05.2003 until 12.2009
- Long operation times due to lack of remote control of the stations
- Faults mostly informed by customers, long reaction times

Value to customer

- Able to control plant from one location
- Able to see and analyze the faults with real-time time stamps
- Effective Load Management and full control for whole of Refinery

Now/Future

- System extensions with SICAM1703
- Extension of Load Shedding because of addition units
- Extension of Client workstations for different location



Refinery Facts

TUPRAS IZMIT Refinery Resid Upgrading Power Management System (PMS) Project has been started in 2012 for the first time and activities are still continue.



Project Details

Solution

- Redundant SICAM PowerCC system with 2 of servers, 4 of UI's and 2 of Web UI's
- 6 units of SICAM AK 1703 for about 240 feeders.
- Supply of 144 units of 7SJ64 Siprotec Relay
- Load Shedding system with S7-400 PLC for about 120 units of Load.
- Power Quality Management
- 3X2 mt. length of Barcovision system

Initial Situation

- From 01.2012 until 09.2014
- Long operation times due to lack of remote control of the stations
- Faults mostly informed by customers, long reaction times

Value to customer

- Able to control plant from one location
- Able to see and analyze the faults with real-time time stamps
- Effective Load Management and full control for whole of Refinery

Now/Future

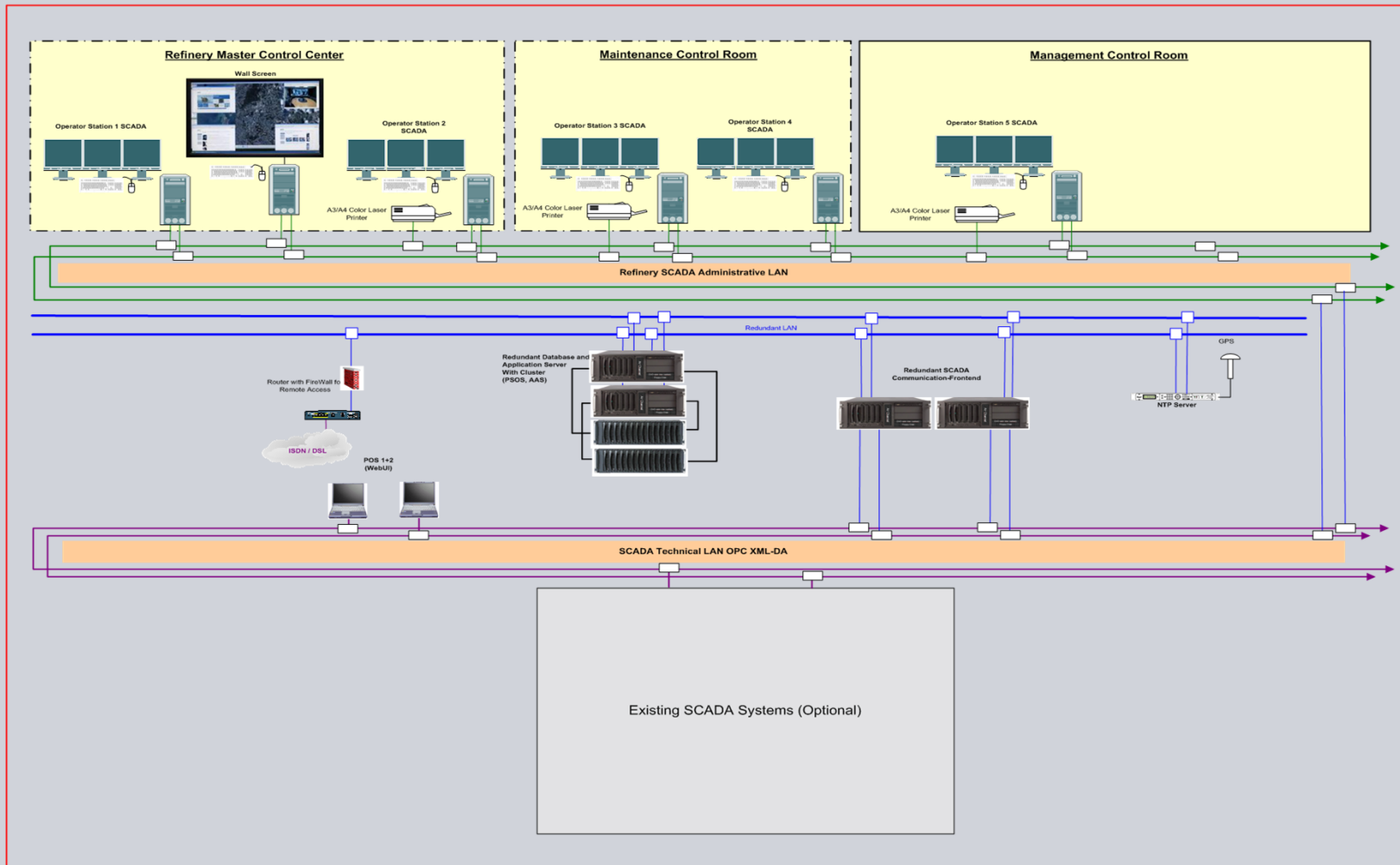
- System extentions with SICAM1703
- Extension of Load Shedding because of addition units
- Extension of Client workstations for different location

TUPRAS IZMIT SCADA/RUP PMS PROJECT-2014



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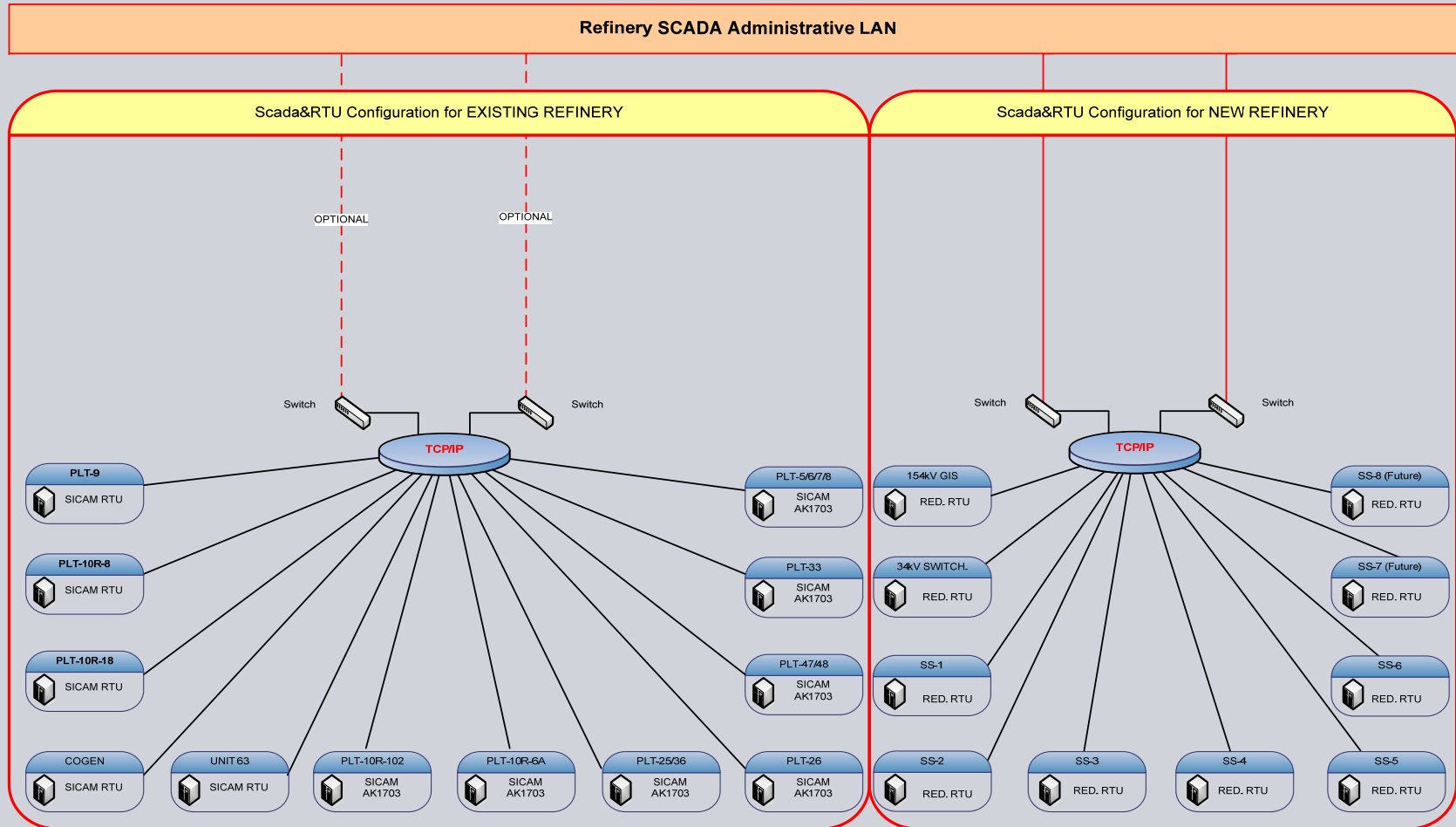


TUPRAS IZMIT SCADA/RUP PMS PROJECT-2014



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TÜPRAS BATMAN SCADA/PMS PROJECT - 2010

Highest Load Shedding Performance
(LS Time < 10ms)



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Refinery Facts

TUPRAS BATMAN Refinery Scada Project will be realized in 2011.

The project is the first application that realizes Load Shedding System via GOOSE Messaging & performance is less than 10ms.



Project Details

Solution

- Redundant SICAM 230 system with 2 of servers, 2 of UI's.
- 1 units of SICAM AK 1703 for about ~ 70 feeders.
- Load Shedding system with RTU.
- 3X2 mt. length of Barcovision system
- Supply of 85 units of 7SJ64&7SD Siprotec Relay

Initial Situation

- Will be implemented at the middle this year
- ABB system with out any interface
- No supervision system for whole refinery

Value to customer

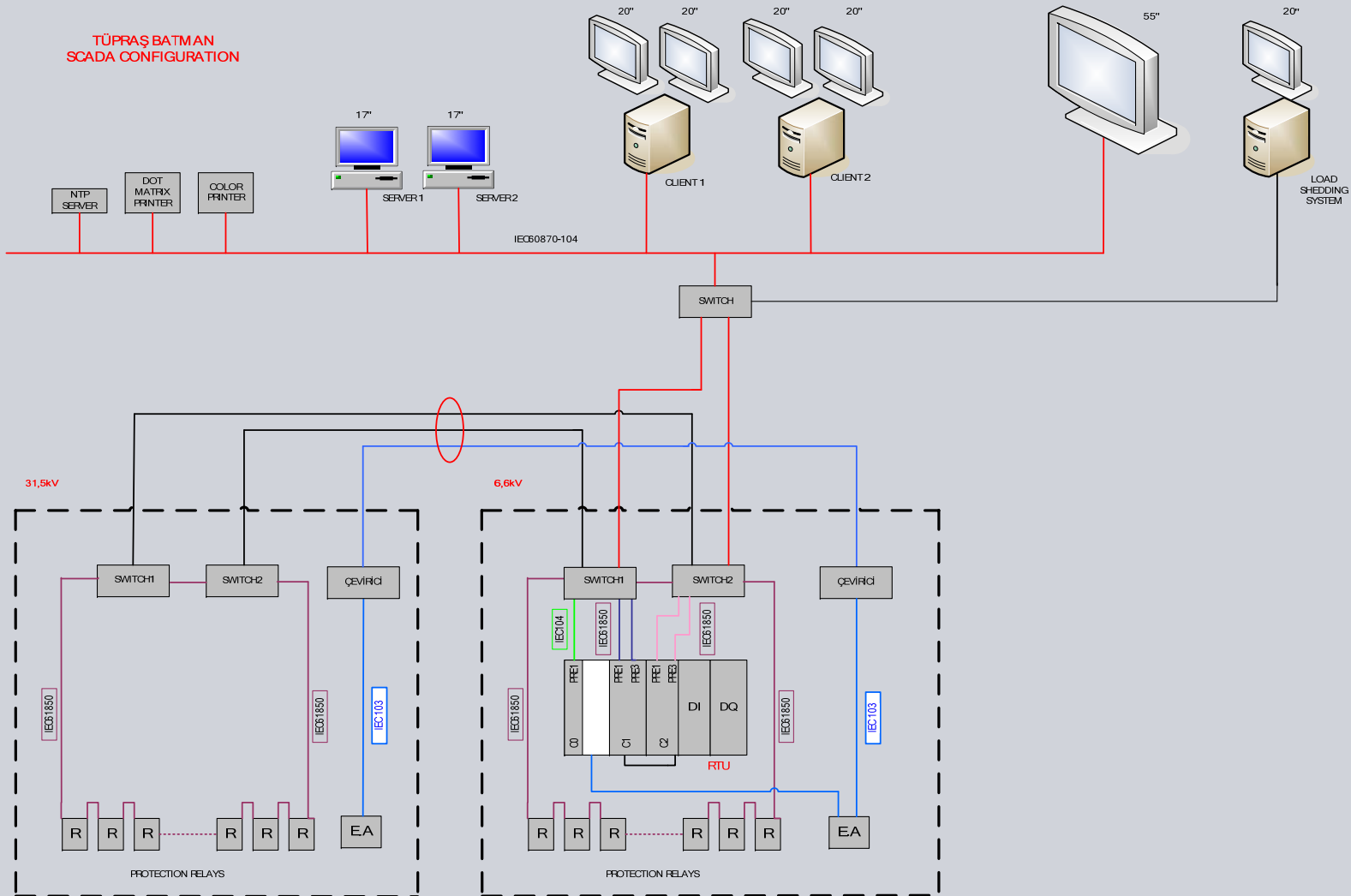
- Able to control plant from one location
- Able to see and analyze the faults with real-time time stamps
- Effective Load Management and full control for whole of Refinery

TÜPRAS BATMAN SCADA/PMS PROJECT - 2010



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Brief Information: About document - EMaC Experiences

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Highlights

All of these references given by this document corresponds to our previous Project experiences. EMaC – Energy Management and Consultancy has been founded August, 2017 and there are no any own business references belonging to the EMaC Mühendislik Ltd. Şti.

EMaC Focus

EMaC is focused on the Power Management System design for the process critical plants such that;

- **Power Plants**
- **Oil & Gas Sector: Refineries**
- **Iron & Steel Companies**
- **National Dispatch Center SCADA Systems**
- **Substation Energy Automation Systems**
- **Sugar Plants**
- **Fertilizer Companies**

EMaC Solutions

Engineering

- Project Management & Consultancy for Energy Management Projects
- Generation Control and Load Management Engineering for Industrial Grids
- Trainings for Sicam Toolbox, Simatic S7, Simatic WinCC, Sicam PAS, Sicam CFC, Industry 4.0
- Communication Solutions based on IEC 60870-5-101/104, IEC 61850, ProfiNET, Profibus DP, OPC, Modbus TCP, Modbus Serial sth. etc.
- Power System analysis: Stability state, short circuit study, transient state calculations and selectivity

Manufacturing

- SCADA, RTU, PLC Based Turn-Key Energy Management Solutions
- Protection Panel Design and Manufacturing
- PLC- RTU Panel Design and Manufacturing
- Digital Fault Recording System design and manufacturing

Consulting

- Power Management System Design Consulting
- Project Management, FAT, SAT Consulting Services
- Site Management
- EPC oriented documentation
- Technical Supervision services

Services

- Engineering Support and Services
- Customer specific software design and services

Other Experiences

EMaC

Energy Management and Consulting



About Us



Co-Founder /Sales Manager

Web : www.emaconsultancy.com

E-mail: tolga.kayserilioglu@emaconsultancy.com

Phone : +90 850 339 59 49

Mobile: +90 530 521 27 60



Co-Founder /Technical Manager

Web : www.emaconsultancy.com

E-mail: suat.ocakci@emaconsultancy.com

Phone : +90 850 339 59 49

Mobile: +90 533 925 48 90

**Address: Uprise Elit Residence
Balikesir Cad. C1 Blok, 36.Kat, No:304
Kartal – Istanbul / Turkey**

The other samples from our experiences

Samples

- Load Management Project: Fauji Fertilizer Company – Sukkur 2009, Pakistan
- Load Management Project: Fauji Fertilizer Company Extension- Sukkur 2011, Pakistan
- Load Management Project: ISDEMIR Iron & Steel Company
The biggest load shedding project including more than 800 CBs, 2008, Iskenderun - Turkey
- Çumra Sugar Plant (Load Management System) 2008, Konya
- Turkey National Grid SCADA System & Power Management (The biggest SCADA System according to the power load : More than 40 GW)

Value to customer

- Able to control plant from one location
- Able to see and analyze the faults with real-time time stamps
- Effective Load Management and full control for whole system

Capability

- System extension with SICAM1703,S7400H Redundant CPUs, Siemens IEDs
- Extension of Load Shedding because of addition units
- Extension of Client workstations for different location