Development of Asset Management Plans for RE O&M

Bringing ISO 55001 closer to real assets

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Agenda

- Project Background
- ISO 55000
- What is an Asset Management Plan
- Key Requirements for Asset Management Plan
- AMP Development Process
- Key AMP Outcomes
- Success Factors
Project Background

- Project in local renewable energy industry
- One wind farm and two solar PV plants within scope
- Plants constructed in REIPPPP round 1
- EPC warranty period expired
- 18 years remaining in Power Purchase Agreement

- Project employer opted for an extensive top-down management system development
- ISO 55001 provided the ideal framework for this
What is ISO 55000?

“This international standard specifies the requirements for the establishment, implementation, maintenance and improvement of a management system for asset management, referred to as an ‘asset management system’.”

ISO 55001:2014
ISO 55000:2014
AM – Overview, principles and terminology

ISO 55001:2014
AM – Management systems - Requirements

ISO 55002:2014
AM – Management systems - Guidelines for the application of ISO 55001
Project Roll-out

- Customised AM framework
- Operational Strategic Plan (OSP)
- AM Policy
- Strategic AM Plans (SAMP, one per plant)

- Asset Management Plans for critical asset types (PV Inverters, PV modules, SCADA, Step-up Transformers, Power Transformers)

Steering Committee established to support Change Management in the organisation
The organisation shall establish, document and maintain asset management plan(s) to achieve the asset management objectives. An **asset management plan** is documented information that specifies the activities, resources and timescales required for an individual asset or grouping of assets.

ISO 55000: 2014

It is common practice for such a plan to contain a rationale for AM activities, operational and maintenance plans and capital investment plans (overhaul, renewal, replacement and enhancement.)

ISO 55000: 2014
Key Requirements for Asset Management Plan

*Provides a consolidated view of how to manage a critical asset type over its life cycle*

- Clear link between business service level expectations and the equipment performance
- Provides estimate of long term financial commitments
- Presents a clear and up to date status of equipment performance, condition and health
- Defines risks and contains risk mitigation plans
- Modelling future costs and asset performance and process to identify future work and staff needs
- Integrates all information and processes associated with equipment
- Tool to communicate organisation’s asset management activities to stakeholders, customers and other parties
AMP Development Process (1)

• Find agreement on AMP contents and the format
• Conduct detailed Failure Mode and Effect Analyses (FMEA) for each asset type in scope
• Consultants source information from combination of options:
  • Plant as-built information and data
  • Organisation’s staff members (Plants, Operations, Commercial, Financial)
  • Subject Matter Experts (SMEs) external to the organisation
  • Suppliers and OEMs
  • General technical, engineering and financial literature (public domain)
AMP Development Process (2)

- Conduct structured asset condition assessments, for at least pilot samples of the operational equipment in scope

- Construct and populate life cycle costing (LCC) models for the projected plant life of 20 years
AMP Development Process (3)

- Document high-level information in AMP Master Document
- Reference details stored in underlying folder structure
- Review progress regularly with as wide an audience as possible
- Development featured high on the agenda of the Steering Committee
Key AMP Outcomes for Organisation Stakeholders

- **Management Team**
  - Identification of AM Risks with mitigation plans
- **Financial Department**
  - Life Cycle Costing (LCC) to aid budgeting
- **Human Resources**
  - Resourcing requirements to aid organisation and competency development
- **Plant Manager/Power Engineer**
  - Guiding principles/rationale for LCM decisions
- **O&M Site Teams**
  - Defined standards for equipment performance
  - Condition assessments to aid decision making
  - Life cycle planning
Success Factors

- Inclusive approach
- Multi-disciplinary approach (both wind and solar experts)
- Dynamic structure (Live document)
- Recommended actions are driven by risks and opportunities (noted and allocated to individuals)

- Stakeholders identified, with requirements noted
- AMP Ownership defined
Thank you

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