Inspections of Ex Equipment in Hazardous location using barcode scanners at Sasol

SAFA SYMPOSIUM 2011
Purpose

Purpose of this system is to conform to legal requirements with respect to classified electrical/instruments equipment inspections, as well as maintenance in hazardous areas, where record keeping is a key criterion.
SCOPE

- Goals and objectives
- Centre of Excellence
- Benefits of Center of Excellence (SEPCoE)
- Types of inspections
- Grade of Inspections
- Process and layout
- Auditing and populating of EPE
- Unique naming convention

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Goal and Objective

- Meet legal requirements of IS and Ex certification.
- Retain ISO certification.
- Meet safety requirements by doing inspections.
- Proof that inspections are actually carried out by having control over the inspection.
- Seamless integration with SAP.
- Inspection One system and SAP Data storage of equipment defects and inspections.
- Paperless environment.
- Monitor equipment integrity and move towards a proactive maintenance strategy
Benefits of Center of Excellence (SEPCoE)

- One standard
- One roll-out plan
- Monitor progress
- Control of resources – contractor; administrators and inspectors
- Compliance
  - *EPE Training of people*
  - Applying *relevant Standards*
  - Applying *OHS Act*
  - *Inspection frequency*
- Hardware management – Scanners; printers and tagging
- Software management – System administrator
- Control of documentation
  - *COC’s*
  - *IA certificates*
- QA and QC of inspections and defects
- Ad hoc audits
- Technical audits
- Reviewing work instructions and procedures

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**Types of inspections**

- **Four basic types of inspection**
  - **Initial inspection**
    - Day one installations
    - Ensure that the selected type of protection and its installation are appropriate
    - Certificate of Compliances will be complete as well as a test report – EIR 7.1
    - Additional certificate should also be completed as per SANS 10142.
    - All IA certificates applicable must be attached to the COC.

- **Periodic inspections**
  - Inspections carried out on routine basis on all EPE
  - Consist of visual not exceeding two years – EMR9.8

- **Sample inspections**
  - Inspections of a proportion of the installed apparatus.
  - Can be visual, close or detailed.
  - Results of all sample inspections should be recorded.

- **Special inspections for movable apparatus**
  - Hand-held, portable, and transportable apparatus
  - Particularly prone to damage or misuse
  - Submitted to a detailed inspection at least every 12 months.
  - The results of detailed inspections should be recorded.

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**Grade of inspections**

- **Visual**
  - can be performed with the apparatus energized
  - EMR 9.8 - visual inspected not exceeding 2 years

- **Close**
  - can be performed with the apparatus energized

- **Detailed**
  - require that the apparatus must be isolated
  - planned for shutdowns
Process and layout

- Obtain basic plant drawings—top view of plant
- Divided each plant into blocks
- Start to do the audit per block and populate equipment on basic plant light drawings
- Print and barcode all the equipment in the block
- Update legend as well as key plan
- Equipment per block must not add up to more than 250
- Develop maintenance plans (strategies) per business unit
- Planned inspection will kick off on start date
- Planning department will only release work order and not print a job card – paperless system
- Download inspection onto scanner – Inspection One
**Divided each unit into blocks**

<table>
<thead>
<tr>
<th>SHEET1</th>
<th>SHEET 2</th>
<th>North</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>SHEET 3</td>
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</tbody>
</table>
Do audit and populate CE per block and update key plan
How to read Barcode on Drawing – Electrical/Instrumentation

021-EE-FLCG-ST05-001

021 – Unit
EE – Electrical Equipment
FL – Equipment Description
CG – Block/Sheet Number
ST – Equipment Mounted On
05 – Elevation
001 – Sequence Number

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How to read Barcode on Drawing for Instrumentation Specific

021FV-1001 – pneumatic valve
021TY-1001 A
021TY-1001 B
021TCB-1001
021 – Unit
FV – Equipment Type
1001 – Valve no
A - I/P
B – Solenoid
TCB – connection box

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Example of stainless steel barcode

Barcode represents SAP equipment number

Technical identification

SAP equipment number

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Drawing layout