

Minutes of Meeting

C57.104 Guide for the Interpretation of Gases Generated in Mineral Oil-Immersed Transformers – Working Group

St Louis MO – Oct 29, 2024

- This was the first working group for the revision of C57.104
- The Chair, Ed teNyenhuis, led the meeting. The Chair introduced the Vice-Chair, Luiz Cheim, and the Secretary, Sami Debass who recorded the attendance and meeting minutes.
- There were 134 persons in attendance (see list below). There were 8 persons requesting membership and 37 guests. Since this was the first meeting, quorum was reached.
- The Meeting Agenda was reviewed. A motion to approve the agenda was made by Mickel Saad and seconded by Marko Teofanovic. The agenda was unanimously approved.
- The TF Spring 2024 Meeting Minutes were reviewed. Toni Mellin moved to approve the agenda, which was seconded by Mario Alonso. The minutes were unanimously approved.
- A call for patents was made with no response.
- The Chair earlier invited members to present suggested changes to the guide using a presentation template. The working group had 4 presentations discussed below.
- Presentation # 1 – Luiz Cheim - Section 6.1 & 6.2 - What to do with online monitoring data versus laboratory data.
 - There are differences in results between different monitoring technologies and the lab technology
 - A motion was made by Emilio Morales-Cruz and seconded by Matt Chu to create a task force to investigate this matter to potentially include in this guide, create a new guide, or publish a white paper. The motion was approved.
- Presentation # 2 – Ramsis Girgis - Create a new section in the guide about 6-8:1 H₂ to CH₄ ratio generation caused by moderate overheating of thin oil film between laminations of core
 - Based on publications by Ramsis Girgis and Ed teNyenhuis in 2009 (already cited in the guide)
 - It may be included in the Annex E Case Studies Section
 - Ramsis Girgis made a motion (seconded by Evgenii Ermakov) to write and submit text to the WG for inclusion in the guide. The motion was approved.
- Presentation # 3 - Don LaMontagne - Discussion on Section A.3 Future Work
 - It was proposed to use Artificial Neural Networks in the guide as a new clause (for online and offline DGA)
 - Don LaMontagne suggested creating an online repository of a failure database with pre-failure DGA and RCA results that can be used to train future classification algos
 - Lance Leward made a motion (seconded by Stuart Chambers) that this should be rolled into the earlier approved TF about online monitoring. This motion was approved.

- Presentation # 4 - Rainer Frotscher- Flowchart in 6.1.1: should be AND instead OR in the second decision diamond
 - This would significantly reduce the number of transformers that end up as Status 3, moving those other results to Status 2.
 - The data set that was used in Annex A was “destroyed” so we cannot run the change in the flow chart algorithm to perform any statistics.
 - Sami Debass requested that we create an anonymous data repository.
 - IEEE is doing this for esters to collect and anonymize the data and pass it to the transformer committee.
 - Patrycja Jarosz from IEEE SA gave information about how the existing esters database works if we wanted to go forward with a similar process for the creation of an IEEE database.
 - Tim Raymond made a motion (Adrina S Cisco seconded) for the WG chair to begin a discussion with IEEE for the creation of an anonymized DGA mineral oil database. This motion was approved.

- There was insufficient time for the other 2 presentations prepared but these will be discussed in a virtual working group meeting in Jan / Feb 2025.
- There was no new business to discuss.
- The meeting was adjourned at 15.00.

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Attendance List

NO.	Last Name	First Name	Company Name	Members Attending (Y/N) & Guests
1.	Alonso	Mario	Georgia Transformer	Y
2.	Aleksander	Owicz	Hitachi Energy	G
3.	Attallah	Ahmad G	Sabic	Guest
4.	Baser	Levent	Hitachi Energy	N
5.	Betancourt	Edwin	Siemens Energy	Guest
6.	Bradshaw	Garrett	Howard Industries	
7.	Brett	John	Delta-X Research	N
8.	Boettiger	William	Boettiger Transformers Consulting LLC	Guest
9.	Boman	Paul	HSB	Y
10.	Bonn	Mike	SOLTEX	N
11.	Brodeur	Samuel	Hitachi Energy	Guest
12.	Burk	Griffin	Ergon	Guest
13.	Casserly	Edward	Ergon	Y
14.	Castellanos	Juan	Prolec GE	Y
15.	Castello	Alonso	Kaedi Energy Solution	Guest
16.	Chanda	Sudip	Delta Star Inc	Y
17.	Chambers	Stuart	EPRI International	Y
18.	Cheatham	Mark	GE	Y
19.	Cheim	Luis	Hitachi Energy	Y
20.	Chen	Kezmen	IFD Technologies	N
21.	Chu	Matt	Shihlin Electric	Guest
22.	S. Cisco sullberg	Adriana	Salt River Project	Guest
23.	Colby	Caleb	Schneider Electric	Guest
24.	Cordova	David	Maddox Industrial	Guest
25.	Cox	Randy	GE	Y
26.	Debass	Sami	EPRI	Y

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27.	Delgado	Gabriel	Invenergy	Y
28.	Dillon	Nikolaus	Dominion Energy	Guest
29.	Doak	Eric	D4 Energy solutions	Guest
30.	Doyle	Lee	Vaisala	Y
31.	Draper	Zachary	Delta-X Research	Y
32.	DA Siliva	Roberto	Maschinefabrik Reinhausen	Y
33.	Duffy	Jesse	Nashville Electric Service	Y
34.	Dukarm	James	Delta-X Research	Y
35.	Dulac	Hakim	APT	
36.	Edward	Tolcakir	TTR	Guest
37.	Emilio	Morales - Cruz	Qualitrol	Y
38.	Ellitt	Will	AEP SWEPSCO	Y
39.	Espindola	Marco	Hitachi Energy	Y
40.	Fazlic	Zlatan	Camlin Energy	Y
41.	Faur	Florin	Prolec GE WAUKESHA	Y
42.	Felton	Todd	MVA Diagnostics	Y
43.	Fernandez	Miguel	Braintree Electric Light Dept.	Y
44.	Ferreira	Marcos	Quanta Technology	Y
45.	Finn	Mark	Hitachi Energy	Guest
46.	Forsyth	Bruce	Cargill	Y
47.	Franklin	Chris	MG Power Associates	N
48.	Frotscher	Rainer	Reinhausen Germany	Y
49.	Gagne	Zach	IFD Technologies	N
50.	Gamer	Joshua	Independent Dielectrics	Guest
51.	Gara	Lorne	Shermco	Guest
52.	Garcia	Miguel	Hitachi Energy	Y
53.	Gardner	James	Prolec-GE WAUKESHA	Y
54.	Gasparini	Eloy	Mistras	Guest
55.	Garza	Hector	Ovto De Mexico	N
56.	Girgis	Ramsis	Hitachi Energy	Y
57.	Gonzalez	Luis	Conduct Industries	Y
58.	Gorzin	Alireza	Black and Veatch	Y
59.	Gyore	Attila	Midel & Mivolt Fluids LTD	Guest
60.	Guner	Ishmael	Hydro -Quebec	N
61.	Hamoir	Didier	Transformer Protector Corp.	Guest
62.	Hernandez	Giovanni	Virginia Transf. Corp	Y
63.	Hernandez	Ronald	Doble Engineering	N
64.	Hernandez-Mejia	Jean Carlos	Georgia Tech Neetrac	N
65.	Herron	William	MR	N
66.	Holden	Andy	Ergon	Y
67.	Hollrah	Dereck	Burns & McDonnell	N
68.	Hopkins	Traci	H2Scan	Y
69.	Foata	Marc	MR	Guest
70.	Jakob	Karl	Cargill	Guest
71.	Jarosewski	Marion	Delta Star Inc	Guest
72.	Jarosz	Patrycja	IEEE SA	N/A
73.	John	John	Virginia Transformer Corp.	Y
74.	Jones	Braxton	SD Myers	Guest
75.	Jonak	Ryan	PGE	Guest
76.	Kasonga	Mick	Oncor Elec	N
77.	Khan	Qasim	NEETRAC- Georgia Tech	Guest
78.	Kirchenmayer	Egon	Siemens Energy	Y
79.	Klempner	Dmitriy	SCE	Y
80.	Kowackl	Rafal	Hitachi Energy	Guest
81.	Kurz	Adreas	MR	N
82.	Lamontagne	Donald	Arizona Public Service	Y
83.	Lewand	Lance	Doble Engineering	Y
84.	Li	Chao	Eaton	N

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85.	LI	Jinming	BC Hydro	Y
86.	Li	Weijun	Braintree Electric Light Dept.	Y
87.	Lin	David	IFD Technologies	N
88.	Lizcand	Cesar	SHELL USA INC.	N
89.	Loiselle	Luc	Tetra Tech	Y
90.	Lucas	Tiffany	Prolec GE	N
91.	Luke	Wang	BC Hydro	N
92.	Mabrey	Stephanie	Weidmann	Y
93.	Malde	Jinesh	MIDEL & MIVOLT Fluids Ltd	Guest
94.	Mani	Kumar	Duke Energy	Y
95.	Mani	Balakrshnan	Delta Star Inc	Guest
96.	Mahajan	Kushal	Sungrow	Y
97.	Mantoan	Francis	Siemens Energy	Guest
98.	Mbouombouo	Mama	Hitachi Energy	N
99.	Megdad	Mohammed	IPS	N
100.	Mellin	Toni	VAISALA	Y
101.	Mannannam	Robert	Maddox Industrial Transf.	N
102.	Miller	Philip	MLGW	N
103.	Morgan	Charles	Eversource Energy	Guest
104.	Munnoz	Molina	Orto	Guest
105.	Murkowski	Emma	Delta-X Research	Y
106.	Murray	David	TVA	Y
107.	Naja	Ismael	Eaton	Guess
108.	Nambi	Shankar	Bechtel Energy	Guest
109.	Newbill	Mark	Hitachi Energy	Y
110.	Nims	Joe	Allen & Hoshall	N
111.	Nolte	Mike	kiewit	Guest
112.	O'Malley	Anastasia	Con Edison NY	N
113.	Pacas	Joel	IFD Technologies	Guest
114.	Panesar	Parminder	Virginia Transformer	Y
115.	Patel	Vinay	Con Edison	Y
116.	Patel	Rakesh	Hitachi Energy	Y
117.	Pedro	Pedro	EFACEC-TRANSFORMERS	N
118.	Perjanik	Nick	Avo Diagnostic Services	Guest
119.	Plisic	Goran	Siemens Energy KPT	N
120.	Pruente	John	APC Construction	Y
121.	Radu	Ion	Hitachi Energy	Y
122.	Raymond	Tim	Inductive Reasoning	Y
123.	Reed	Scott	MVA	Y
124.	Reeder	Perry	GE	N
125.	Reimer	Jonathan	Fortis BC	Guest
126.	Razvan	Arash	Delta Star Inc	Y
127.	Rossini	Yuri	Siemens Energy	Y
128.	Saad	Mickel	Hitachi Energy	Y
129.	Schott	Cody	The J-J Family of Camp	N
130.	Schmitt	Wolfgang	Schneider Electric	Guest
131.	Sinclair	John	Black and Veatch	Y
132.	Smith	Jimmy	Howard Industries	Guest
133.	Soeller	Markus	Power Diagnostix System	N
134.	SOHN	Yong Tue	HYOSONG HICO	Y
135.	Soto	Mauricio	Hitachi Energy	Y
136.	Sparling	Brian	KINECTRICS	Y
137.	Staley	Brad	Leeward Renewable Energy	Y
138.	Steeves	Greg	Baron USA	Y
139.	Sweetser	Charles	Omicron	Guest
140.	Witkowski	Michal	Hitachi Energy	Guest
141.	Tanaka	Troy	Burns and McDonnell	Y
142.	teNyenhuis	Ed	Hitachi Energy	Y

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143.	Teofanovic	Marko	Ontario Power Generation	Guest
144.	Thierry	Juan Luis	Doble Engineering	Guest
145.	Thomas	Prevost	Weidman	N
146.	Thompson	Ryan	Burns and McDonnell	Y
147.	Tillery	Tim	Howard Industries	Guest
148.	Tostrud	Mark	Dynamic Ratings	Y
149.	teNyenhuis	Ed	Hitachi Energy	Y
150.	Van Drell	Cole	American Transmission Co	Y
151.	Vanderwalt	Alwyn	ECI	Y
152.	Verdolin	Rogério	VERDOLIN Solutions	Y
153.	Vir	Dharam	Prolec GE	Y
154.	Volodymyr	Prykhodko	ZTZSETVECES	N
155.	Vu	Nguyen	IFD Technologies	Guest
156.	Wager	John	AEP	Guest
157.	Washburn	Alan	Burns & McDonnell	Guest
158.	Welton	Drew	Intellirent	Y
159.	Watson	Joshua	NPPD	N
160.	Weyer	Daniel	Monolith	Y
161.	White	Elliot	SD Myers	N
162.	Whitehead	Bill	H2Scan	Y
163.	Whitesell	Kayla	Delta-X Research	Guest
164.	Woods	Deanna	ATC	Y
165.	Wess	Zacan	Weg Trains	Guest
166.	Xu	Shuzhen	FM Global	Y
167.	Zhn	zhinwring	Chint	Guest
168.	Zuiderveen	Thomas	IFD Technologies	Guest