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Standardization - ZESCO’s Experience

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Introduction (ZESCO)
Standardization in ZESCO
Standardization Challenges
Motivation
Methodology
Achievements
Conclusion
ZESCO Limited

- is a parastatal company under the Companies Act.
- was established in 1970
- Is vertically integrated (Generation, Transmission, Distribution and supply)
Introduction ....

Generation – Major Hydro Power Stations prior to the Power Rehabilitation Project

– Kafue Gorge Power : 900 MW
– Kariba North bank : 600 MW
– Victoria Falls : 108 MW
Introduction....

Generation – Small Hydro Power Stations

- Lusiwasi : 12 MW
- Musonda Falls : 5 MW
- Chishimba Falls : 6 MW
- Lunzuwa River : 0.75 MW
INSTALLED HYDRO GENERATION CAPACITY AFTER REHABILITATION PROJECT

- **Kariba North Bank**
  - Before PRP: 600 MW
  - After PRP: 720 MW

- **Vic Falls**
  - 108 MW

- **Kafue Gorge**
  - Before PRP: 900 MW
  - After PRP: 990 MW

- **Mini Hydros**
  - 23.75 MW

**Generation capacity**

- Before PRP: 1631.75 MW
- After PRP: 1841.75 MW
Introduction ....

Generation – Isolated Diesel Power Stations

- Mwinilunga 0.68 MW
- Kasempa 1 MW
- Kaoma 0.8 MW
- Kabompo 0.75 MW
- Zambezi 0.75 MW
- Lukulu 0.68 MW
- Lundazi 1.4 MW
- Luangwa 0.27 MW
Introduction ....

Transmission - National Grid
Introduction ..... 

Distribution

- Four Divisions
- Sixteen Regions
- 310,000 customers across the country
STANDARDISATION IN ZESCO
Standardization challenges

- Diversity of systems
  - Generation
  - Transmission
  - Distribution and Supply
- Plant spread through out the country
- Workforce spread through out the country
- Different
  - Equipment and components
  - Methods and Procedures
  - Spares requirements
Common Bulk Stores

- Common stores having too much stock
- Multiplicity of equipment and components entails:
  - high stores inventory
  - Cumbersome procurement processes
  - Increased engineering time (Specifications)
- This affects the bottom line
Motivation for Standardization

- Cost reduction by minimizing (optimizing) the number of
  - plant items,
  - stock items,
  - work processes,
  - principles,
  - practices and
  - terms that are used throughout the organization
- Reducing engineering time for commonly and repeatedly used items
- Improve bottom line
Situation - 10 years ago

- Technical specifications existed in departments
- No central place to coordinate and address the standardization requirements for the corporation
Need for Standardization

- The need to reduce costs led to the need to develop standard procedures and specifications.

- Good practices that are standardized could be easily replicated throughout the utility, which could reduce engineering time.

- Rationalization of specifications could reduce stores inventory.
Methodology used
Formation of dedicated unit

- With the above challenges the need for a dedicated unit to drive the process of standardization arose.

- Hence the creation of the Technical Support Services Unit (Standards Unit) in 1997,

  - Facilitated end user participation through formation of temporal internal working groups to comment on standards.
Participation in Regional & International Standardization activities

- There are few manufacturers in Zambia.
- Most equipment and materials are procured from outside the country.
- Equipment from outside the country may not entirely conform to our local conditions.
- Hence the need to actively participate in regional and international standardization activities.
Regional & International cooperation...

- By participating in the development of regional & international standards
  - local conditions are taken into account.
  - ZESCO staff benefit from the experience of experts from other utilities & institutions
  - Larger markets created by common specifications would lead to reduced costs
Implementation of Online Systems

- The need to streamline effective management of work process/projects as well as implementation of common standards throughout the corporation gave rise to the need for online tools.
Online Tools

Standardization Module linking into the Design and Construction System
Standardization Module linking into DCS

(Maintenance, Short, Medium and Strategic Plans)

PLANNING

WORKS DEFINITION → WORKS DESIGN → ASSIGNMENT → CONSTRUCTION → COMMISSIONING

ENGINEERING → BUDGET → WAYLEAVE/PERMITS

FINANCE

STORES & PROCUREMENT

OPERATIONS

BILLING

CUSTOMER REQUEST

CUSTOMER SERVICE

MATERIALS MANAGEMENT

STANDARDIZATION

FOLLOW-UP
Achievements
Achievements

- After formation of a dedicated unit
  - Standardization awareness increased through
    - Coordinated participation of end users cutting across the various disciplines
    - Technical audits of network
    - Review and customizing of technical specification for procurement
    - Increased exposure of staff to regional and international standardization activities
Achievements...

- Developed internal capacity to develop company specifications e.g.
  - Lightning arrestor specification (including rationalization of ratings)
  - Insulator specifications
ZESCO Actively participated in the development of the following national standards:

- Quality of Supply (ZS387)
- Quality of Service (ZS397)
- Metering standards
- Safety Code

Now ZESCO is already implementing the quality of supply standard.
Achievements...

- Implementation of construction standards throughout the corporation facilitated by online business information system that has provided a centralized data base for standard construction units.

- Planning engineers use the same construction units data base for design of network infrastructure.
Achievements.....

- **ZESCO**
  - has participated in the development of all the more than 25 regional specifications (PIESA)
  - is currently the Vice convenor of the standardization Working Group in PIESA
  - Actively participates in UPDEA which has about 53 member utilities across Africa
  - Is part of the UPDEA members working towards the formation of the AFSEC
Achievements.....

- Because of the holistic approach taken by ZESCO

  - Manufacturers are encouraged to come to ZESCO and present their various technologies
  - This has lead to technology transfer

- ZESCO Hopes to participate in the formation of the National Technical Committee to facilitate membership to IEC and AFSEC
Conclusion

- ZESCO has made significant strides in the standardization process

- This has been facilitated by
  - Management support through formation of a Dedicated standardization unit
  - Investment in online tools
  - Regional and International cooperation
ZESCO will continue to enhance resources towards equipping its staff through training to ensure effective implementation of standards across the corporation.

- support the standardization activities at all levels
- continue to actively participate in the regional & international standardization activities
Conclusion…. 

- The Online tool has given ZESCO an effective means for maintaining and updating standards used in construction.
Thank You

END