

## Minutes of Meeting IEC TC14 MT60214

Date: February 28th, 2017 (11<sup>th</sup> meeting)  
 Venue: BSI, London, UK  
 Room: Room 5.11

### 1 Opening of the meeting

Tuesday, February 28<sup>th</sup>, 2017, 09:00am

### 2 General information

#### a. Membership

new members since 10<sup>th</sup> MT meeting

- none

#### b. Attendance sheet (participants)

Function	Last Name	First Name	NC	Remarks
Member	Ali	Mustafa	PK	not attending
Member	Andersson	Gunnar	SE	X
Member	Carollo	Carlo	IT	X
Member IEEE	Colopy	Craig	US	X
Member IEEE	Dix	Larry	US	X
Member	Drobishevsky	Alexander	RU	not attending
Member	Dyer	Paul	GB	X
Member	Eguchi	Naoki	JP	not attending
Member	Foata	Marc	CA	X
Member	Fuwa	Yasushi	JP	not attending
Member	Gyore	Attila	HU	only 2 <sup>nd</sup> day
IEEE	Geibel	Dave	US	X
Member	Jarman	Paul	GB	not attending
Convenor IEEE	Kraemer	Axel	DE	X
Member	Pegoraro	Luigi	IT	X
Member	Sato	Shigekatsu	JP	not attending
Member	Sridhar		IN	not attending
Member	Bengt-Olof	Stenestam	SE	not attending
Member	Washiyama	Yuki	JP	not attending
Member	Zheng	Shuyu	CN	not attending
Guest	Tanaka	Koji	JP	afternoon first day & second day
Guest	Vyas	Sachin	IN	X

**Total number of members: 20**

#### c. Attendance rate

Meeting	Members present	Members absent	Attendance rate [%]	Guests
Kyoto (2014)	11	4	73,3	1
Montreal (2014)	8	8	50,0	3
Washington (2014)	11	5	68,8	6
London (2015)	10	6	62,5	1
Stockholm (2015)	9	7	56,3	4
Memphis (2015)	9(10)	9(8)	50,0 (55,6)	8
Venice (2016)	8	11	42,1	2

Nashville (2016)	8	11	42,1	6
Dresden (2016)	11	9	55,0	0
Vancouver (2016)	5	15	25,0	4
London (2017)	9(10)	11(10)	45,0 (50,0)	2

**d. Project timeline:**

<b>Committee Draft (CD):</b>	<b>2017-05</b>
<b>Committee Draft for voting (CDV):</b>	<b>2017-11</b>
<b>Final Draft International Standard (FDIS):</b>	<b>2018-09</b>
<b>International Standard (IS):</b>	<b>2019-03</b>

**3 MoM**

**3.1 of the 9th meeting**

Paragraph	Decision	Who	done
	No comments <b>decision Vancouver:</b> will be recalled again in the next meeting <b>decision London:</b> Minutes accepted as written		

**3.2 MoM of the 10th meeting**

Paragraph	Decision	Who	done
	No comments <b>decision London:</b> Minutes accepted as written		

**4 Unresolved tasks from previous working documents (1WD to 4WD)**

**4.1 Topics from 3WD IEC 60214-2 (Draft after London meeting), distributed in May 2015**

Paragraph	Decision	Who	done
6.4.3 (6.5.3)	Text needed to explain tap changer and placement of it for step-voltage regulators. Reference 60076-21 depending on the decision if an step-voltage regulator annex will be created is this text to be put into Annex or in paragraph 6.5.3 Decision: With the decision to have no step-voltage regulator Annex with respect to the winding arrangement, a short description and/or a reference to the step-voltage regulator standard should be established		

6.4.3 (6.5.3) (continued)	decision: CAC will provide a proposal  CAC will provide a proposal for the Vancouver meeting  <b>decision Vancouver:</b> CAC will prepare the proposal for the next meeting  CAC's proposal:	CAC	open
	<b>decision London:</b>  CAC will sent proposal to AK by email for discussion	CAC/AK	open

#### 4.2 Topics from 4WD IEC 60214-2 (Draft after Venice meeting), distributed in March 2016

Paragraph	Decision	Who	done
	none		✓

#### 4.3 Topics from 5WD IEC 60214-2 (Draft after Nashville meeting), distributed in June 2016

Paragraph	Decision	Who	done
	none		✓

#### 4.4 Topics from 6WD IEC 60214-2 (Draft after Dresden meeting), distributed in September 2016

Paragraph	Decision	Who	done
	none  <b>decision Vancouver:</b>  will be recalled again in the next meeting  <b>decision London:</b>  none		

### 5 Unresolved tasks from previous meetings

Paragraph	Decision	Who	done
7.4.8	New text (7.4.8 Overloading) shall be studied by the group and finally discussed/agreed at the next meeting		✓
	Proposal within: GA_7.4.7 new7.4.8 _ 9.4 _ 9.5 after Stockholm meeting 150609		
	Topic (7.4.8) is postponed to the next meeting		
	Check the overload limits in IEEE		
	Take the discussed and changed text and put into the draft		

7.4.8 (continued)	<p>Decision: Consider the changed text of 7.4.8 in 5WD for the next meeting. Opinions and /or proposals shall be distributed at least three weeks before the next meeting takes place.</p> <p>Florin Faur volunteers to provide a paragraph on overload for discussion at the next meeting.</p> <p>Florin's proposal: <a href="#">FF(DG) 7_4_8 Overloading OLTC.docx</a></p> <p>Combine the existing text in the draft with Florin's proposal and pages 5&amp;6 of GA's statement <a href="#">GA Overloads for IEC 160819.docx</a></p> <p>MF/AK will send their proposal to DG/GA for comments</p> <p>During the discussion the term consecutive operation was changed to continuous consecutive operation. A new definition was added. These changes were made directly in the 6WD</p> <p><b>decision Vancouver:</b></p> <p>MF/AK's open task was shifted to the next meeting</p> <p>MF/AK's proposal: <a href="#">MF-AK 7-4-8 Overloading conditions.docx</a></p> <p>MF/AK's proposal with GA comments: <a href="#">GA 7-4-8 Overloading conditions.docx</a></p> <p><b>decision London:</b></p> <p>Text proposal (GA 7-4-8...) is accepted with small changes. Also the resulting changes in 7.2.1.3.2 are accepted.</p> <p>Change the text in 8WD</p> <p><b>Change after the meeting:</b></p> <p>Unfortunately the document GA 7-4-8 Overloading conditions was not based on MF-AK 7-4-8 Overloading conditions as mentioned above. Therefore the question was asked to the MT which text should be used.</p> <p><a href="#">Last meeting MT 60214.pdf</a></p> <p>Answers from AG, LD and GA were received:</p> <p><a href="#">RE_AG_Last meeting MT 60214.pdf</a></p> <p><a href="#">RE_LD_Last meeting MT 60214.pdf</a></p> <p><a href="#">RE_GA_Last meeting MT 60214.pdf</a></p> <p>Based on this answers the text was modified</p> <p><a href="#">NEW MF-AK 7-4-8 Overloading conditions.docx</a></p> <p>an will be incorporated in 8WD</p>	MF/AK GA  AK	✓ ✓  open
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## 6 Ideas for issues/paragraphs to be added

### 6.1 Presentation of tasks addressed in the meetings so far

Paragraph	Decision	Who	done
	no written proposal not discussed so far		

## 6.2 Open tasks

Paragraph	Decision	Who	done
12.1 (whole paragraph)	Measures during commissioning Proposal GA GA 12_1 Commissioning complete proposal.docx		
	Decision: The NOTE of 12.1.2 is placed already at the end of 11.6 and will be deleted here as proposed by GA in his proposal. A reference sentence was added to the proposal Take the modified text and put it into 5WD		
	Open questions: paragraph 12.1.1 has to be discussed at the next meeting with PD changes were done directly in the 6WD		
	<b>During the preparation of the 5WD the following situation in 12.1.3 arose:</b> An introductory paragraph was part of an earlier proposal of GA to this topic and is not shown in GA's actual proposal. Due to the use of the wording "fritting", we have added a definition for fritting in chapter 3. Decision has to be made if the introductory paragraph was forgotten in the last proposal of GA or if it was deleted by GA, then also the definition in chapter 3 has to be deleted. GA will check the right version <b>decision Vancouver:</b> GA's open task was shifted to the next meeting GA's statement: <a href="#">GA 12-1 Confusion.pdf</a> GA's comment: <a href="#">GA 12-1-3-1 Winding res measurement170220.docx</a> <b>decision London:</b> Text will be left as it is in 7WD, agreed Fix the text in 8WD and add the NOTE as written in GA's comment	GA GA  AK	✓      open

<p>12.4 (whole paragraph)</p>	<p>members shall think about possible monitoring devices to create a list, afterwards texts will be provided</p> <p>GA's list: <a href="#">GA_Monitoring systems_Stina_BOS.docx</a></p> <p>AK and MF will propose a "new" structure of this clause respecting other standards and the outcome of the CIGRÉ WG 2.34, distribution per email for comments. Target: November</p> <p>MF introduced his first proposal (Section 12.4 Monitoring MF Vancouver proposal.docx), yellow highlighted passages are new, non-highlighted passages are taken from 6WD. Some changes were made during the discussion.</p> <p>There was discussion on the distinction between invasive and non-invasive techniques. This distinction shall be removed.</p> <p><b>decision Vancouver:</b></p> <ul style="list-style-type: none"> <li>- The group accepted the new structure as given in <a href="#">Section 12.4 Monitoring MF Vancouver proposal.docx</a></li> <li>- MF/AK will work further on this topic</li> </ul> <p><a href="#">MF/AK's proposal: MF-AK 12-4 Monitoring.docx</a></p> <p><b>decision London:</b></p> <ul style="list-style-type: none"> <li>- MF-AK's proposal was changed and accepted</li> <li>- DG will provide additional points to be listed in 12.4.3</li> </ul>	<p>MF/AK</p> <p>AK</p> <p>DG</p>	<p>✓</p> <p>open</p> <p>open</p>
	<p>Monitoring parameters</p>		
	<p>Text needs update and some paragraphs have no text (12.4.1.3, 12.4.1.4 and 12.4.1.5)</p>		
	<p>Postponed to the next meeting in Nashville</p>		
<p>12.4.1.2</p>	<p>Decision: check the existing paragraph on DGA (12.4.1.2)</p> <p>GA's proposal: <a href="#">GA 12_4_1 Insulating liquid testing (Proposals for section 12).docx</a></p> <p>GA will cross-check the requirements given in "Sampling, marking, and storage" with IEC 60475.</p> <p>Add a NOTE not to take samples from energized sealed equipment without checking the pressure. Prevent the tap-changer to be operated during oil sampling, NOTE?</p> <p>Take the changed text and put in the 6WD, GA's additional proposals will be incorporated later</p> <p><b>decision Vancouver:</b></p> <p>GA's open tasks were shifted to the next meeting</p> <p><a href="#">GA's proposal for a NOTE: GA Note for 12-4-1-2 170214 new.docx</a></p> <p><b>decision London:</b></p> <p>GA's NOTE is already covered in the proposal (see MF-AK 12-4 Monitoring.docx)</p>	<p>GA</p>	<p>✓</p> <p>no further action</p>

13.4	Operation of step voltage regulators no text so far		
	Decision: proposal will be prepared CAC will provide a proposal for the Vancouver meeting <b>decision Vancouver:</b> CAC will prepare the proposal for the next meeting <b>CAC's proposal:</b> <b>decision London:</b> <b>CAC will sent proposal to AK by email for discussion</b>	CAC  CAC/AK	<b>open</b>  <b>open</b>

### 6.3 New tasks

Paragraph	Decision	Who	done
different	different proposals of SR, decisions are saved in the document Final discussion on SR's proposals: <u>SR LIST OF CONTRIBUTIONS NASHVILLE.doc</u> AK tries to solve this issue with SR per email.		
	<u>New (?) working docs sent by SR:</u>	SR	
	<u>SR COVERING FOR SR VANCOUVER CONTRIBUTIONS</u>	SR	
	<u>SR CONTRIBUTIONS FOR VANCOUVER</u>	SR	
	<u>SR COPY OF 6 WD AFTER DRESDEN FOR MARKUP FOR VANCOUVER MEETING</u>	SR	
	<u>SR APPENDIX 1 NEW SECT 13 MAINTENANCE</u>	SR	
	<u>SR LIST OF CONTRIBUTIONS NASHVILLE</u>	SR	
	<u>SR MARC FOATA SECT 6 ETC</u>	SR	
	<u>SR POINT 3 SR CONTRIBUTION</u>	SR	
	<u>SR POINT 4 SR CONTRIBUTION</u>	SR	
	<u>SR POINT 5 SR CONTRIBUTION</u>	SR	
	<u>SR POINT 6 SR CONTRIBUTION</u>	SR	
	<u>SR POINT 7 SR CONTRIBUTION</u>	SR	
	<u>SR POINT 8 SR CONTRIBUTION</u>	SR	
	<u>SR POINT 9 SR CONTRIBUTION</u>	SR	
<b>decision Vancouver:</b> SR's open issues were shifted to the next meeting	SR		
<b>decision London:</b> <b>SR shall check, if his contributions /proposals are already satisfied within 7WD. The result shall be distributed by email to the MT.</b>	SR	<b>open</b>	

13.2	<p>Rewording of Operation of on-load tap-changers, especially with regard to the use of a manual drive when the transformer is in service.</p> <p>AK's proposal: <a href="#">AK 13_2 Operation of an on-load tap-changers.docx</a></p> <p>Put the changed text into the 6WD</p> <p>This text shall be checked by PD</p> <p><b>decision Vancouver:</b></p> <p>PD's open task was shifted to the next meeting</p> <p>PD's statement:</p> <p><b>decision London:</b></p> <p>The proposed text was changed online in 8WD and agreed.</p>	<p>PD</p> <p>AK</p>	<p>✓</p>
6.3.2	<p>Is there a revision of this sub-clause needed (dry-type tap-changers)?</p> <p><b>decision Vancouver:</b></p> <ul style="list-style-type: none"> <li>- check the actuality of IEC 60076-11</li> <li>- several changes were made in 7WD</li> </ul> <p>AK's actuality check: <a href="#">AK 6-3-2 Dry type transformers.docx</a></p> <p><b>decision London:</b></p> <p>The paragraph was changed online in 8WD</p>	<p>AK</p> <p>AK</p>	<p>✓</p> <p>✓</p>
11.5	<p>Not discussed so far, but worth to be included due to some issues of this kind in the past</p> <p>Proposal AK</p> <p>Add the following NOTE behind the first paragraph:</p> <p>NOTE The operation of an OLTC other than by using its motor-drive might cause severe damage to the tap-changer. Follow the tap-changer manufacturer's handbook.</p> <p><b>decision Vancouver:</b></p> <ul style="list-style-type: none"> <li>- add the proposed NOTE in 7WD</li> <li>- check handcrank operation with respect to damage (change of direction of operation, too fast operation, too slow operation)</li> </ul> <p>AK's proposal for handcrank operation: <a href="#">AK 11-5 handcrank operation.docx</a></p> <p><b>decision London:</b></p> <p>use the proposal to put into 8WD</p>	<p>AK</p> <p>AK</p>	<p>✓</p> <p>open</p>





13.1	<b>decision Vancouver:</b> - Additional text on unidirectional breathers will be prepared by DG - Gas-accumulation within the tap-changer compartment is a safety issue. Is there a need for explanations regarding pressure issues? <a href="#">DG's proposal for discussion: DG 13-1 Explosive gases.docx</a>	DG	✓
	<b>decision London:</b> DG's proposal was changed and accepted to be put into 8WD	AK	open

## 7 Draft 7WD

All members are invited to look through the complete Draft 7WD and to identify necessary changes or additions up to the meeting following Vancouver.

Paragraph	Decision	Who	done
2	AK's proposal with respect to the dual logo procedure: <a href="#">AK 2 Normative references.docx</a> <b>decision London:</b> proposal to be put in 8WD <b>New document after the meeting:</b> This text version is a new trial to combine the solutions chosen in IEC/IEEE 60076-57-1202 and IEC/IEEE 60076-57-129 with respect to the normative reference issue for dual logo standards. <a href="#">NEW%20AK%202%20Normative%20references.docx</a>	AK	open
3	AK's proposal with respect to the dual logo procedure: <a href="#">AK 3 Terms and definitions.docx</a> <b>decision London:</b> proposal to be put in 8WD	AK	open
4 (new)	AK's proposal with respect to the dual logo procedure: <a href="#">AK 4 Use of normative references.docx</a> <b>decision London:</b> proposal to be put in 8WD <b>New document after the meeting:</b> <b>see above under §2</b>	AK	open
6.1.3	a separation of conservators is not imperative for vacuum type tap-changers. AK's proposal: <a href="#">AK 6-1-3 Physical layouts.docx</a> <b>decision London:</b> Put the revised text into 8WD	AK	open

6.1.3.4	<p>Proposal to stipulate the differences between non-vacuum and vacuum types  AK's proposal: <a href="#">AK 6-1-3-4 In-tank type tap-changers.docx</a></p> <p><b>decision London:</b>  Put the revised text into 8WD</p> <p>Some changes were made to 6.1.3.2 online in 8WD</p>	AK AK	open ✓
6.3.1.2	<p>Actual wording is too specific and an indication for a possible derating (as it is done in the DETC paragraph) is missing.  AK's proposal: <a href="#">AK 6-3-1-2 Liquid immersed OLTCs.docx</a></p> <p>GA's comment on the introduction of LCset, which is newly defined in IEC 60296</p> <p><b>decision London:</b>  Put the revised text into 8WD</p> <p>Some changes were made to 6.3.1.3 online in 8WD</p>	AK AK	open ✓
12.2.4	<p>One sentence is proposed to be deleted, because it is a little bit too pessimistic.  The other changes are more referred to the use of DGA in transformers.  AK's proposal: <a href="#">AK 12-2-4 Discharges c-o operation.docx</a></p> <p><b>decision London:</b>  Put the revised text into 8WD</p>	AK	open
5.2	<p><b>decision London:</b>  Figure 3 title was changed online (a,b,c) in 8WD, but has to be formatted afterwards</p>	GA AK	open
7.3.2	<p><b>5.8 On load tap-changers</b></p> <p>The breaking capacity of an on-load tap-changer depends on the maximum slope of the current after it crosses zero value. For converter industrial applications, this value differs from the one found in applications for power transformers (as described in IEC 60076-1) and is essential for the proper selection of the on-load tap-changer. This value, expressed in A/s, shall be provided to the transformer manufacturer by the purchaser.</p> <p><b>decision London:</b>  exchange the 1<sup>st</sup> sentence of the 2<sup>nd</sup> paragraph with the above text. Change converter industrial applications with converter transformers in the proposed text.</p>	GA AK	open
7.4.2	<p><b>decision London:</b>  Key of Figure 16 was changed online in 8WD</p>	DG AK	✓
9.2.4 (new)	<p><b>decision London:</b>  insert new paragraph "Sudden pressure relay" in 8WD. Changes were made online in 8WD</p>	GA AK	✓
9.2.3, 9.2.5 (new)	<p><b>decision London:</b>  paragraph were discussed and changed online in 8WD</p>	GA AK	✓
10.6	<p><b>decision London:</b>  paragraph was discussed and changed online in 8WD</p>	GA AK	✓

whole document	<b>decision London:</b>	ALL	
	change where it s appropriate requirements (normative) "shall" , "must" , "have to" ... to recommendations (informative). Also "oil" to "fluid" shall be changed where it is appropriate.	AK	open

## 8 Future meetings

Decision	Who
Next meeting date: September for discussion of CC on CD, location: Stockholm (?), Milwaukee (?), Regensburg (?) finally decided when the time line with CD is fixed	

## 9 Any other business

All text- or discussion-proposals, which shall be discussed in the upcoming meeting, shall be distributed at least **three weeks** before the meeting to the members. With this measure everybody has the chance to prepare himself and have a look to the proposal.

## 10 Closing of the meeting

Wednesday, March 01<sup>st</sup>, 2017, 05:00pm

## 11 Abbreviations

Member	Abbreviation
Mustafa Ali	MA
Gunnar Andersson	GA
Carlo Carollo	CC
Craig Colopy	CAC
Larry Dix	LD
Alexander Drobishevsky	AD
Paul Dyer	PD
Naoki Eguchi	NE
Marc Foata	MF
Yasushi Fuwa	YF
Dave Geibel	DG
Attila Gyore	AG
Paul Jarman	PJ
Axel Kraemer	AK
Luigi Pegoraro	LP
Shigekatsu Sato	SS
Sridhar	SR
Bengt-Olof Stenestam	BOS
Yuki Washiyama	YW
Shuyu Zheng	SZ