



Preventive Maintenance Optimization (PMO) at ShGP

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Outlines

- ❖ **Definitions**
- ❖ **Team Formation**
- ❖ **Methodology**
- ❖ **Findings**
- ❖ **Major Accomplishments**
- ❖ **Optimization Benefits**
- ❖ **Conclusion**





Preventive Maintenance

Servicing equipment or a component of equipment at regular intervals regardless of condition for the purpose of bringing the equipment back to a healthy condition before they fail.





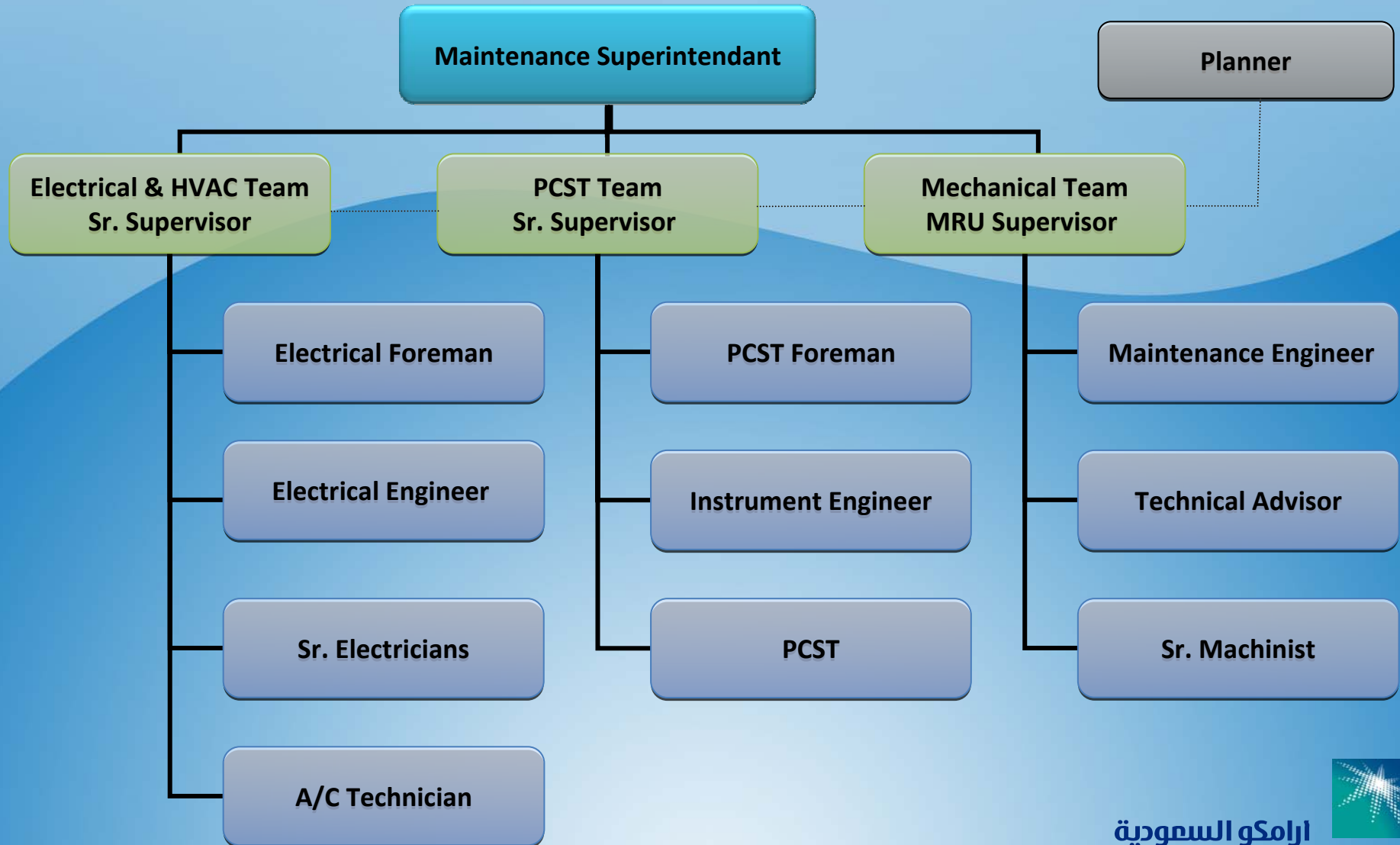
PMO Definition

Application of a systematic approach to review, evaluate and analyze PM tasks to have preventive maintenance more cost effective and reliable.





Team Formation





Methodology

Collect Data



PM Necessity



Analyze PM Task



Optimize PM Task



Recommendation





Data Collection

PM Database Collection will be sorted out as per its craft (SAP) & PM Group

- During the Optimization, It simplified more:

- Equipment criticality
- Mandatory or legal requirements (GI, Metering...)
- PM cycle requirements
- Instrument PM Classes (Calibration...)
- Electrical PM Classes (Meggering...)
- Mechanical PM Classes (Lubrication...)
- PM required shutdown
- PM duration
- PM text requirements
- PM under equipment condition program
- PM requirements as manufacturer recommends





Analyze PM

Why I need to do this PM?

- Is it based on equipment failure/ history analysis?
- Is the equipment having a known failure rate?
- What is my best judgment on this PM?
- Check for PM duplication with other PM?
- Check for the equipment existence, as it may be removed or upgraded?
- Check for PM task to mothballed equipments!
- Is the PM task already performed by operation!
- Is the PM task covered by other means?





Findings

- ❖ Equipment not covered in PM program
- ❖ Equipment with irrelevant PM
- ❖ Critical checks were missing in PM Task Sheet
- ❖ High PM frequency on non-critical equipment
- ❖ Duplication of equipment lubrication





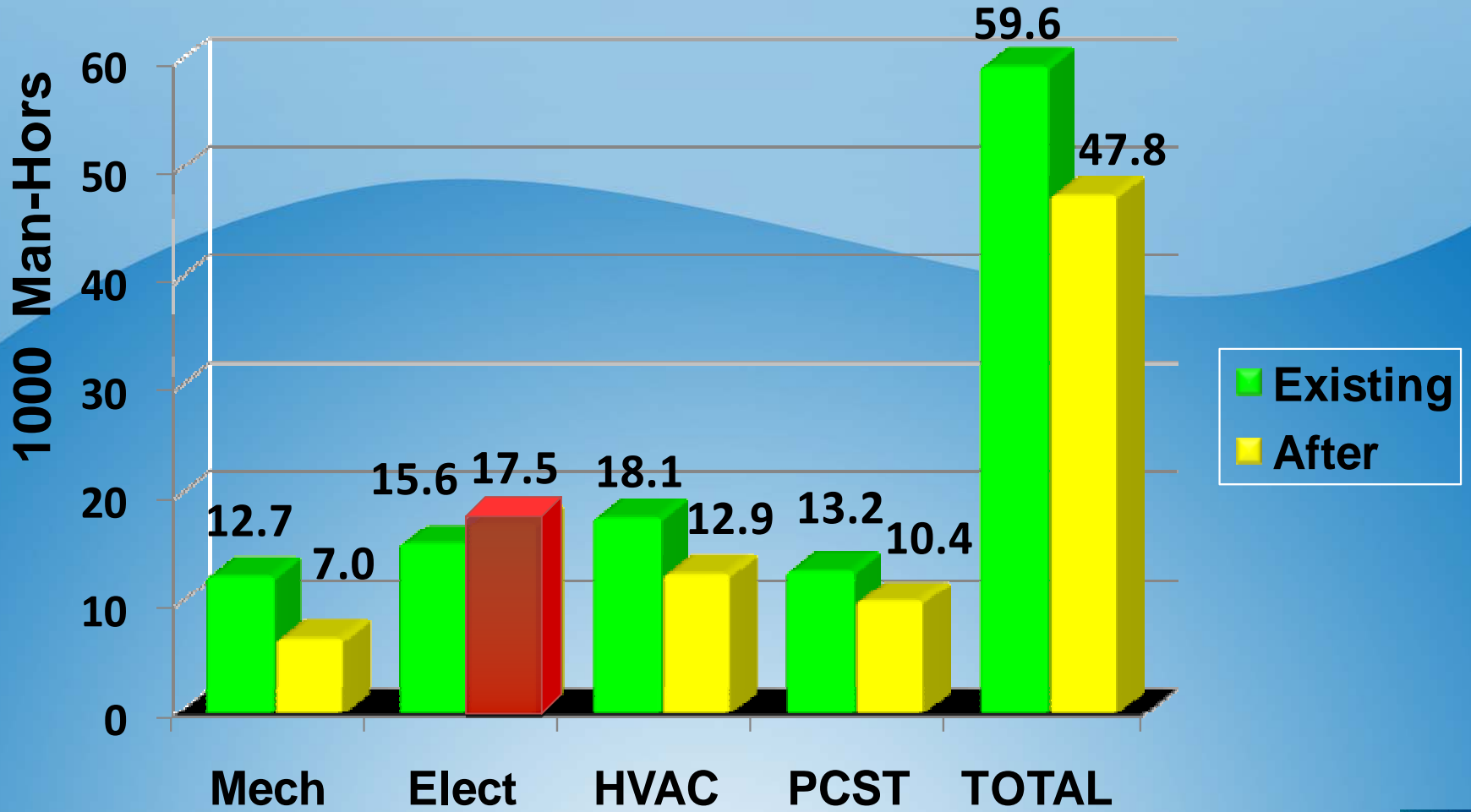
Major Accomplishments

- ❖ Added missing equipment
- ❖ Removed none value added activities
- ❖ Adjusted PM frequencies
- ❖ Optimized planned man-hours
- ❖ Identified new technologies for PM





Man-Hours Optimization





Optimization Benefits

- ❖ Eliminate non-value added activities
- ❖ Add missing critical activities
- ❖ Enhance equipment Reliability / Availability
- ❖ Enhance PM Program effectiveness





Optimization Benefits (cont)

- ❖ Enhance manpower and resources utilization
- ❖ Attain Best In Class





Conclusion

- ❖ **PMO is a dynamic process**
- ❖ **Annual PM review**
- ❖ **PMO every 3 years**
- ❖ **Cost saving**





Thank You





Video Scope Device:

- **Function:**

visual inspection of HV motor windings (21,000 HP ABB Motors).

- **Advantage:**

Eliminate dismantling motors for regular inspection.

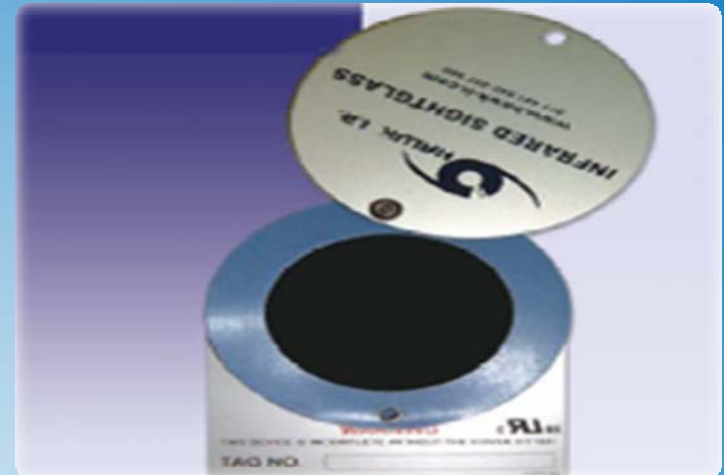




Infrared Sight Glass & Camera:

- **Function:**
 1. Inspection switchgear internals without opening panel doors
 2. Thermal Inspection for all substations
- **Advantage:**

Avoiding electrician exposure to live parts





Flash Protection PPE:

- **Function:**
Protecting technicians from flashovers.
- **Advantage:**
Providing safe working environment.





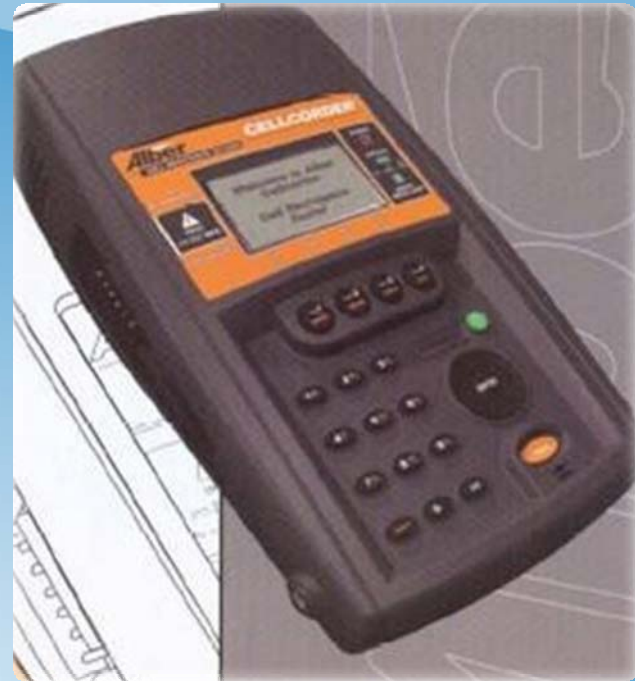
Battery Tester:

- **Function:**

**Measuring resistance of
battery cells**

- **Advantage:**

**Reducing PM hours for
battery banks**





Battery Capacity Test:

- **Function:**

Testing UPS battery capacity annually

- **Advantage:**

Reducing PM hours for complete battery banks





Digital Hydrometer:

- **Function:**

**Measuring cell specific gravity
and temperatures**

- **Advantage:**

**Reducing PM hours for battery
banks & providing accurate
readings**

