



Equinor Refining Denmark A/S

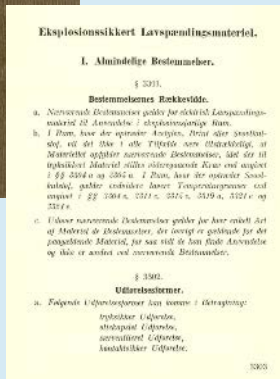


Luftfoto af
raffinaderiet

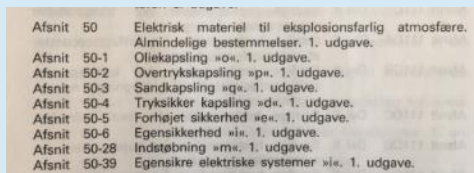
Historien om Equinor Refining Denmark A/S



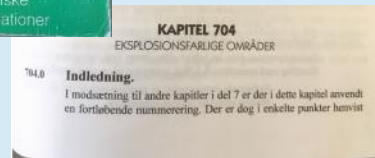
1946
Stærkstrøms
reglement



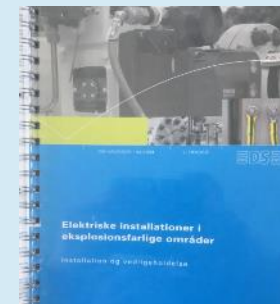
1962
Stærkstrøms
reglement



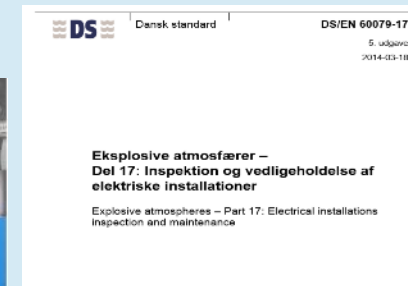
1993
Stærkstrøms
reglement



2003
ATEX direktiv



DS-håndbøger



Standard serien
60079-xx

1960
Dansk Vedol A/S
bygger raffinaderiet

1963
Dansk ESSO A/S
overtager
raffinaderiet

1986
Statoil Refining Denmark A/S
overtager raffinaderiet

1995
Kondensatrefinaderiet
indvies

2018
Statoil Refining Denmark A/S
skifter navn til
Equinor Refining Denmark A/S

Vores Krav til kompetancer

- Egne el og automationsteknikere bliver uddannet via kurser i EN-60079-14 & EN-60079-17 & 19
- For indlejet personel skal de i henhold til kontrakten opfylde samme krav som eget personel
- Der stilles krav til kompetance efter EN-60079-14 & 17 i fastpris kontrakter
- Equinor's ledende personel skal opfylde de samme krav
- Equinor's designer i projektmiljøet skal opfylde de samme krav

Vedligehold og Inspektion

- De regler som både eksterne og interne bliver uddannet efter idag, er efter de gældende standarder EN-60079-14/17
- Det giver udfordringer ifb med vedligehold af installationer som er udført fra 1960 til 2003 hvor kravene ikke var de samme
- Derfor giver vi egne og eksterne en oplæring i hvordan de skal udføre inspektionerne iforhold til de krav der var gældende før 2003.
 - De var på nogle punkter mere lempelige
- Typiske spørgsmål ifb med en visuel inspektion
 - Spørgsmål ?
 - En elektriker finder under en visuel inspektion en motor som er IP 55, den er installeret i 1995 og er placeret i zone 2
 - Er den installeret lovligt?
 - En elektriker finder under samme inspektion en IP44 samledåse til en lys installation installeret i 1989 og er placeret i et område som er klassificeret til Zone 2
 - Er den installeret lovligt ?

Reparation af ex materiel

- Vi kommer ikke uden om, at når der udføres vedligehold på ex-materiel så skal der også repareres en gang i mellem.
- Vi ved at Standarden EN-60079-19 sætter kravene!
- Vi udfører selv reparationer og tager ansvaret!
- Før hver reparation bliver der foretaget en risikovurdering af teknisk afdeling og vedligeholdelses afdelingen, som bliver dokumenteret i SAP mod udstyr tag nr.
- For alle reparationer er der procedure som bliver dokumenteret i SAP mod udstyret tag nr.

Reparation af ex materiel

- Eksempler hvad vi på vi fortager reparationer på:
 - Defekt plast skruer på ex (e) kapslinger som forlængst er udgået af produktion.
 - Der får vi fremstillet nye skruer hos et eksternt firma



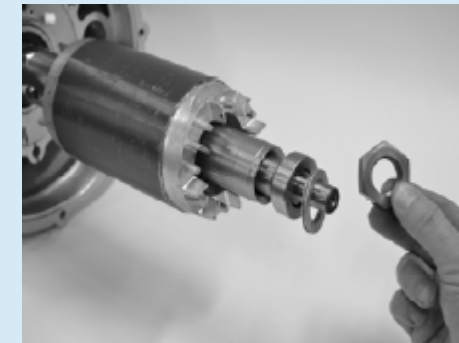
Reparation af ex materiel

- 1 til 1 Lejeskift på Zone 2 motorer.
- Eget værksted har kompetancer i lejeskift, da vi tidligere har været godkendt til ABB motorer og dermed reparationer efter EN-60079-19
- Motorer til Zone 1 sendes til eksternt værksted som er certificeret
- For alle reparationer er der procedure som bliver dokumenteret i SAP mod udstyret tag nr.



Reparation af ex materiel

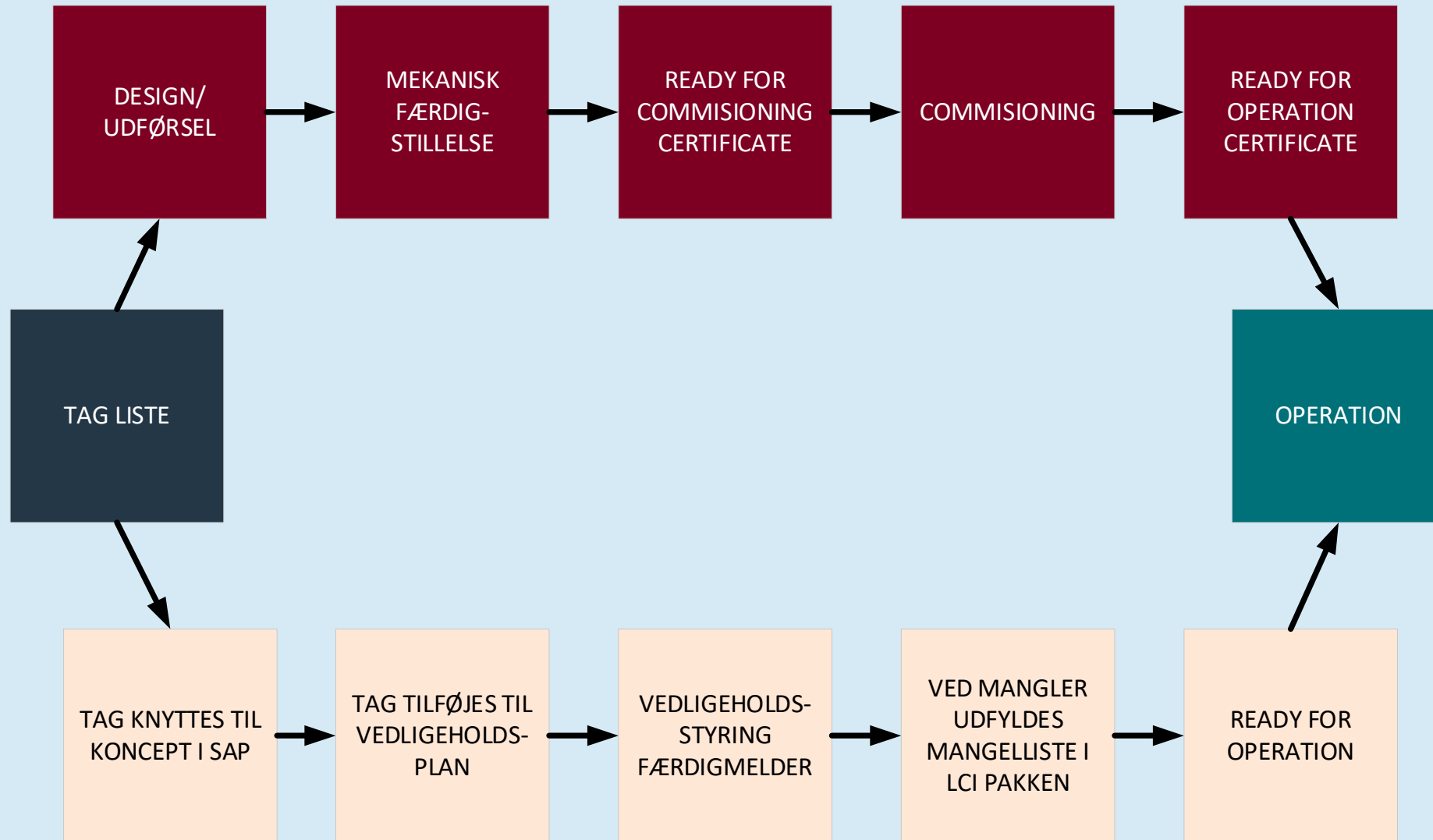
- Motor aktuator af fabrikatet Rotork til zone 1
 - Aktuatoren bliver repareret efter den detaljeret manual som medfølger
 - Ved skader på flamespalter bliver aktuatoren kasseret
 - Eget personel har kompetancer da de har deltaget på Rotork kurser



Reparation af ex materiel

Hvordan reparerer I Ex materiel?

Arbejdsproces for ny installation



Planlægning af projekt



PROJ-M5 45214534 LM

Project/Modification : Uds. tavle i SUB-H
WBS : M.KLBXX.18.Y.0014

LAYOUT VERSION: v21-26APR2018-SG

SEE SHEET

SEE SHEET

SEE "TR0052"

UDFYLDE

Tag-rekvir

Engineering Code (Ref. TR3111)

REQ. U	CODE	DESCRIPTION
	A	<i>New Tag</i>
	B	<i>Existing tag with change of equipment</i>
	C	<i>Existing tag without change of equipment, with update of information and documentation</i>
	D	<i>Existing tag, to be removed</i>
	E	<i>Existing tag, only for information. Not part of LCI</i>

MODEV	SG(11DEC2018)	X	X													CIRCUIT/STARTER	FE-MDB-11H1
MODEV	SG(11DEC2018)	X					X										FE-TRP-H
JAH/MODEV	JAH(31JAN2019)	X															QMDB-11H1

Planlægning af projekt



PROJ-M5 45214534 LM

Project/Modification : Uds. tavle i SUB-H
WBS : M.KLBXX.18.Y.0014

LAYOUT VERSION: v21-26APR2018-SG

UDFYLDES AF: UDFYLDES		TAG		TAG / Func. Location		SEE "TR0052"
Tag-rekvirent LCI		Catagory		(max 40 charters) (F.L.used for TDC3000 max 24 charts) USE UPPER CASE LETTERS		kvirent
REQ. USER	TAG M/					AG / Func. Location (max 40 charters) sed for TDC3000 max 24 charts) SE UPPER CASE LETTERS
L.E.STRAND	SG(13JU					
L.E.STRAND	SG(13JU	CIRCUIT/STARTER		MDB-H		
L.E.STRAND	SG(13JU	CIRCUIT/STARTER		TR-H		11H1
L.E.STRAND	SG(13JU	CIRCUIT/STARTER		MDB-11H1		STATION H
L.E.STRAND	SG(13JU	CIRCUIT/STARTER		SUB-STATION H		STATION 11H
L.E.STRAND	SG(13JU					-0006
L.E.STRAND	SG(13JU					
L.E.STRAND	SG(13JU					-11H-1
L.E.STRAND	SG(30AU					
MODEV	SG(11DEC2018)	X	X			CIRCUIT/STARTER FE-MDB-11H1
MODEV	SG(11DEC2018)	X		X		FE-TRP-H
JAH/MODEV	JAH(31JAN2019)	X				CIRCUIT/STARTER QMDB-11H1

Projektets omfang overført til ProCoSys



ProCoSys™ **Kalundborg** New Search Reports Security & Users Help

Completion Preservation Work Orders Software Change Record Purchase Orders Document Electrical Toolbox Hookup Plant Con

Completion / KALUNDBORG_MOD / M.KLBXX.18.Y.0014 / 15 / 12 / 1512-C01 /

Mechanical Completion Package

1512-E002, Udskiftning af 10KV & 400 V fordeling

SAVE Duplicate Move To... Void Delete

Locked for editing (Project closed)

Main **Scope** Progress Counts PL Items Work Orders Hookup

+ ADD TAG + NEW LOOP LOOP CONTENT DUPLICATE EDIT ROW(S) DELETE MOVE TO... + ADD PUNCH ITEM Quick filter

	SHEET	SUB	TAG NO	REV.	LEAD	PRES.	FORM PHASE	MCCR	ATT.	RESP.	STATUS	SIGNED	VERIFIED	UPDATED AT	UPDATED BY
<input type="checkbox"/>	01	01	F103398-1L1		<input type="checkbox"/>	<input type="checkbox"/>		ELE03.1...	<u>1</u>	STMI	OK	21-11-20...	22-11-20...	22-11-20...	ANDHED
<input type="checkbox"/>	02	01	F103398-1L2		<input type="checkbox"/>	<input type="checkbox"/>		ELE03.1...	<u>1</u>	STMI	OK	22-11-20...	22-11-20...	22-11-20...	ANDHED
<input type="checkbox"/>	03	01	F103398-1L3		<input type="checkbox"/>	<input type="checkbox"/>		ELE03.1...	<u>1</u>	STMI	OK	22-11-20...	22-11-20...	22-11-20...	ANDHED
<input type="checkbox"/>	04	01	F103399A		<input type="checkbox"/>	<input type="checkbox"/>		ELE03.1...	<u>1</u>	STMI	OK	22-11-20...	22-11-20...	22-11-20...	ANDHED
<input type="checkbox"/>	05	01	F103399B		<input type="checkbox"/>	<input type="checkbox"/>		ELE03.1...	<u>1</u>	STMI	OK	22-11-20...	22-11-20...	22-11-20...	ANDHED
<input type="checkbox"/>	06	01	TR-H		<input type="checkbox"/>	<input type="checkbox"/>		ELE08	<u>0</u>	STMI	OK	22-11-20...	30-11-20...	30-11-20...	K01KOS
<input type="checkbox"/>	07	01	MDB-11H1		<input type="checkbox"/>	<input type="checkbox"/>		ELE10	<u>0</u>	STMI	OK	22-11-20...	30-11-20...	30-11-20...	K01KOS
<input type="checkbox"/>	08	01	MDB-H		<input type="checkbox"/>	<input type="checkbox"/>		ELE10	<u>0</u>	STMI	OK	22-11-20...	30-11-20...	30-11-20...	K01KOS
<input type="checkbox"/>	09	01	SERVICE BYGNING		<input type="checkbox"/>	<input type="checkbox"/>		ELE03.1...	<u>1</u>	STMI	OK	22-11-20...	22-11-20...	22-11-20...	ANDHED

Checklister for udstyrsgrupper

Mechanical Completion Check Record
ELE03.1.KAL, Check List for Electrical Cables

SAVE | Unsign | Unverify | Lang English, American | Print Please choose...

Check list | Attachments | Punch list

Kalundborg | KALU Mechanical Completion Check Record
ELE08, Transformer

Cable No.
From Tag No. SAVE | Unsign | Unverify | Lang English, American | Print Please choose...
From Descr.
From Area

Check list | Attachments | Punch list

Kalundborg | KALU Mechanical Completion Check Record
ELE10, L.V. Distribution Board / Switchgear

Tag No.
Description
Area
PO No.

SAVE | Unsign | Unverify | Lang English, American | Print Please choose...

Check list | Attachments | Punch list

Kalundborg | KALUNDRBORG_MOD | M.KI BXX.1&Y.0014, TAVIFR SUB "H"

Tag No.	MDB-11H1	Function	MAIN DISTRIBUTION BOARD	Comm. Pkg. No.	1512-CD1
Description	10KV FORDELING SUB-II	Attachments	0	MC Pkg. No.	1512-C002
Area	1512	Serial No.		Sheet	07.01
PO No.		Part No.		Status	OK

Check items		INSTALLATION
		Checked N/A
01	Check fabricators nameplate data incl. product certification (e.g. CF)	<input checked="" type="checkbox"/> <input type="checkbox"/>
02	Check equip. classification against area classification (Ex, IP etc.)	<input checked="" type="checkbox"/> <input type="checkbox"/>
03	Tag plate marking correct (content, material and number of plates)	<input checked="" type="checkbox"/> <input type="checkbox"/>
04	Warning- / instruction- / info signs correct and visible	<input type="checkbox"/> <input checked="" type="checkbox"/>
05	Assembled in accordance with GA drawings and specifications	<input checked="" type="checkbox"/> <input type="checkbox"/>
06	Check installation against layout / plot plan / other relevant doc.	<input checked="" type="checkbox"/> <input type="checkbox"/>
07	Access for maintenance / operation in accordance w/requirements	<input checked="" type="checkbox"/> <input type="checkbox"/>
08	Glanding / MCT correct	<input type="checkbox"/> <input checked="" type="checkbox"/>
09	Terminal blocks, marking and voltage segregation correct	<input type="checkbox"/> <input checked="" type="checkbox"/>
10	Busbars and connecting links tight to specified torque	<input checked="" type="checkbox"/> <input type="checkbox"/>

Mangellister



[Completion](#) / [KALUNDBORG_MOD](#) / [M.KLBXX.18.Y.0014](#) / [15](#) / [12](#) / [1512-C01](#) /

Mechanical Completion Package

1512-E002, Udskiftning af 10KV & 400 V fordeling

SAVE

Duplicate

Move To...

Void

Delete

Locked for editing (Project closed)

Main

Scope

Progress

Counts

PL Items

Work Orders

Hookup

VIEW: OUTSTANDING NOT VERIFIED ALL

ITEM NO	TAG NUMBER	CAT.	RESP.	TO BE CLEARED BY	DUE DATE	CLEARED BY	VERIFIED BY	WO NO	DESCRIPTION	P S
3306705	MDB-11H1	PB	STMI	CON	07-12-2...	RENC	ANDHED		Der skal fremstilles et nyt resopalskilt.	
3306711	TR-H	PB	STMI	CON	14-12-2...	RENC	ANDHED		Bortkørsel af sten & fyld fra den gamle transformergård	
3306722	MDB-11H1	PB	STMI	CON	07-12-2...	RENC	ANDHED		Fjerne overskydende beton på gulv , under den gamle MDB-11H1 . Fjerne 2 gamle vinkelb...	
3313629	MDB-11H1	PB	STMC	CONSTR.		RENC	ANDHED		Raffinaderiets centraljord skal fjernes fra udligningsforbindelsen til MDB-11H1, og forlæn...	

Færdigstilling

- Når checklister for udstyr er udfyldt af projektet kan der udstedes et "Ready For Commissioning Certificat".
 - Her gennemgår fagansvarlig installationen og idriftsætter den for at udføre relætest, funktionstest mv. og udfylder udstyrsafhængige Commissioning Preparatory Check Lists (CPCL).
- Først når alle CPCL lister er udfyldt og evt. punch A punkter på mangellisten er udbedret, kan der udstedes et Ready For Operation Certificate.
- Alt foregår i ProCoSys platformen, og checklister mv. kan eksempelvis tilgås via ex tablet fra anlægget.

Vedligehold af udstyr

På taglisten udfyldes også "maintenance Concept".

Koncepterne er standardiseret i hele koncernen, og der findes et koncept for langt størstedelen af Equinors udstyr.

REDUNDANS KLASSER (ABC)	SAP MAIN. CONCEPT
A	SN0101
A	TH0220
A	SN0100
A	
A	
A	SI0000
A	SI0000
A	SI0106
A	
A	SI0000
A	SI0000

Concept	Description
BC0000	Batteries, miscellaneous equipment
BC0100	Battery, UPS, lead, fluid with SCE code 16
BC0105	Batt, UPS, VRLA with SCE code 16
BC0110	Battery, lead acid, replacement strategy
BC0111	Battery, non-UPS
BC0115	Battery, navigation aid with SCE code 16
BC0120	Batt, UPS, NiCd SPH, (SAFT) with SCE code 16
BC0125	Batt, UPS, NiCd SBM, (SAFT) with SCE code 16
BC0130	Batt, UPS, NiCd SLM, (SAFT) with SCE code 16
BC0200	Charger, battery
BC0250	UPS
BC0255	UPS, module based
BC0299	Frequency converters, miscellaneous equipment
BC0300	Frequency converter, air cooled
BC0305	Frequency converter, water cooled
BC0310	Frequency converter, small compact units
BG0000	Electro, miscellaneous equipment
BG0100	Heat tracing thermostat box, Ex
BG0101	Thermostat box, non-Ex
BG0102	Junction box, Ex
BG0103	Junction box, non-Ex
BG0104	Junction box, high voltage, Ex
BG0105	Junction box, high voltage, non-Ex
BG0115	Switch, Ex
BG0120	Socket outlet, Ex
BG0125	Socket outlet, non-Ex
BG0150	Flashlight, Ex
BG0200	Light fixtures, emergency, internal battery, Ex with SCE code 25
BG0201	Light fixtures, emergency, centrally battery power, Ex with SCE code 25
BG0202	Light fixtures, Ex
BG0203	Light fixtures/flood lights, non-Ex
BG0204	Light, emergency exit with SCE code 25
BG0205	Light, marking/navigation aid, Ex
BG0206	Light, flood, emergency, central battery with SCE code 25
BG0207	Light, flood, Ex
BG0208	Light, marking/navigation aid, non-Ex
BG0209	Light fixtures, emergency, internal battery, non-Ex with SCE code 25
BG0210	Lights, miscellaneous equipment
BG0211	Light LED
BG0220	Heating element, Ex
BG0221	Heating element, non-Ex
BG0222	Heat tracing cable
BG0223	Heater
EA0100	Earth, Main Offshore
EA0200	Earth, Main Onshore, Global
EA0201	Earth, Main Onshore, Local
GC0000	Generators, miscellaneous equipment
GC0101	Generator emergency, HV with SCE code 15
GC0102	Generator emergency, LV with SCE code 15
GC0200	Generator essential, LV

GC0202	Generator essential, HV
GC0300	Generator continuous operation
GC0400	Generator firewater pump, HV
GC0401	Generator firewater pump, LV
MD0000	Motor, EL, miscellaneous equipment
MD0100	Motor EL, DC
MD0101	Motor EL, LV <25 kW, Ex
MD0102	Motor EL, LV >25 kW, Ex
MD0103	Motor EL, HV asynch, Ex
MD0104	Motor EL, HV asynch, non-Ex
MD0105	Motor EL, synchronous, Ex
MD0115	Motor EL, LV <25 kW, non-Ex
MD0116	Motor EL, LV >25 kW, non-Ex
SI0000	Starter, cubicle, miscellaneous equipment
SI0100	Starter, circuit breaker, high voltage, w/SIF with SCE code 52
SI0101	Starter, circuit breaker, low voltage, w/SIF with SCE code 52
SI0102	Starter, contactor, high voltage, w/SIF with SCE code 52
SI0103	Starter, contactor, low voltage, w/SIF with SCE code 52
SI0104	Starter, circuit breaker, high voltage
SI0105	Starter, contactor, high voltage
SI0106	Starter, circuit breaker, low voltage
SI0107	Starter, contactor, low voltage
SN0000	Switchboard, miscellaneous equipment
SN0100	Switchboard <52kV, high voltage
SN0101	Switchboard, low voltage
SN0105	Gas Insulated Switchgear
SN0106	Gas Insulated Switchgear with circuit breaker with SCE code 52
SN0300	Distribution board
SN0301	Distribution board, circuits without ELCB
SN0310	Distribution board, Ex protected
SN0311	Distribution board, Ex protected, circuits without ELCB
SN0400	Control cabinet
TH0000	Transformers, miscellaneous equipment
TH0200	Transformer, dry insulated, no fan
TH0201	Transformer, dry insulated, with fan
TH0210	Transformer, oil insulated, hermetic, non-Ex
TH0211	Transformer, oil insulated, hermetic, Ex
TH0220	Transformer, oil insulated, DETC, non-Ex
TH0221	Transformer, oil insulated, DETC, Ex
TH0222	Transformer, oil insulated, OLTC, non-Ex
TH0223	Transformer, oil insulated, OLTC, Ex

Eksempel på vedligehold af nødlys

Display Maintenance Concept: Detail screen

Functional Location Equipment

Concept	BG0200	Light, em, int.batt	Version	79	Status	Release	Rel.dat	04.09.2018
Catalog profile	PM-150	EL-Power cable and termination						
Description	Light fixtures, emergency, internal battery, Ex wit...		Instructio...	Justification	Auto gener. (Cause: Text SMA 10009-012)			Change log
Responsible	Electrical safety and operation			Reference				

FMEA Notes Maintenance

Standard Text Language English

 _Details  _Reasons  _Create  _Delete 

Maintenance activity	Act. desc	Type text	Max int.	Unit max i	Rec. int.	Unit rec.	Initi int.	Unit init	Shutdown	Discipl.	Discip...
▶ BG0200-0001	Battery cycling	Program maintenance				4 MON				E	Electrical
▶ BG0200-0002	Capacity test - Emergency light	Condition monitoring	48 MON		12 MON		12 MON		X	E	Electrical
▶ BG0200-0003	Detailed checking/change of light source	Program maintenance	120 MON		72 MON		72 MON			E	Electrical
▶ BG0200-0006	Ex Close visual inspection	Condition monitoring	48 MON		36 MON		36 MON			E	Electrical

Eksempel på vedligehold af nødlys

Maintenance Activity - Detail

Maintenance Activity BG0200-0006

Activity description Standard text language English Editor

Ex Close visual inspection

Performe Ex close visual inspection.

DEFINITION OF DIFFERENT TYPES OF CLOSE VISUAL INSPECTION:

Visual inspection:
An inspection that reveals a visual fault. This can in certain cases be performed at a distance from the equipment.

Close inspection:
Inspection which encompasses those aspects covered by a visual inspection and, in addition, identifies those defects, such as loose bolts, which will be apparent only by the use of access equipment, for example steps, (where necessary) and tools.
NOTE: Close inspections do not normally require the enclosure to be opened, or to be de-energized.

EXTENT OF INSPECTION:

Close inspection shall be performed on all equipment that can be inspected with normal access.
For other equipment, that requires scaffolding or climbing equipment, visual inspection is sufficient.

For more information, see document in SAP.
Transaction in SAP : CV04N
Document : 1955874

Shared activity description 10009 Version 12

Activity group 38 EX barrier check

Maintenance type T Condition monitoring

Discipline E Electrical

Technical feedback type

Equipment shutdown required

Safety critical element 02 EEx(d) Flameproof Joint Cond

Target failure fraction 0,00 % or marked as Trend

Intervals

Max interval 48 Unit MON

Max interval justification

GL0114

Recommended interval 36 Unit MON

Recommended interval description



Initial interval 36 Unit MON


Initial interval description

Eksempel på vedligehold af nødlys

Display Work order 24658502 *36M FV Tændkilde BL3-4400 - 1841 pkt. Status REL PCNF PRT GMPS MANC NMAT PRC SETC

Close  Print preview

  Show Progress

Operation	Description	Work center	Feedback status	Status
0010	Tændkildekontrol BL3-4400-EX - 1841 pkt.	E-ELE		CNF
0100	Tændkildekontrol Nødlysarmatur Sek 4400	E-ELE		CNF
0990	Rapport i SAP og update af dokumentation	E-ELE		<input type="button" value="Complete Operation"/>

Technical Feedback

Operation	Func. Loc.	Equipment	Maintenance activity description	Last done	Not reported	Done	Not done	Status	Notifications
0100	1300-LF-03-B-LDB004-10Y		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	
0100	1300-LF-04-B-LDB004-11B		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	
0100	1300-LF-06-B-LDB004-10Y		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	
0100	1300-LF-06-B-LDB004-12Y		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	
0100	1300-LF-07-B-LDB004-11B		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	
0100	1300-LF-07-B-LDB004-12R		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	
0100	1300-LF-08-B-LDB004-10Y		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	
0100	1300-LF-01-B-LDB002-02B		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	
0100	1300-LF-01-B-LDB002-03R		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	
0100	1300-LF-01-B-LDB002-03Y		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	
0100	1300-LF-01-B-LDB002-06Y		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	
0100	1300-LF-02-B-LDB002-03Y		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	
0100	1300-LF-02-B-LDB002-06Y		Ex nærvisuell inspeksjon	03.04.2019	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Ok	

Eksempel på vedligehold af LV motor

Maintenance Activity - Detail

Maintenance Activity MD0102-0006

Activity description Standard text language English Editor

Ex close visual inspection of motor

EXECUTION:

1. Check EXTERNALLY:
 - a) general condition of the motor.
 - b) data plates, labelling and cable number. Apply a thin layer of acid-free vaseline or similar product to the data plates.
 - c) mount and anchor bolts.
 - d) that the motor's cooling fan has not been damaged and that the fan cover is in good condition and that the protective cover for the fan cover is in place for vertically mounted motors.
 - e) earthing connections/equalisation connections.
 - f) earthing brushes on shaft, replace as required (if installed). Check the spring pressure and that the brushes move easily in the holders.
 - g) drain the motor if drains have been installed.
 - h) that the condition of gaskets and nipples/blanking plugs in the enclosure is satisfactory.
 - i) cable lead-ins, cable relief and fasteners.
2. Check EXTERNALLY:
 - a) motor's clutch housing, junction boxes (connections and internal condition). Covers shall be lubricated with an approved lubricant.
 - b) flameproof joints in the clutch housing and junction boxes if Ex d. Lubricate the flameproof joints prior to installation.
 - c) that the heating element is working (if installed).
 - d) local start/stop/emergency stop switch (if installed). Replace any corrosion inhibitors.
 - e) Open any inspection hatches in cooler and check for leaks.
3. For equipment with the enclosure category Ex p, also check:
 - a) ducting, pipes and enclosures.

Shared activity description 10190 Version 10

Activity group 02 Close visual check

Maintenance type T Condition monitoring

Discipline E Electrical

Technical feedback type

Equipment shutdown required

Safety critical element 02 EEx(d) Flameproof Joint Cond

Target failure fraction 0,00 % or marked as Trend

Intervals

Max interval 48 Unit MON

Max interval justification

Recommended interval 36 Unit MON

Recommended interval description

Initial interval 36 Unit MON

Initial interval description

Eksempel på vedligehold af LV motor









Display Maintenance Program Order 24756018: Operation Overview

Order

48M FV Eftersyn motorstarter MCC-C1

Sys.Status

HeaderData Operations Components Costs Partner Objects Additional Data Location Planning









Act	SOp	Work ctr	Plant	Co...	StTextK	SystemCondi...	Operation short text	PRTs	L...	C...	H	Work
0010		G-ELE-EL	1333	PM01			Visuel kontrol af motorstarter	<input type="checkbox"/>			<input type="checkbox"/>	
0020		G-ELE-EL	1333	PM01			Smøring	<input type="checkbox"/>			<input type="checkbox"/>	
0030		G-ELE-EL	1333	PM01			Isolationsmåling	<input type="checkbox"/>			<input type="checkbox"/>	
0040		G-ELE-EL	1333	PM01			Jordsløjfemåling	<input type="checkbox"/>			<input type="checkbox"/>	
0050		G-ELE-EL	1333	PM01			Relætest	<input type="checkbox"/>			<input type="checkbox"/>	
0060		G-ELE-EL	1333	PM01			Funktionstest	<input type="checkbox"/>			<input type="checkbox"/>	
0070		G-ELE-EL	1333	PM01			Detaljeret Ex inspektion af motor >25kW	<input type="checkbox"/>			<input type="checkbox"/>	
0080		G-ELE-EL	1333	PM01			Detaljeret Ex inspektion af motor <25kW	<input type="checkbox"/>			<input type="checkbox"/>	

Eksempel på vedligehold af LV motor

Display Work order 24756018 48M FV Eftersyn motorstarter MCC-C1 Status CRTD CSER MANC NMAT PRC

Close Print preview

Show Progress

Operation	Description	Work center	Feedback status	Status
0010	Visuel kontrol af motorstarter	G-ELE-EL		Complete Operation
0020	Smøring	G-ELE-EL		Complete Operation
0030	Isolationsmåling	G-ELE-EL		Complete Operation
0040	Jordsløjtemåling	G-ELE-EL		Complete Operation
0050	Relætest	G-ELE-EL		Complete Operation
0060	Funktionstest	G-ELE-EL		Complete Operation
0070	Detaljeret Ex inspektion af motor >25kW	G-ELE-EL		Complete Operation
0080	Detaljeret Ex inspektion af motor <25kW	G-ELE-EL		Complete Operation

Technical Feedback

Operation	Func. Loc.	Equipment	Maintenance activity description	Last done	Not reported	Done
0070	1300-MM-1323		Ex nærvisuell inspeksjon motor		<input type="radio"/>	<input type="radio"/>
0070	1300-MM-1340		Ex nærvisuell inspeksjon motor		<input type="radio"/>	<input type="radio"/>
0070	1300-MM-1358		Ex nærvisuell inspeksjon motor		<input type="radio"/>	<input type="radio"/>
0070	1300-PM-1319		Ex nærvisuell inspeksjon motor		<input type="radio"/>	<input type="radio"/>
0070	1300-PM-1744		Ex nærvisuell inspeksjon motor		<input type="radio"/>	<input type="radio"/>
0070	1300-PM-1753 A		Ex nærvisuell inspeksjon motor		<input type="radio"/>	<input type="radio"/>
0070	1300-PM-1809		Ex nærvisuell inspeksjon motor		<input type="radio"/>	<input type="radio"/>
0070	1300-PM-1814 B		Ex nærvisuell inspeksjon motor		<input type="radio"/>	<input type="radio"/>
0070	1300-PM-1815		Ex nærvisuell inspeksjon motor		<input type="radio"/>	<input type="radio"/>
0070	1300-PM-1815		Ex nærvisuell inspeksjon motor		<input type="radio"/>	<input type="radio"/>

Eksempel på vedligehold af LV motor

Display Notification Items: List of Notifications

Notification

Notification	Order	Description	Functional Location	Description of functional location	FMo	Problem code text	Notif.date	Ref.
40867236	21141546	Udskiftning af pumpe motor PM-1202 A	1300-PM-1202 A	Regenerator Reflux Pump	DEX	ISO Electric motors - CST Defective EX Protection	20.10.2008	29.0
43904781	23259400	El-motor skal udskiftes pga. af korrosion	1300-PM-2520	Skumpumpe	DEX	ISO Electric motors - CST Defective EX Protection	19.12.2014	28.0
45276845	24446084	Udskiftning af EM-608 B	1300-EM-608 B	LET VBGO	DEX	ISO Electric motors - CST Defective EX Protection	01.06.2018	26.0
45455312		Indkøb af ny PM-4702 B.	1300-PM-4702 B	Debutanizer reflux pump B	DEX	ISO Electric motors - CST Defective EX Protection	25.10.2018	02.1

FMEA Notes Maintenance

[_Details](#)
[_Activities](#)
[_Create](#)
[_Delete](#)

FMEA	Fail.mo.tx	Fail.me.tx	Fail.me.co
FM0021	CST Breakdown	ISO Short circuiting	
FM0019	CST Contact Danger/Electric Shock	ISO General	
FM0027	CST Defective EX Protection	CST Defective flameproof joint, mechani	
<ul style="list-style-type: none"> MD0102-0006 Ex close visual inspection of motor 			
FM0028	CST Defective EX Protection	CST Defective enclosure/ IP	
<ul style="list-style-type: none"> MD0102-0006 Ex close visual inspection of motor 			
FM0029	CST Defective EX Protection	CST Defective flameproof joint, corrosio	
<ul style="list-style-type: none"> MD0102-0006 Ex close visual inspection of motor 			
FM0030	CST Defective EX Protection	CST Defective electrical connection	
<ul style="list-style-type: none"> MD0102-0006 Ex close visual inspection of motor MD0102-0010 Online monitoring, general 			
FM0010	CST Breakdown	ISO Vibration	Vibration
FM0011	CST Breakdown	ISO General	Viklingshavari
FM0012	CST Breakdown	ISO General	Bearing failure

Spørgsmål?



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