

Streamlining the AtEX inspection process



by implementing effective, paperless
Ex maintenance and inspection
strategies



IEC 60079-17

Edition 4.0 2007-08

**INTERNATIONAL
STANDARD**

**Electrical installations inspection
and maintenance**

Ensure regulatory compliance of electrical installations in hazardous areas:

- make sure that equipment has an inspection and maintenance plan in accordance with IEC 60079-17
- so that it continues to be safe to operate and
- this can be demonstrated to the satisfaction of the HSE

The key driver - difficult to demonstrate compliance



- No easy visibility of asset register
- Multiple Excel spreadsheets to maintain
- Whilst reasonably accurate, contained minimal equipment information
- Evidential trail; offshore techs “could be accused” of selecting easiest equipment to carry out detailed inspection
- Paper based inspection checks with records held offshore

What we wanted to achieve

Replace paper-based inspection process

- Easy visibility of single asset register from any location
- Paperless inspection checks with onshore access to live data
- Visible tagging of equipment
- Documented, auditable evidence that different equipment is selected for a detailed inspection each time
- More detailed information to maximise effectiveness of data, eg access requirements
- Able to demonstrate compliance with legislation

Inspection And Maintenance Of Electrical Equipment Installed In Hazardous Areas MAN/94/03.08

INSPECTION PROCEDURE E652 (DETAILED)
FOR Exd, Exe, Exn and Exp INSTALLATIONS

011-M02-00 ITEM 001
HALKIR HT183-7C TYPE PLG12
EExe II TG Ex 82296X

Check that :	Exd	Exe	Exn	Exp
A APPARATUS				
1 Name plate is legible.	*	/	*	*
2 Apparatus is appropriate to area classification.	*	/	*	*
3 Apparatus group is correct.	*	/	*	*
4 Apparatus temperature class is correct.	*	/	*	*
5 Apparatus circuit identification is correct.	*	/	*	*
6 Apparatus circuit identification is available.	*	/	*	*
7 Enclosure, glass and glass to metal sealing gaskets and/or compounds are satisfactory.	*	JA	*	*
8 There are no unauthorised modifications.	*	/	*	*
9 Bolts, cable entry devices (direct and indirect) and blanking elements are of the correct type, complete and tight.	*	/	*	*
10 Flange faces are clean and undamaged and within permitted specification.	*	/	*	*
11 Gaskets are complete/undamaged.	*	/	*	*
12 Electrical terminations and terminals tight and correct type.	*	/	*	*
13 Enclosed break and hermetically sealed devices are undamaged.	*	/	*	*
14 Restricted breathing enclosure is installed to certification requirements.	*	/	*	*
15 Motor fans have sufficient clearance to enclosure and cover.	*	JA	*	*
B INSTALLATION				
1 Type of cable is appropriate.	*	/	*	*
2 Cable secure. Free from Damage.	*	/	*	*
3 Apparatus securely mounted.	*	/	*	*
4 Sealing of trunking, ducts, pipes and/or conduit is satisfactory.	*	JA	*	*
5 Stopper boxes and cable boxes are correctly filled.	*	JA	*	*
6 Earthing connections including any supplementary earthing bonding connections are satisfactory.	*	/	*	*
7 Protective gas inlet temperature is below maximum specified.	*	/	*	*
8 Protective gas is free from contaminants.	*	/	*	*
9 Protective gas pressure and/or flow is adequate.	*	/	*	*

How we achieved it

- Involved offshore team early in the project as their buy-in was essential and their input proved useful in template design
- Delivered a system pre-configured with existing data with database structure designed to suit Thistle layout, including existing plot plans
- Developed download lists to provide evidence that, over time, every item will have a detailed inspection grade
- Improved offshore communications so we could take advantage of Cloud-based service



The Result

Data cleanse, import data from Excel register & attach relevant inspection templates



Plot plan schedule determined by Maximo



Download inspection forms to intrinsically safe PDA

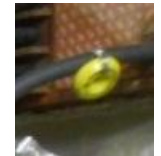
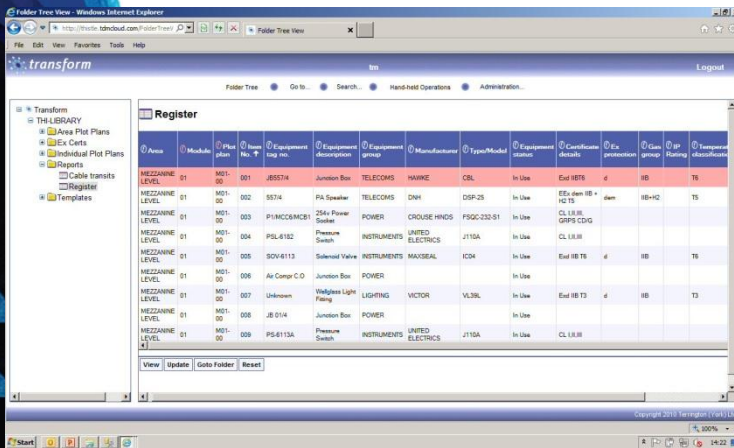


Upload templates to automatically update register, results immediately visible onshore



Carry out inspection, perform & record remedials completed, create & inspect new items found

Attach & scan RFID tag (one-off task)

Area	Plot Plan No.	Item No.	Equipment tag no.	Equipment description	Equipment group	Manufacturer	Type/Model	Equipment status	Condition details	Ext. annotation	Class	IP Rating	Temperature classification
MEZZANINE LEVEL	01	MO1-001	JB5714	Junction Box	TELECOMS	HAVINE	CSL	In Use	Ext IB75	#	IB	T5	
MEZZANINE LEVEL	01	MO1-002	9574	PA Switcher	TELECOMS	DNH	DSP-25	In Use	Ext IB75	#	IB	T5	
MEZZANINE LEVEL	01	MO1-003	P14MCCSMB2	25kV Power Switcher	POWER	CROUSE HINDS	FSQC-325-S1	In Use	CL 18 IB				
MEZZANINE LEVEL	01	MO1-004	P5L4182	Pressure Switch	INSTRUMENTS	UNITEC ELECTRICS	J175A	In Use	CL 18 IB				
MEZZANINE LEVEL	01	MO1-005	SOV4113	Solenoid Valve	INSTRUMENTS	MAVIGAL	ICM	In Use	Ext IB 75	#	IB	T5	
MEZZANINE LEVEL	01	MO1-006	Air Comp C/O	Junction Box	POWER			In Use					
MEZZANINE LEVEL	01	MO1-007	Unknown	Wall/area Light Fitting	LIGHTING	VICTOR	VL39L	In Use	Ext IB T3	#	IB	T3	
MEZZANINE LEVEL	01	MO1-008	JB-014	Junction Box	POWER			In Use					
MEZZANINE LEVEL	01	MO1-009	P5L413A	Pressure Switch	INSTRUMENTS	UNITEC ELECTRICS	J175A	In Use	CL 18 IB				

Benefits

- Accurate up-to-date Ex equipment register, accessible from any location with relevant access permissions
- Quickly advise construction of cable transit availability; significant time saving
- Better planning of shutdowns with easy visibility of remedials requiring shutdown
- Document management functionality; include block drawings, loop diagrams, cable routes, cable spec - new installations can be traced
- Significant reduction in administration
- Demonstration of regulatory compliance

Conclusions

- Proven system for management of electrical installations in hazardous areas
- Flexible, easy to use software that offshore team are happy to use
- Can be utilised for other applications - looking at how TransForm can be expanded to include other routine based data collection checks
- Able to provide limited, security controlled access to external bodies such as HSE, Lloyds Register, Wood Group PSN
- Complete visibility of remedials completed at time of inspection without raising Work Order

Thank you for your time

www.terringtondm.com

www.atex-inspection.com

www.petrofac.com

Tracey Marshall: +44 (0)7899 721508

tracey.marshall@terringtondm.com

Brian MacLennan: +44 (0)1244 287079

brian.maclennan@petrofac.com