

P1409 CUSTOM POWER TASK FORCE

IEEE 15.06.05.01

Meeting Minutes

IEEE PES 1999 Winter Meeting

New York, NY

Tuesday, February 2, 1999

New York Hilton

West Ballroom

1:00 to 3:00 PM

The Custom Power Task Force met during the IEEE PES Winter 1999 Meeting in New York, NY. Dan Sabin chaired the meeting.

The IEEE Standards System houses the web page for the task force. It is located at <http://grouper.ieee.org/groups/1409/index.html>. Currently, the following information is available at the site:

- General information about P1409
- Archive of drafts of the P1409 Guide in Adobe Acrobat PDF format
- Announcements of meetings
- Latest version of the custom power technology development list
- Minutes and agendas from prior meetings in PDF format
- Presentation material from recent panel sessions

Introductions

Sabin called the meeting to order and announced that this would be a working meeting, primarily focusing on reviewing the application guide. The agenda was reviewed, and attendees introduced themselves, identifying their names and company affiliations. A total of 49 people signed the attendance list, a summary of which is attached. Members were asked to update their information on the attendance list, as well as update the status of any absent members they were aware of. The current membership lists includes 66 members, 17 correspondence members, and 129 guests.

Minutes from San Diego

The last meeting of the task force was at the 1998 IEEE PES Summer Meeting in San Diego, California. Middlekauff presented and reviewed the minutes at the New York meeting. It was announced at the San Diego meeting that the PAR for the Custom Power

Task Force had finally been approved on June 24, 1998. The application guide was discussed briefly, primarily to identify and re-affirm the chairman for each chapter. The chapter topics were reviewed and determined they were satisfactory. The list of chapter chairman and titles was to be posted on the web site. A goal was set to have all material for the chapters gathered by October 1, and the first draft of the guide complete by December 1. A special publication was discussed, which would introduce and define custom power, using material from previous panel sessions. The goal was to have the draft for this publication complete by the Winter 1999 meeting, and have the final draft ready by the T&D show in April. (It was noted that the minutes had incorrectly noted the T&D show as being in May.) The custom power technology development list was distributed at the meeting, and several additions were suggested at the meeting. A panel session was conducted at the Summer 1998 meeting titled "*Application of Custom Power Devices for Enhanced Power Quality*". This session was once again very well attended. All presentation material from this session is to be available on the web site. A future panel session is planned for the Winter 1999 meeting in New York. It was noted that the P1409 web site will continue to be the primary source of information for the group; it has been very well received and heavily utilized. Members can contact the officers for material if they do not have access to the web site. The next meeting was to be February 2, 1999 in New York. The minutes were unanimously approved, with the one correction for the date of the T&D show noted.

P1409 Web Page

A request was made at the previous summer meeting to remove password protection for the P1409 web page. IEEE requests that the password protection remain on the web site. Members are to contact Dan Sabin if they need the password. Several updates to the application guide have been submitted but not posted on the web site by the date of the meeting. They are now posted there.

Application Guide

The purpose of the guide was reviewed. There was another brief discussion as to what equipment should be addressed in the guide, and it was reiterated that custom power is defined to pertain to equipment applied at voltage levels from 1kV to 38kV. It was decided to mention some of the key low voltage (480V) applications in the guide, but it would not focus on them.

The chairman asked that the attendees break into discussion groups to discuss the content and purpose of each chapter of the guide. The chapters were first identified and described, and the chapter chairman identified. Chapter discussion leaders were assigned for chapters whose chairmen were not present. Attendees were asked to join the discussion of the chapter they were interested in contributing to. After about 40 minutes of the breakout session, each group leader gave a report on their discussion. Final notes and updates are to be submitted to the task force secretary, and will be organized more completely. Some highlights from the chapter discussions are as follows:

Definitions

Neil Woodley, Chapter Chair

The term “Custom Power” is to be redefined more clearly. An emphasis was placed on the term “static,” which would then exclude motor-generator sets from being considered custom power applications. It was again noted that M-G sets and UPS devices will be mentioned in the guide, but not focused upon. Members of the group suspect there is a separate IEEE guide focusing on UPS devices, which would eliminate the need for much discussion the custom power application guide. Neil Woodley is to confirm this.

A discussion following Neil’s presentation addressed the issue of the use of “device” versus “controller” when referring to custom power equipment. No conclusion was met.

Input/Output Requirements

Stephen Middlekauff, Chapter Chair

It was determined that the title of this chapter should be renamed to “Application Considerations,” and that much of the focus of this chapter may overlap with the “Engineering Issues” chapter. It was decided that this chapter will focus exclusively on considerations concerning the custom power equipment itself, with regard to what effect the utility system and the protected load may have on the specifications of the device. Based on the content of the custom power technology development list, it was determined there are three distinct emerging technologies: static transfer switches, static series compensation devices, and static shunt compensation devices. This chapter will attempt to identify issues concerning these three technologies specifically. The chapter will be reorganized as follows:

- A. Definitions of power quality events; reference the Emerald book for power quality event definitions, and develop a solutions matrix for which type of custom power technologies will best address these events.
- B. Identify load characteristics: determine what is important to the load (e.g., phase shift, line-to-line voltage, etc.)
- C. Sizing and performance requirements: discuss what parameters and specifications must be considered given various load characteristics.
- D. Special Considerations: focus on issues dealing with specific technologies (i.e. issues that may be a concern for a static series device but not a transfer switch).

It was suggested that this chapter also consider issues concerning combinations of the three technologies, for example a series compensation device in combination with a transfer switch. Some of the material in the current version of this chapter was deemed more appropriate for the ‘Engineering Issues’ chapter.

Performance Measurements

Jeff Smith, Chapter Chair

It was decided that more references were needed to IEEE 1159. This chapter will address the effect on the monitoring location has on addressing the performance of a custom power device. The chapter discussion group also discussed the specific requirements for properly evaluating the response of a custom power device. It was suggested by the task force that this chapter might be moved closer to the front of the guide, since many of its issues are relevant to other chapters. A concern was raised about defining efficiency, and it was suggested it may be better addressed in the 'Economics' chapter, but was concluded it a method for measuring efficiency should be defined in the 'Performance Measurements' chapter.

Engineering Issues

Jim Burke, Chapter Chair

This discussion group determined this chapter should focus on how a custom power device should respond to various events. Other issues were mentioned which revealed a strong overlap with the 'Input/Output Requirements' chapter. Stephen Middlekauff and Jim Burke will coordinate with each other to redefine these two chapters to ensure there is no overlap and all appropriate issues are addressed. It was agreed that this chapter will focus on requirements of the utility system and the load. Narain Hingorani raised a point concerning load requirements involving synchronous versus induction motor load, specifically the synchronism requirements involving synchronous loads. Another suggestion involved addressing a DC component as related to power quality events.

Economic Assessment

Ram Mukherji, Chapter Chairman

Ram gave a brief presentation on the results of his discussion group. The final results of their discussions will be forwarded to the task force secretary for posting on the web site.

Custom Power Technology Development List

It was announced to the group that the technology development list has been reorganized by technology type as opposed to utilities as before. The list is now comprised of static transfer switches, static series compensation devices, and static shunt devices.

Applications are alphabetized by utility under each section. After compiling any updates from the meeting, the updated list will be posted on the web site.

Panel Session

There was a panel session at the Winter 1999 meeting, titled “*Application of Custom Power Devices for Enhanced Power Quality*” at 9:00 AM on Tuesday, February 2. Approximately 100 people attended the session. All presentation material will be available on the web page, and a paper version of all presentations are in the proceedings. Economics of the devices still appears to be the hot topic among the attendees. The panelists were:

1. “*Special Application Considerations for Custom Power Devices.*” S. Nillson, Technical and Business Consultant
2. “*Improved Power Quality Solutions Using Advanced Solid State Switching and static Compensation Technologies.*” G. Reed, Mitsubishi Electric Power Products
3. “*Field Demonstration of a Distribution Static Compensator Used to Mitigate Voltage Flicker.*” J. Gurney, BC Hydro, Canada
4. “*Application of Active Filters for Power Quality Improvement.*” J. Johnson, Electronic Power Conditioning, Inc.
5. “*Power Quality Performance of a Multi-Mode Transportable Battery Energy Storage System.*” T. LaRose, Salt River Project

CIGRE Liaison Report

Narain Hingorani gave a report on the activity of the CIGRE custom power working group. Most of the material is in for a CIGRE sponsored application guide, but they are not going into near as much detail as the IEEE custom power task force application guide is. The CIGRE custom power working group plans to meet for two days in Edmonton around the summer IEEE PES meeting to finalize their document, and publish it shortly afterward. They will submit a draft copy to the IEEE CPTF to review.

Next Meeting

The next meeting of the Custom Power Task Force will be at the IEEE/PES Summer 1999 Meeting in Edmonton, Alberta, Canada.

*Minutes submitted by Stephen Middlekauff, P1409 Secretary
February 9, 1999*

Custom Power Task Force
TF 15.06.05.01

Meeting Attendance

IEEE/PES Winter 1999 Meeting, New York, New York
Tuesday, February 2, 1999
New York Hilton, 1:00 to 3:00 PM

Name	Company
* Gregory Ardrey	Alliant Utilities - Wisconsin Power & Light
* Arun Arora	ABB High Voltage Technologies
Bruno Bisewski	Teshmont Consultants, Inc
* Colin E.J. Bowler	ABB
* James L. Burke	ABB Power T&D Company, Inc.
* Randy Collins	Clemson University
Mike Ennis	S&C Electric
Glenn Hatanaka	Ontario Hydro Technologies
* Gil Hensley	Pacific Gas & Electric Co
* Narain Hingorani	Hingorani Power Electronics
* Bob L. Hirt	ABB
* Clark Hochgraf	Siemens
* Bill Howe	E Source, Inc.
* Eric John	ABB
* Brian K. Johnson	Department of Electrical Engineering
* John Kennedy	Georgia Power Company
Mohan Kondragunta	Edison Technology Solutions
* Mike Kotch	Tampa Electric Co.
W. O. Kramer	Silicon Power Corporation
* David Kreiss	Kreiss Johnson Technologies
Thomas W. LaRose	SRP
Peter Lehn	University of Toronto
* Jim Lemke	Cinergy
Juan D. Martinez-Velasco	Universitat Politecnica Catalunga
* Keith Mathenia	Enron

Name	Company
* Mark F. McGranaghan	Electrotek Concepts, Inc.
* Stephen Middlekauff	Duke Power Company
* Ram Mukherji	Enron Energy Services
* Peter Nedwick	Virginia Power
John O'Neill	Commonwealth Edison
Gregory L Olson	Public Service Electric & Gas Company
* Pramod Parihar	Bechtel
* Scott Peele	Carolina Power & Light Company
* Brian Prokuda	Keweenaw Power Systems
* Alvaro J. P. Ramos	University of Pernambuco - Escola Politecnica
* Gregory F. Reed	Mitsubishi Electric Power Products, Inc.
Paulo F. Ribeiro	Babcock & Wilcox - Accelerator & Magnet
* D. Daniel Sabin	Electrotek Concepts, Inc.
Joseph M. Santuk	Virginia Power Co.
Tom Short	Power Technologies, Inc
* Jeff Smith	Electrotek Concepts, Inc.
* Le Tang	ABB Electric Systems Technology Institute
Betty Tobin	Seattle City & Light
David Vannoy	Connectiv Solutions
Randy Wachal	Manitoba HVDC Research Center
Reigh Walling	GE Power Systems Energy Consulting
* Dan Ward	Virginia Power
* Cheri Warren	Power Technologies, Inc.
* Neil H. Woodley	Siemens

* Denotes task force member

Total in Attendance: 49