

ARC FLASH HAZARD

CROSS EQUINOR LEARNING FROM ARC FLASH INCIDENTS IN 2020
SYNERGI 1625866 AND 1623679



The Equinor SSU Learning Panel



Photo source: all-test.com



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WHAT this is ABOUT

In 2020 there were two serious incidents in Equinor related to arc flash energy – one at an onshore facility and one offshore. Both incidents caused personal injury and extensive material damages. Based on these incidents a new guideline is developed with the aim of describing measures to manage arc flash hazard GL0707 - Guideline for managing arc flash hazard
Actions are specified in this package to ensure and document learning from the incidents across Equinor.

WHAT to DO

- Review the shared material and consider relevance for your Business Area or Cluster
- Review and implement the relevant actions specified in this document
- Document the implementation of actions in Synergi

Synergi 1625866 – Offshore incident	Synergi 1623679 – Onshore incident	Safety Investigation One pagers SIOp	External version
Link - Offshore incident	Link - Onshore incident	SIOp- Onshore incident SIOp - Offshore Incident	Will be made available at always-safe.no

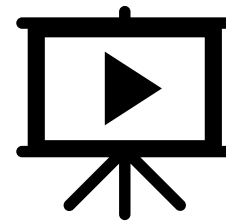
CONTENT

- Film by Leading Advisor electro safety and operations in Equinor, Lennart Jardstål and Responsible Person electrical facilities in EPN, Arne Nossum:
 - Information about arc flash incidents in 2020
 - Equinor strategy for handling of arc flash energy levels formalized in GLO707
- Relevant links
- Actions

MOVIE Arc flash risk – incidents and learning

Please click the icon below to watch a ~12 minute information film about the incidents in 2020 and the guideline for handling of arc flash hazard

Watch film:







EXTERNAL REFERENCES

For further information material related to arc flash risk, please find relevant links to external products below:

- [YouTube Film explaining Arc Flash causes and prevention - by Electrical Safety UK Ltd, 22.8.2018 *](#)
- [Dailymotion video demonstrating Arc Flash Explosion - by Michael Placeres, 2012](#)
- [PSA's investigation report - offshore incident](#)
- [PSA's investigation report - onshore incident](#)
- [NFEA Academy: Norwegian guideline «Lysbuerisiko, krav til og bruk av bekledning» will be entered](#)

* Movie contains commercial element

OVERALL RECOMMENDATIONS FROM GL0707 – Guideline for managing arc flash hazard

<p>ARC FLASH LEVEL</p> 	<p>GL0707 - section 2: The recommendation is to reduce the arc flash energy as much as possible to limit the risk of injury to personnel and materials. Measures to reduce arc flash energy level can be:</p> <ul style="list-style-type: none"> • Adjusting protection devices • Arc flash detection • Protection device upgrade • Include protection device on incomer breaker 	<p>Desired result:</p> <p>Arc flash energy reduced as much as possible to limit the risk of injury to personnel and materials</p>
<p>PROTECTIVE CLOTHING</p> 	<p>GL0707 – section 3 and 4:</p> <ul style="list-style-type: none"> • Specification of standard protective clothing, minimum arc flash protective clothing and full arc flash protective clothing. – for both open and closed compartments • Choice of protective clothing according to various switchboard types 	<p>Desired result:</p> <p>Correct type of protective clothing is specified and used to protect against arc flash energy</p>
<p>RISK ASSESSMENT</p> 	<p>GL0707 – section 5:</p> <ul style="list-style-type: none"> • Risk assessment shall be performed for all switchboards • A list of issues that may be addressed in the assessment is included 	<p>Desired result:</p> <p>Risk assessments performed for all switchboards - readily available in STID. Risk assessment used to decide necessary technical actions or limitations in operation</p>
<p>CALCULATIONS AND WARNING SIGNS</p> 	<p>GL0707 – section 6:</p> <ul style="list-style-type: none"> • Specifies how to label equipment and criteria for labelling • Examples are provided on how to indicate arc flash energy level <p>GL0707 – section 7:</p> <ul style="list-style-type: none"> • Specifies how calculations should be done – ref to IEEE1584 or similar 	<p>Desired result:</p> <p>Switchboards labelled with warning signs containing an arc hazard warning and protective clothing requirements - based on correct calculations.</p>

ACTION HANDLER	ACTION DESCRIPTION	CLOSING CRITERIA
Business area level action handler	Consider the adoption of GL0707 and ensure formal adoption if decided.	GL0707 considered for adoption – and adopted if decided. If covered by other documents – describe which ones.
Management in Business areas' operational units to ensure actions are implemented with the correct level of involvement from technical integrity/ modification/ maintenance resources as needed.	Ensure correct calculations according to GL0707 or as a minimum according to local regulations	Correct arc flash calculations in place If necessary – actions to reduce arc flash energy levels are recommended.
	Decide actions to reduce arc flash energy if necessary and implement these	Decided actions are implemented.
	Perform risk assessment and ensure this is available in STID	Risk assessment performed and documented in STID.
	Label arc flash energy levels.	Labelling is according to GL0707 or as a minimum according to local regulations.
	Implement compensating measures if necessary	Identified compensating measures are implemented