

# **P1409 CUSTOM POWER TASK FORCE**

IEEE 15.06.05.01

## ***Meeting Minutes***

### **IEEE PES 2000 Summer Meeting Seattle, Washington Tuesday, July 18, 2000**

**Sheraton Hotel and Towers  
8:00 to 10:00 AM**

The Custom Power Task Force met during the IEEE PES Summer 2000 Meeting in Seattle, WA. 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. Copies of the application guide were passed out for review. A total of 36 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 80 members, 17 correspondence members, and 134 guests.

### **Minutes from Las Vegas**

The last meeting of the task force was at the 2000 IEEE Joint Meeting of the Distribution Subcommittee and the IEEE Standards Coordinating Committee 22, held in Las Vegas, Nevada. Middlekauff presented and reviewed the minutes at the Seattle meeting. The application guide was discussed in detail, utilizing breakout sessions to discuss each chapter. Each breakout session representative reported to the group on their proposed changes, and follow-up discussion ensued. Sabin proposed several changes to some of the definitions, including *source transfer switch* and *backup stored energy supply*. The

group decided to omit the terms *reliability* and *shunt / series hybrid controller*. Neil Woodley sent a report from the official PES Winter 2000 meeting in Singapore.

## **Panel Session**

A panel session was held at the official Winter 2000 PES meeting in Singapore. The session, chaired by Math Bollen, covered the topic of voltage sag mitigation. The presentations are available on the P1409 web site. A panel session for the Winter 2001 IEEE PES Meeting is being planned and is being organized by Sabin.

## **Application Guide**

Sabin reviewed the title and purpose of the application guide, and reminded members that a password-protected copy of the draft guide was available on the P1409 website. IEEE policy requires that draft documents remain password protected. The username and password can be obtained by contacting the task force officers by email or by telephone.

Numerous changes have occurred to the guide since the last meeting, due to editorial review and recent email discussion. These changes included modifying the definitions to match the definitions provided in standard 1159. A question was raised regarding when the document was required to be approved, and it was confirmed the group has four years since May of 1998 to complete the guide.

The chapter titles and chairmen were identified and affirmed. The chapter titles and chairmen are:

- Terminology: Neil Woodley
- General Needs: Dan Sabin
- Application Considerations: Jim Burke
- Performance Objectives: Open
- Case Studies: Open
- Economic Assessment: Ram Mukherji
- Bibliography: Dan Sabin

Randy Collins was nominated for the chapter chairman for the Case Studies chapter, and he accepted.

Discussion groups were formed for each chapter, and a representative gave a report of the discussions afterwards.

**Terminology:** Discussion chair: Brian Johnson

The group decided to strike the term "reliability" in the definition of "custom power" and "custom power controller." They also added a second sentence to the definition of "power quality" (3.1.19) to include "The concept includes phenomena like long (sustained) and short (momentary) interruptions, voltage sags, and transients as well as harmonic distortion, voltage fluctuation (flicker), voltage notching and others." A new definition would be added for static switch.

The group addressed the definition 3.1.24 for static circuit breaker, and identified the need to include a safety requirement of an integrated mechanical switch to prevent leakage current. It was concluded to elaborate section 5.3.3 to include this topic, with Ray O'Leary contributing the information.

The group decided to add and clarify the definitions for IGCT, GCT, IGBT, GTO, and other common power electronic components found in custom power devices. There was also a suggestion to ensure consistency of the use of the terms *transfer switch* and *static breakers*, specifically within chapter 5.

***Application Considerations*** Discussion chair: Jim Burke

A discussion centered on whether to omit the section on static voltage regulators, due to the fact that only a small number of them are in existence, and the technology is not being accepted by the market. Despite various testimonials from industry representatives that there was little interest in the technology, the decision was made to keep the SVR section in for now.

Jim also pointed out that Section 4.6 of the guide implies the utility will provide custom power solutions, and the group decided this should be changed to remove this implication, and clarify that custom power controllers may be implemented by the utility or the end-user.

***Performance Measurements*** Discussion Chair: Scott Peele

This group emphasized the need for measuring and characterizing the *quantity* of power in addition to the power quality focus already included in this chapter. Studying the quantity of power would help better understand the environment the custom power controller will be in, as well as necessary power ratings, compensation requirements, inrush currents it could be subjected to, etc. The breakout group suggested changing the section name to "Sizing the Equipment." A group discussion also suggested the name "Performance Specification." No final decision was reached.

This group decided to remove section 7.1.1, which discusses sag and reliability indices, citing it is already addressed in chapter 4. This group suggested adding a section that discussed where to monitor for end-use equipment, as well as monitoring the actual custom power device. A suggestion was also made to remove SARFI references altogether, due to the fact that these indices is still relatively new and not universally accepted. The alternative is to have the section refer to IEEE standards 1159, 1346, and 519.

Chris Melhorn was appointed the new chairman for this chapter.

***Case Studies*** Discussion Chair: Randy Collins

This chapter currently consists of various case studies on different types of custom power controllers. The group noted that the static series compensator section currently

consisted of four cases, three of which were capacitor based. The group suggested deleting two of the three capacitor based cases, leaving one and the fourth case, which was a SMES, based case. The group suggested adding another case or elaborating on the existing case regarding battery storage energy systems. Ernst Camm is to supply info for this case.

The group noted that the two transfer switch case studies were somewhat redundant, and suggested removing one and expanding the other, with the possibility of adding a second case on a high speed mechanical switch. The group suggested expanding and editing the case for the static compensator (DSTATCOM) and the case for the static VAR compensator.

The group suggested a new format for the case studies, which would include three main sections:

- 1) Problem statement: a concise statement of the power quality problem, identifying the critical load, the configuration of the service from the utility, reasons why the power quality problem is occurring, and a one-line diagram.
- 2) Solution: explain why the specific technology was chosen, and the ratings and specifications of the device, and any limitations inherent to the technology.
- 3) Results: Discuss power quality conditions before and after the application, in a format that clearly describes the performance of the device after installation (graphical, tabular, etc), showing waveforms illustrating performance.

**Economics** Discussion Chair: Ram Mukherji

This group suggested elaborating section 9.3.1 to discuss reserve capacity costs that could be transferred to end-user. They also suggested a discussion of the cost of facilities (real estate, footprint costs, etc.).

## **Next Meeting**

The IEEE P1409 Task Force currently plans to meet next at the IEEE PES 2001 Winter Meeting on Tuesday, January 30, 2001 in Columbus, Ohio, USA.

## Custom Power Task Force *Meeting Attendance*

**IEEE/PES Summer 2000 Meeting, Seattle, Washington, USA  
Tuesday, July 18, 2000**

Name	Company	Custom Power
Math Bollen	Chalmers University of Technology	Guest
Ernst Camm	S&C Electric Co.	Member
Randy Collins	Clemson University	Member
Fouad Dagher	National Grid	Member
Osmani Demirci	American Electric Power	Member
Andy Dettloff	Detroit Edison	Member
Russ Ehrlich	Conectiv	Member
Ricky Evans	Virginia Power	Guest
Alan Fraser	EWEB	Member
Dave Gilmer	Yampa Valley Electric Assn., Inc.	Member
Mark Halpin	Mississippi State University	Member
Gil Hensley	Pacific Gas & Electric Co	Member
Reza Iravani	University of Toronto	guest
Jon Jipping	Detroit Edison	member
Eric John	ABB Power T&D Company, Inc.	Member
Brian K. Johnson	Department of Electrical Engineering	Member
John Kennedy	Georgia Power Company	Member
Thomas S. Key	EPRI-PEAC	Guest
W. O. Kramer	Silicon Power Corporation	Guest
David Kreiss	Kreiss Johnson Technologies	Member
Frank Lambert	Georgia Tech - NEETRAC	Member
Chris Melhorn	EPRI-PEAC	Member
Stephen Middlekauff	Duke Power Company	Member
Malte Mosters	Lectrix	Member
Ram Mukherji	Enron Energy Services	Member
Ray O'Leary	S&C Electric	Member
Magnus Olofsson	STRI AB	Member
Scott Peele	Carolina Power & Light Company	Member
D. Daniel Sabin	Electrotek Concepts, Inc.	Member
Ambra Sannino	University of Palerues	Member
Peter Shah	Metrosonics Inc.	Guest
Michael T. Sheehan	Puget Sound Energy	Guest
Georges Simard	Hydro-Québec	Correspondence Member
Timothy D. Unruh	Custom Energy	Guest
David Vannoy	Conectiv Solutions	Guest
Neil H. Woodley	Siemens AG	Member

Total in attendance: 36