

Engineering Services

Mepstra Engineering and Consultancy Pvt. Ltd- HQ Hyderabad India

Mepstra USA Corporation – IL. USA

About Company:

Company is founded by team of Engineering Professionals with many years of global experience in Engineering, Design, Analysis, Product development, Manufacturing and Services in Mechanical and Electrical Domains.



Located in IT hub of
Hyderabad -India



Multi Domain Expert
Engineers serving
global customers



Secured & dedicated
IT Infrastructure



Value to the customer

2016

Started Operations
with 2 Engineers

2017

10+ Indian Customer
4 Major global accounts
Team Size : 8 Engineers

2018-2019

40+ Indian Customer
20+ Major Global accounts
Team Size : 24 Engineers

2020-2022

65+ Indian Customer
40+ Major Global accounts
Team Size : 55 Engineers

Electrical Engineering Services

Mepstra Engineering and Consultancy Pvt. Ltd- HQ Hyderabad India
Mepstra USA Corporation – IL. USA

Electrical Engineering:

Our Electrical Engineering team consists of experts in complex Electrical systems design, Distribution Panels & Remote monitoring panels design, Controls philosophy & specialized energy-saving power distribution architecture for DATA CENTERS.

We have worked on 30+ large-scale Data centers & Hospitals Power distribution Projects in USA, Europe & Asian markets in the last two years. We keep adding these projects to our bucket.

We are recognized in Datacenter Market as Experts in MV & LV Power distribution systems controls, substation engineering, and Protection & Automation.

We support our global clients in electrical system engineering, power generation, transmission, and distribution, automation, and controls. We also work on harness design, application engineering, prototype building, testing, validations support.

- **Drafting Tools :**

- ✓ AUTOCAD
- ✓ ETAP
- ✓ MICROSTATION
- ✓ EPLAN
- ✓ AUTODESK – REVIT - BIM

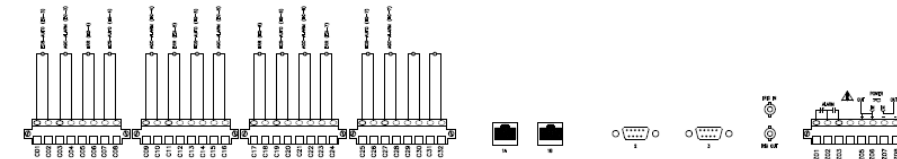
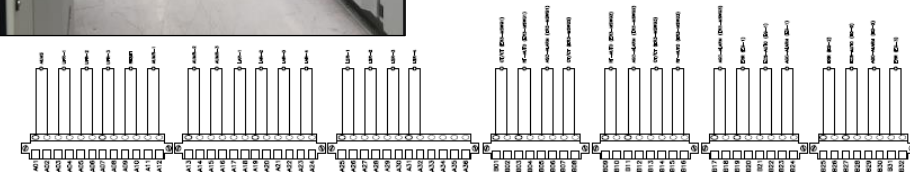
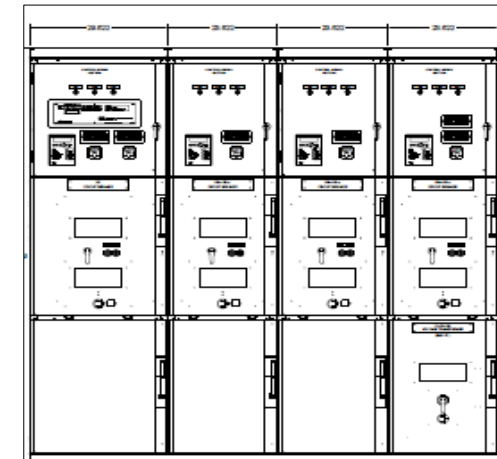
- **FEA Tools**

- ✓ Magnet – Electromagnetic
- ✓ FlowTHERM

Electrical Engineering:

We offer following Electrical Engineering Services:

- Design of electrical Power Distribution systems in LV & HV
- Design of specialized electrical Panels
- Single Line diagrams, 3 Line diagrams.
- Electrical Schematic diagrams
- Detailed electrical system layout design.
- Automation of complete power distribution
- Busbar design & calculations
- Control Panel design
- Project submittal documentation
- 2D & 3D layout design (MEP)
- Protection systems Design



Power Distribution Substation Design (up to 400 /33KV)

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Distribution Substation Design

We offer the following Engineering Services:

We support the design of Indoor and outdoor GIS substations up to 36KV with multiple configurations.

- ❖ **Power Load calculations**
- ❖ **Short circuit coordination study**
- ❖ **Project relay coordination study**
- ❖ **Harmonics Analysis**
- ❖ **All Devices Coordination**
- ❖ **Insulation coordination study**
- ❖ **Arc Flash Study as per OSHA and IEEE guidelines**
- ❖ **Substation Layout Design (IEEE 605)**
- ❖ **Communication and Monitoring system including Smart Devices**
- ❖ **Earthing System Design (IEEE 80)**
- ❖ **Surge and Lighting Protection Design**
- ❖ **Protection and Controls Design as per ANSI codes**



Plant Engineering

Mepstra Engineering and Consultancy Pvt. Ltd- HQ Hyderabad India

Mepstra USA Corporation – IL. USA

Plant Engineering:

- We offer diverse industrial plant design experience across the power, process and oil and gas industries. We deliver high quality 3D model-based plant and process layout, mechanical Design Services.
- Our design engineering services are spread over the full spectrum of the plant lifecycle, including Engineering design (ED), Detail engineering (DE), and field services support.
- Our experienced mechanical engineers will support customers in MEP layout, designing conveyor systems, equipment layout, drafting services, assembly guides and documentation



Process Engineering

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Process Engineering:

Process automation has evolved significantly over recent years. When applied with systematic planning, process automation in chemical, food, steel, oil and gas, paper etc industries substantially improves performance and reduces the cost of operations. Most processes are manual, deterministic, and repetitive, and more than 70% can be automated using automation hardware and software. Processes that have greater complexity and require human judgment automated by 15–20% through strong collaboration between software and human workers.

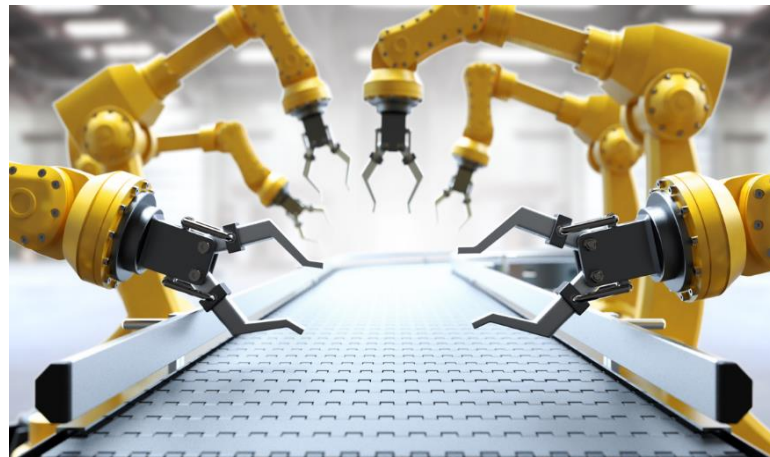
Process Automation Services

- Process layout design
- Equipment layout design
- Conveyor system design and automation
- Power Distribution Automation
- Substation Automation – DCS System
- Smart Grid System



Robotics Automation Services

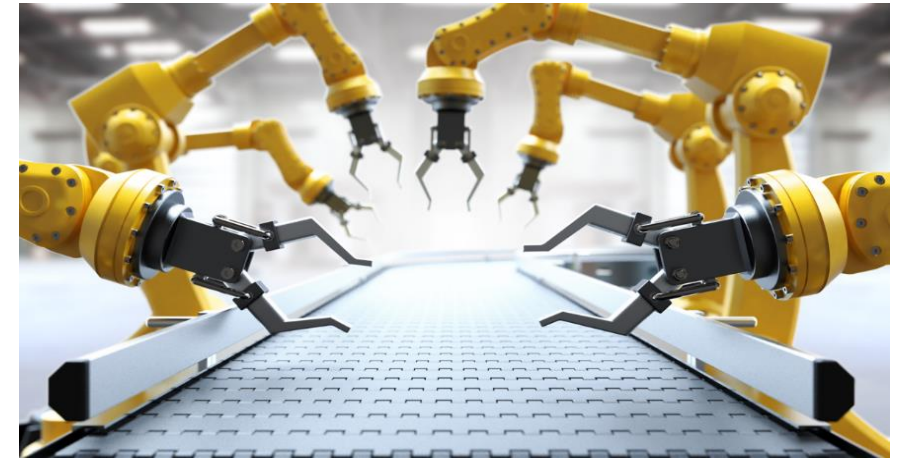
- Controls System Design
- Instrumentation components specification
- PLC and Robotics Programming



Process Engineering:

We offer following Process Engineering Services:

- Process layout design
- Equipment layout design
- Conveyor system design and automation
- Power distribution system layout
- Design of fixtures and tools for robotic system
- Calculations and flow diagrams creation
- Controls system design and documentation support
- Pneumatic, Hydraulic and Servo based special purpose machine design



Data Center Engineering Services



Mepstra Engineering and Consultancy Pvt. Ltd- HQ Hyderabad India
Mepstra USA Corporation – IL. USA

MEP Services:

We offer following Services for Customers Globally

Design Process :

- Customised Solution
- Lean Design
- Use of latest technologies
- Green approach – Reuse, recycle & footprint
- Monitoring and Control automated system
- Quality check – Peer reviews
- Start-up and commissioning
- Facility Maintenance support

Mechanical Design Services

- Heat load calculation
- Equipment Layout Design
- Project Management
- Piping Design
- Ventilation System
- Control Systems
- Air distribution System

Electrical Design Services

- HT/LT Power Distribution
- Equipment Layout Design
- Reserve Power calculation
- Cable/Bus raiser systems
- Panel & cable schedules
- Control Systems Design
- Earthing/Lightning Protection/ Surge Protection
- Lighting layout
- Complete steel Power house modelling

Tools & Software:

- ☐ Autodesk – Revit
- ☐ AutoCAD – Mechanical
- ☐ PTC Creo –cabling
- ☐ AutoCAD – Electrical
- ☐ Solid works
- ☐ PTC Creo – Solid modelling

Data center Solutions

We offer following Services for the Data centres

- Complete Design of state-of-the-art power Distribution system
- Engineering Project Management
- MEP Design Support
- Redundant architecture automation & controls design
- Supply, Installation, modification, upgradation of existing PLC/SCADA Automation Systems
- Factory witness tests & system level Reviews
- Key Documents creation : SOO, Test Matrix, MOP's and O &M
- Startup and commissioning onsite support –Level 3, 4 & 5 commissioning support.



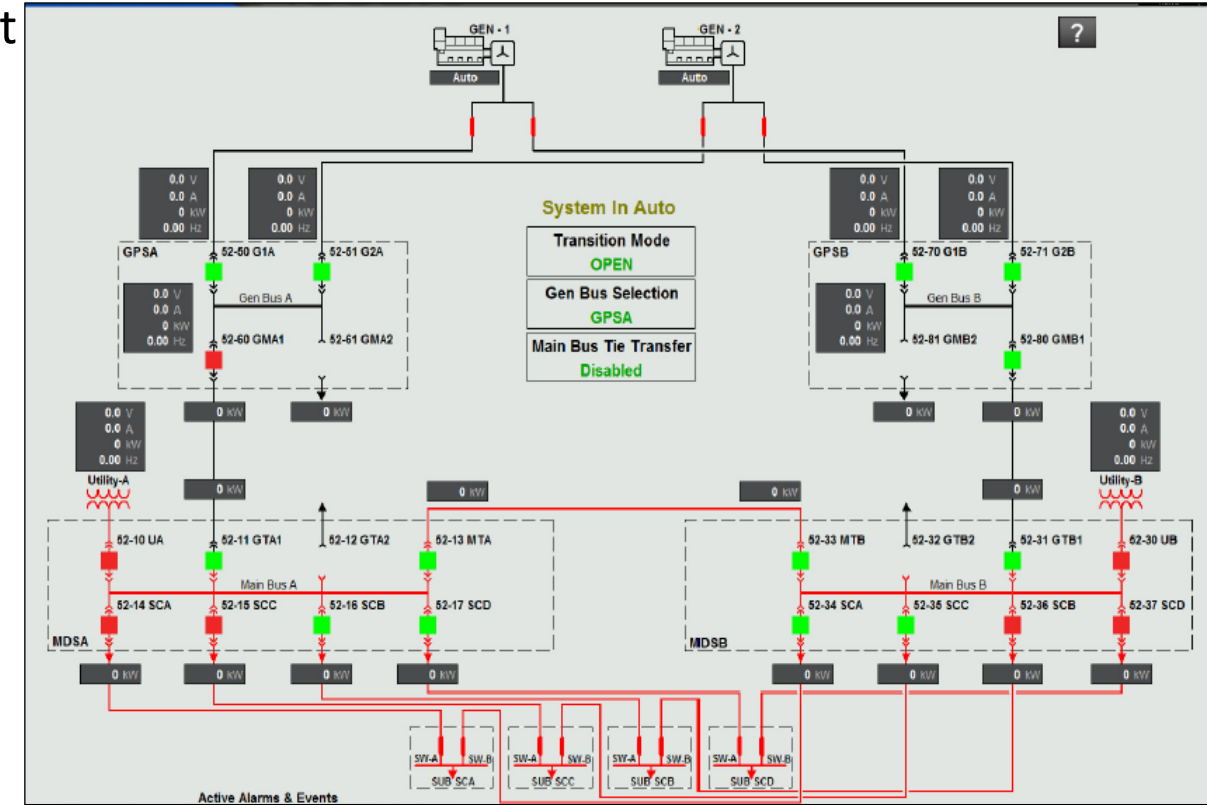
An Integrated Approach to Operational Efficiency and Reliability of Data Centers

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Power Distribution Automation

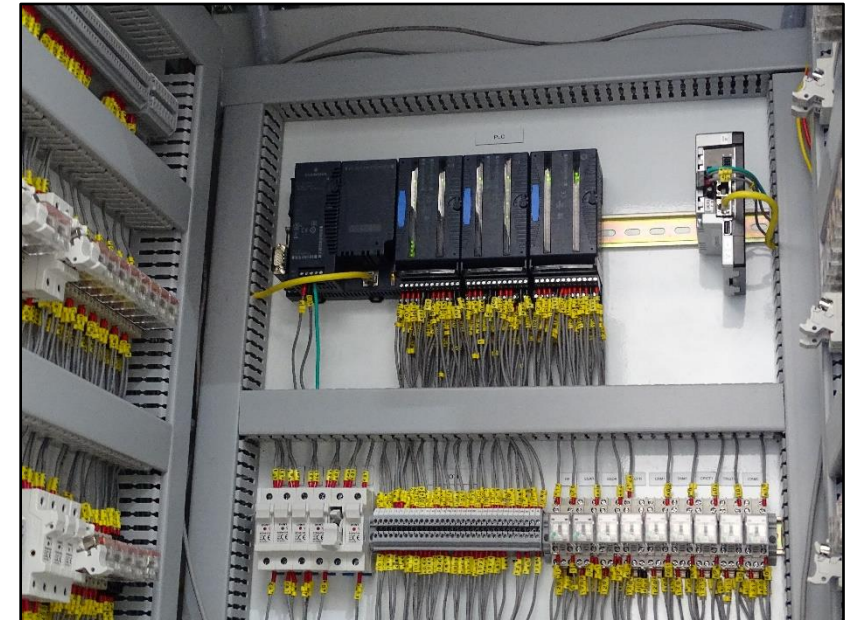
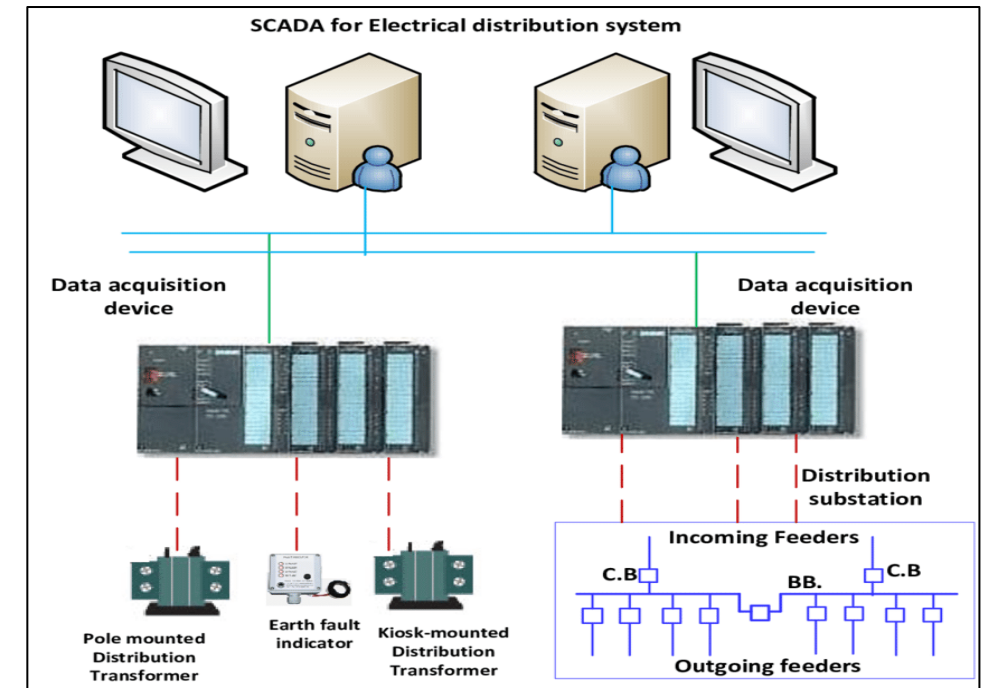
An Integrated Power Distribution Approach to Operational Efficiency & Reliability provides prescriptive measures for better data collection, integration, and change management practices throughout the entire facility lifecycle

- ❖ Lists and defines required operational documents for turnover to Facility Operations team
- ❖ Recommends employing a commissioning consultant from schematic design phase through 'Go Live' turnover
- ❖ Presents a formulated approach for producing a holistic facility sequence of operations manual that is delivered to the Facility Operations team at turnover
- ❖ Defines and outlines Sequence of Operations format



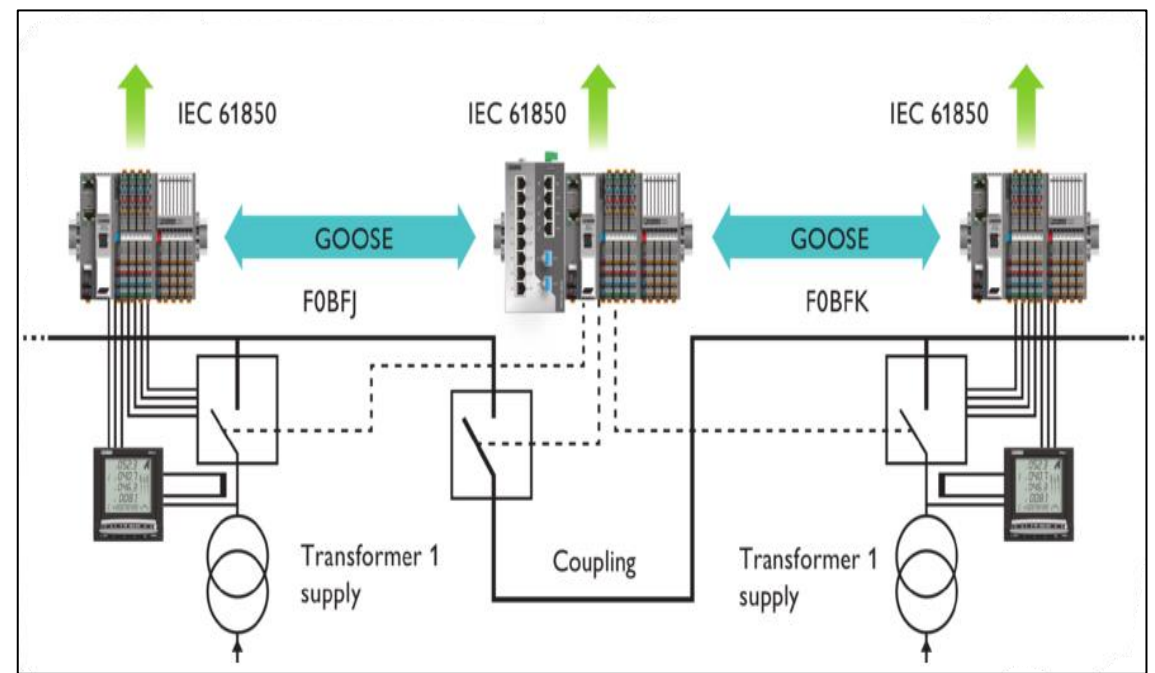
Controls Philosophy

- Automation control philosophy is TIER based in data centres. Resiliency, Reliability and Redundancy differentiates.
- TIER 4 data centres employ full redundancy including Electrical, Mechanical and HVAC.
- These control systems are designed to be fully maintained while the data centre is fully functional.
- Most important point is to be able to achieve the best PUE number. Employing SCADA systems provides visual Dash Boards for DC Managers to run data centres in the most cost-effective way.
- IEC 61850 defines communication protocols to provide communication between different equipment located in a substation, such as protection, control, and measurement equipment, as well as (IEDs) intelligent electronic devices.



Goose Technology

IEC61850 is a very large standard with many functions & services within it. One of the unique functionalities supported by IEC 61850 is peer-to-peer communication commonly known as **GOOSE** (Generic Object-Oriented Substation Event). Generic Object-Oriented Substation Event is the main way to specific communication services mapping. GOOSE is a method of exchanging messages between IEDs over a local Ethernet network and it is suitable for time critical applications such as protection functions in substation



SCADA

SCADA protocols are designed to be very compact. Many are designed to send information only when the master station polls the RTU. Typical legacy SCADA protocols include Modbus RTU, RP-570, Profibus and Comital.

Standard protocols are IEC 60870-5-101 or 104, IEC 61850. These communication protocols are standardized and recognized by all major SCADA vendors.



Industrial Automation & Controls

Mepstra Engineering and Consultancy Pvt. Ltd- HQ Hyderabad India
Mepstra USA Corporation – IL. USA

Automation & Controls:

Our Automation & Controls team consists of experts in Rockwell Automation Products (AB), GE Intelligent platform PLCs & SCADA, Schneider electric PLCs & SCADA, and Siemens

The team is having 20+ years of experience in the Automation & Controls Domain

We work with Process Industries, Data centers, Hospitals, Airports, Wastewater treatment plants, Panel builders & govt organizations in USA, Europe & India

We provide a wide range of automation, controls, retrofit, modification & custom solutions to meet customer requirements. Controls platform, systems & Services are offered with extensive knowledge and proficiency



We offer following Services

- ### UTILITY INTERCONNECT
-
- The diagram illustrates the utility interconnect system, showing the flow of power from three input busbars (W4521, W578, W579) through transformers, meters, and various equipment. The system includes three transformers, each connected to a meter. The meters are connected to various equipment, including generators, ATs, MCCs, chillers, RT pumps, HVAC, general service lights, and UPS units.
- Input Busbars:**
- W4521
 - W578
 - W579
- Transformers and Meters:**
- TRANSFORMER 1: METER 230-001-600
 - TRANSFORMER 2: METER 230-160-724
 - TRANSFORMER 3: METER BMC110 732899
 - TRANSFORMER 4: METER BM000117 740078
 - TRANSFORMER 5: METER A000078 800406
 - TRANSFORMER 6: METER A000078 102800
- Equipment:**
- GENERATOR
 - AT081 ZENITH
 - AT082 BRETROL
 - AT086 ZENITH
 - AT088 ZENITH
 - AT084 ZENITH
 - AT083 ZENITH
 - PS082 ZENITH
 - MCC PH1
 - MCC PH2
 - CHILLER 566
 - CHILLERS 384 RT
 - RT PUMPS
 - HVAC 3 SECOND FLOOR
 - GENERAL SERVICE LIGHTS PWR 600A
 - UPS #1 3000A
 - UPS #2 3000A



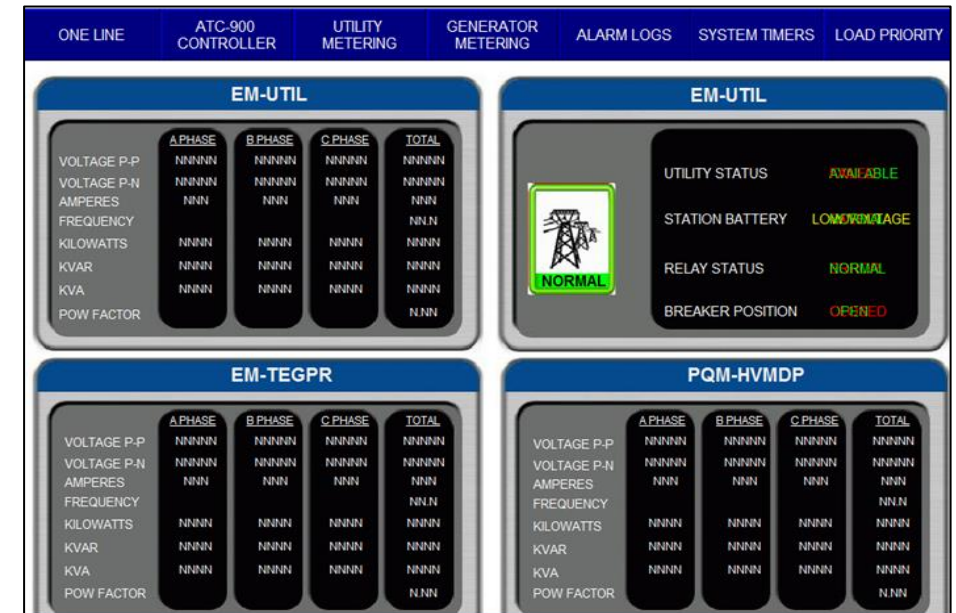
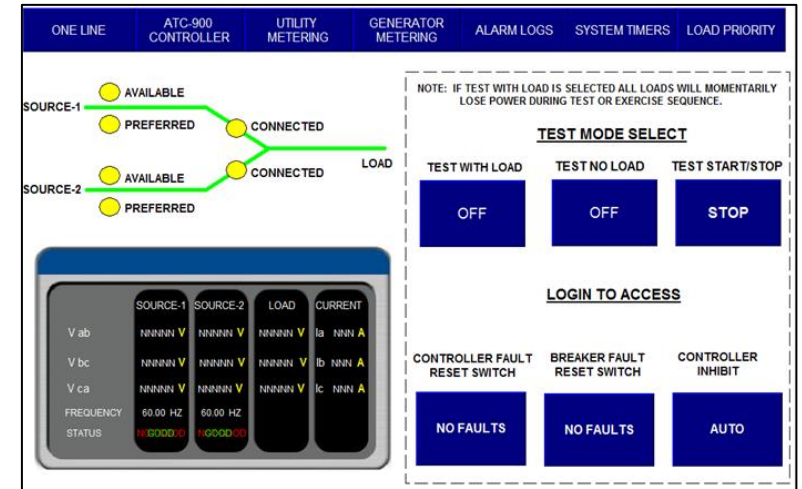
Key Projects Completed:

1. Ensono, Illinois USA : Replacement of GE 90:30 with Rx3i PLC, HMI & SCADA - Project Value : INR 1.4 Cr.
2. Via West , Inc. USA : Start-up & commissioning of Diesel power plant controls & SCADA system . Project Value : INR 0.5 Cr.
3. CenturyLink, USA: Review & upgradation of control system for onsite power generation. Project Value : INR 0.5 Cr.
4. Flexential Data Centres – Multiple Locations in USA –Additional Generators, Upgradation of the Controls – Project Value -3.5 Cr.
5. Kyocera Corporation, USA - Upgradation of the PLC's and Controls, Recommissioning of complete Power Distribution System - 1.8 Cr.
6. Pioneer CEP, USA: Design, Engineering , Programming, start-up & commissioning of GCP for El Paso Utility company. Project Value : INR 0.32 Cr.
7. Apple Data Center in Europe - Development of control strategy, PLC / SCADA Simulation Procedure Factory acceptance testing. Project Value : INR 0.38 Cr.
8. Apple Data Center in USA: Development of control strategy, PLC / SCADA Simulation Procedure Factory acceptance testing. Project Value : estimated 0.62 Cr.

Case Study - 1

Project – Automation of the Water Treatment plant

- Customer Location – USA
- PLC : Control Logix
- Software for Logic: Studio 5000 (Version-31)
- Software for SCADA: Factory Talk View (8.10).
- No. of I/O : 72 I/O + (Analog Devices using CMM Card)
- Communication : Ethernet, Modbus TCP/IP.
- Analog Devices : Power Quality Meter(Eaton), Energy Meter(Eaton).
- ATS : ATC-900 (Eaton).
- HMI Hardware : Panel View Plus 7 15"



Case Study - 2

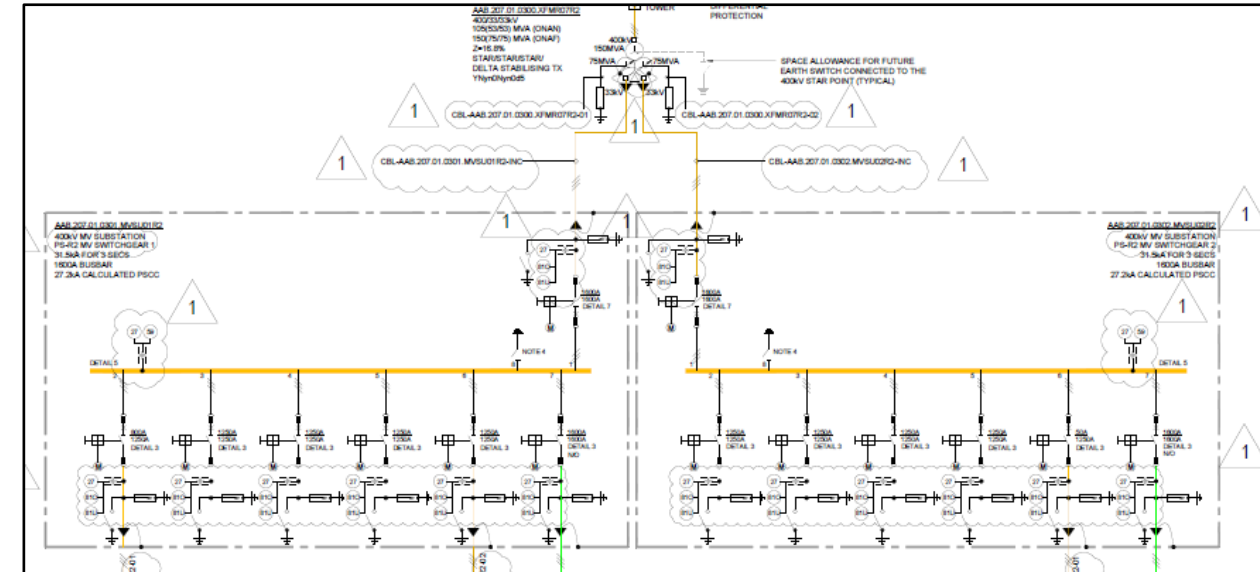
Project – Pumping Station Automation

- **Customer Location – USA**
- **PLC : Replacement of Control Logix(Rockwell) to RX3i (GE PACS System).**
- **Software for Logic : Studio 5000 /Proficy Machine Edition.**
- **Software for SCADA: Factory Talk View /Proficy Machine Edition.**
- **No. of PLC's : Master-PLC with redundancy, 2-Remote I/O PLC and 4-PLC for Generator.**
- **Communication : Ethernet, Modbus TCP/IP.**
- **Analog Devices : Power Quality Meter and Generator Synchronization modules.**
- **HMI Hardware : Panel View 1000**

Case Study - 3

Project – Substation Power Distribution System Engineering

- Customer Location – USA
- Substation Type and Rating – 400KV /33KV, 150MVA transformers- 4 numbers
- Each Transformer is feeding to two Switchgears, Busbar rating 1600A
- Scope of Work
 - ❑ Engineering review of the MV Switchgear Design
 - ❑ Manual and Automated controls through Schneider PLC/SCADA systems
 - ❑ Outstation control Panels reviews
 - ❑ Creation of SOO and test Matrix
 - ❑ Creation of SLD drawings
 - ❑ Protection and Controls System Design



Machine Automation and Robotics

Mepstra Engineering and Consultancy Pvt. Ltd- HQ Hyderabad India
Mepstra USA Corporation – IL. USA

Machine Automation and Robotics

We have team of experienced engineers having 10+ years of experience in Machine Automation

We work with Special purpose machines manufacturers from global locations and build custom made automation solutions including controls, Sensors, electrical, drives and communication.

Key Robotic Solutions

- We can integrate major Industrial Robots manufacturers like ABB, Yaskawa, Fanuc etc
- We offer Vision based automation technology for the robotics
- Complete control system including communications and motion controls.
- Motion based applications such as palletizing machines, labelling machines, Packing and Inspection Areas

Key Machine Automation Solutions

- Customized software tools development to convert 3D models into XYZ or LRA inputs for the CNC machines
- Control Panel Design and Development, Drives system Design
- PLC and HMI Programming
- Documentation Services
- Centralized Monitoring of the machines



Automation & Controls:

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Team is having 20+ years of experience in Automation & Controls Domain

We work with Process Industries, Data centers, Hospitals, Airports, Wastewater treatment plants, Panel builders & govt organizations in USA, Europe & India

We provide wide range of automation, controls, retrofit , modification & custom solutions to meet customer requirements. Controls platform, systems & Services are offered with extensive knowledge and proficiency

Key Projects:

- Replacement of GE 90:30 with Rx3i PLC, HMI & SCADA
- Start-up & commissioning of Diesel power plant controls & SCADA system
- Review & upgradation of control system for onsite power generation
- Design, Engineering , Programming, start-up & commissioning of GCP for El Paso Utility company.
- Development of control strategy, PLC / SCADA Simulation Procedure Factory acceptance testing.



Electrical Panels Manufacturing

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LV/MV Panels and Control Panels Manufacturing

Mepstra group has established state of the art electrical Panels manufacturing facility in Industrial Park Adibatla, Hyderabad.

Mepstra Group & its associates suppliers (ISO 9001:2008) have state of the art manufacturing, assembly, testing, packaging and delivering capabilities.

Mepstra Group signed MOU with C&S electric as manufacturing partner for IEC 61439 LV Panels.

We have designed, developed and exported MV ATS to Qatar for US military Projects

Mepstra can manufacture following components and products/prototypes

- LV and MV Panels (As per IEC standards)
- Control Panels
- Electronics- PCB,s embedded programming, housings, pre engineered wire assemblies.
- Aluminum parts
- 3D Printed Parts for proof of design
- Stainless steel parts for Medical and food Industry



Equipped with CNC Turret Punching, CNC Laser cutting & CNC Forming Machines



Power Distribution Start-up & commissioning

Mepstra Engineering and Consultancy Pvt. Ltd- HQ Hyderabad India
Mepstra USA Corporation – IL. USA

Start up and commissioning Services

We offer Start up and commission services (Level 2 to 5) for

New Systems, Upgradation, Modification & retrofit services

- Data centers Power distribution system
- Hospitals & Medical centers Power distribution
- Commercial establishments Power distribution & building management system integration
- Process Automation (Pharma, Airports)
- Onsite Power generation systems
- LV & MV Panels
- LV & MV equipment's
- As per Regulatory standards for start up and commissioning of green building



Customers

Mepstra Engineering and Consultancy Pvt. Ltd- HQ Hyderabad India
Mepstra USA Corporation – IL. USA

Key Customers

Data Centres

ensonio™

viawest

EQUINIX

CenturyLink™

FLEXENTIAL



Switchgear

S&C ELECTRIC COMPANY
Excellence Through Innovation

FIBREBOND®

EI pb
PowerBar
E+I ENGINEERING GROUP

PIONEER
POWER SOLUTIONS

GE
Industrial Solutions

ABB

Contractors

Sturgeon
ELECTRIC

NUWAVE
ELECTRIC

Shapoorji Pallonji

Greenko

AMARA RAJA
Gotta be a better way

Automation

PAS Professional
Automation Services

MEGAWIN CORPORATION

MHI
McCLURE-HILL
INCORPORATED
A Colorado Company Since 1978

KYOCERA

Banner Health

Others

WOXSEN™
SCHOOL OF BUSINESS

Coca-Cola

EBIX

M+W GROUP

ARUP

O'HARE
INTERNATIONAL
AIRPORT

Engage with us for Outsourcing opportunities

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