

Performance Characteristics Subcommittee

Task Force Inverter Transformer Precautions on Ground Shields C57.159

Unapproved Meeting Minutes

**Fall 2023 meeting
Kansas City, MO
4:45 pm Monday, October 23, 2023**

The Task Force met at the Westin Hotel – Century C Conference Room. The meeting was called to order at 4:45 PM by Chair, Dr. Hemchandra Shertukde

Chair made opening comments.

49 attendees. This is the first meeting of this task force.

Introductions

Approval of Agenda: The Fall 2023 agenda was approved unanimously without discussion.

Motion: Don Ayers

Second: Vijay Tendulkar

Call For Patents: The Chair presented the information on Patent Disclosures and asked the group to report any relevant patent issues – None were communicated.

Copyright Notice: The Chair presented the IEEE_SA Copyright Policy. No discussion.

Chair presented Working Group Policies stating all attendees at first meeting today requesting membership are granted membership.

Chair presented previous of PAR scope published in 2016

Current document expiration December 31st, 2026

Presentation by Phil Hopkinson: Analysis and Integration of Yy padmount transformers heating in a solar PV farm

SUMMARY

- Standard Transformers newly installed connected to IGBT transformers were overheating and gassing
- Metering showed line-line voltage is devoid of harmonics and typical. Line-ground voltage has much higher harmonics up to the 200th.
- Inverters well filtered line to line and line to neutral but not line or neutral to ground
- DGA Analysis shows Hydrogen and Methane in oil indicating possible partial discharge
- Transformer passed all tests before teardown
- Teardown showed carbon evident in insulation materials between LV winding and coil, specifically at the laminations
- Shielding the core eliminates the high harmonics voltage line-ground.

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- LV neutral should remain ungrounded because to prevent ground loop with IGBT ground

Discussion commenced regarding the presentation

Dan Sauer suggested to include "liquid immersed" terminology when PAR is created which is consistent with C57.12.80

Chair recommends creating PAR study group to take into consideration the new topics.

PAR study group to meeting virtually before Spring 2024 meeting to develop Title, Scope

Adjourned at 6:05

The Task Force will meet again at the Spring 2024 meeting,

Chair: Dr. Hemchandra Shertukde

Secretary: Rhea Montpool

Participation list:

Last Name	First Name	Company	Req. Membership
Ronchi	Rodrigo	WEG Transformers	Y
Walker	David	MGM Transformers	Y
Sauer	Dan	Eaton	Y
Ayers	Donald	Ayers TX	Y
Lee	Moonhee	Hammond Power Sol	Y
Oakes	Stephen	WEG	Y
Weiss	Zachery	WEG	Y
Hakim	Shamaun	WEG	
Partyka	George	PTI	
Snyder	Steve	Hitachi	
Kenndy	Sheldon	Sheldon P. Kennedy Eng	Y
Larrison	Andrew	Hitachi	Y
Garcia	Miguel	Hitachi	Y
Nunn	Shawn	Hitachi	Y
Masoud	Sharifi	Siemens Gamesa R.E	Y
Orr	Paul	NEMA	Y
Gamboa	Jose	HJ Family of Companies	Y
Door	Jeffrey	HJ Family of Companies	Y
Wheeler	Michael	Hitachi	Y
Young	Samuel	Hitachi	Y
Newbill	Mark	Hitachi	Y
Naderian	Ali	BBA	Y
Lopez-Fernandez	Xose	Univrsidad De Vigo	

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Watson	Joe	JD Watson & Assoc	Y
TeNyenhuis	Ed	Hitachi	Y
White	Joe	Power Engineers	Y
Staley	Brad	Leeward Energy	Y
Emilio	Morales-Crus	Qualitrol	Y
Spurlock	Mike	Spurlock Eng Serv	Y
John	John	Virginia Transformer	Y
Hernandez	Giovanni	Virginia Transformer	Y
Katapalli	Thrinadha	Virginia Transformer	Y
Mellin	Toni	Vaisala	Y
Mabrey	Stephanie	Weidmann	Y
Beaudoin	Jason	Weidman	Y
Gardner	James	Prolec-GE	Y
Dominguez	Raul	WEG	Y
Malde	Jinesh	M&I Materials	Y
Tendulkar	Vijay	Eaton	Y
Levin	Aleksandr	Weidman	Y
Delgado	Gabriel	Invenergy	Y
Matthews	Lee	Howard	Y
King	Gary	Howard Ind	Y
Gaytan	Carlos	Prolec GE	Y
Hipchen	John	Copper Development Assn	Y
Marquardt	Bryan	Cleveland Cliffs	Y
Conneighton	Brian	Cleveland Cliffs	Y
Pousset	Baptiste	Transformer Protection Co	Y
Coker	Anthony	M&I Materials	Y