CUSTOM POWER TASK FORCE

TF 15.06.05.01

Meeting Minutes

IEEE PES Summer 1995 Meeting, Portland, Oregon
Tuesday, 25 July 1995, 3:00 - 4:30 PM
World Trade Center, Conference Rooms 3 and 4

A meeting of the Custom Power Task Force was held prior to the Distribution Voltage Quality Working Group meeting at the Winter Power Meeting in New York. The meeting was chaired by Dan Sabin, substituting for the task force chairman, Harshad Mehta.

Introductions

Attendees introduced themselves; 49 signed the attendance list, a summary of which is attached. Attendees were asked to update their addresses, phone numbers, etc., on the membership list passed around. The updated membership list is also attached.

At the request of Dan Ward, chairman of the Distribution Voltage Quality Working Group, Dan Sabin requested those present to state whether or not they would be attending the IEEE PES Summer 1997 Meeting in Berlin, Germany. The results of the survey were:

- would probably attend: 7%
- would maybe attend: 58%
- would definitely not attend: 35%

Similar surveys were conducted throughout the summer power meeting with the intention of planning overall conference room needs for the Berlin conference.

Minutes from New York

The prepared for the last meeting of the task force at the IEEE PES 1995 Winter Meeting in New York were prepared and presented by Dan Sabin.

Status of P1409

Dan Sabin announced that the Project Authorization Request (PAR) submitted to the IEEE Standards Board on 5/1/95 was disapproved. The board requested that the PAR be returned to the task force, requesting a clearer and more appropriate title, as wells as strongly suggesting that the task force seek international coordination through appropriate IEC national bodies or technical committees.

The group discussed the pros and cons of changing the voltage limits that the Custom Power Guide Book would address. No objections were raised in establishing an upper limit of 38 kV. However, there was no clear consensus as to what the lower voltage limit should be. Some argued for 480 volts; others for 4.16 kV. It was decided to submit the PAR with a lower limit of 1 kV to firmly establish that this guide was to be applicable to the distribution level only. A revised PAR will be resubmitted for the board's 9/21/95 meeting (enclosed).

Project Title:

> Guide for Application of Power Electronics for Power Quality Improvement on Distribution Systems Rated 1 kV through 38 kV

Scope of the Project:

> The project's objective is to produce a guide to introduce and define the emerging technology of custom power. This technology involves devices and circuit configurations of power electronic equipment used in utility power distribution systems rated 1 kV through 38 kV. The guide will include definitions, general need guidelines, performance objectives, electrical environments, input/output criteria, performance measurements, case studies, bibliography, and engineering tradeoffs.

Purpose of the Proposed Project:

> To provide guidelines and performance expectations for the application of power electronic-based equipment on utility distribution systems to improve power quality and control in these distributions systems. It will be a resource to utilities as they enter into the competitive marketplace, providing detailed information about custom power devices as options to solving power quality problems.

Proposed Coordination/Recommended Method of Coordination:

Liason Membership
Power Quality Standards Coordinating Committee SCC22

Circulation of Drafts:
IEC Technical Committee 77: Electromagnetic Compatibility
└→ CIGRE Study Committee 36: Electromagnetic Compatibility
└→ Working Group 36.05: *Voltage Quality* (Joint CIGRE/CIRED WG CC02)

If we want to follow the route of developing an international standard, then coordination with the CIRED/CIGRE CC.02 working group may be a good method.

Chairman's Report

Dan Sabin delivered the chairman's report for Harshad Mehta. Harshad feels that there is a great deal of urgency in having the Custom Power Guide Book finished as quickly as possible. The guide will be an excellent resource for utilities as an accepted guide listing utility-side alternatives to power quality problems.

New Applications

Ned Schiff of American Superconductor Corporation volunteered information about applications related to custom power that his company is actively pursuing.

Guidebook Outline

Most of the meeting was dedicated to reviewing presentations by chapter chairpersons responsible for individual sections of the Custom Power Guide Book.

1. Definitions *draft chapter enclosed*
Neil Woodley, Westinghouse Corporation

Neil's chapter on definitions include an introduction to custom power and an alphabetical listing of terms that he felt would be used by the other chapter chairman in their guide book sections. Some suggestions were raised that Neil check on how many of his terms are already defined by IEEE Standards 1250-1995 and 1159-1995.

Discussion was raised at this point concerning the importance of IEEE remaining a neutral party in the emerging field of custom power products, not favoring one manufacturer over another. Therefore, it was agreed that an action item for the task force secretary would be to review all of the guide book sections, sanitizing each of proprietary material.

2. General Needs *draft chapter enclosed*
Dan Sabin, Electrotek Concepts, Inc.

One of the focal points of Dan's section on general needs will be in relating the range of power quality disturbances occurring on electric power distribution systems. He will draw some incident rate information from recent papers which publish results from the Electric Power Research Institute research project (EPRI RP3098-01), *An Assessment of*

Distribution Power Quality. His approach to this section of the guide book will be to relate:

- typical disturbances and impacts on customer equipment operation
- power quality disturbance incidence rates
- range of available solutions
- role of custom power technologies
- technical requirements of custom power technologies
- custom power topologies

A few of the task force members suggested that Dan refer to the diagrams and figures in IEEE Std. 1250-1995 for reference while writing this section of the guide book, which he agreed to do.

3. Configurations/Objectives *draft chapter enclosed*
Neil Woodley, Westinghouse Corporation

Neil's second presentation dealt with more technical information regarding the different custom power devices, including specifics for the DSTATCOM, DVR, solid-state breaker, and solid-state transfer switch. The group agreed that the section was a good start, but needed to be expanded so as to not exclude other types of distribution-level custom power options.

4. Input/Output *key diagrams enclosed*
Larry Morgan, Duke Power Company

Larry Morgan's presented the key graphics to the group to explain the methodology he would use in writing his chapter of the guide book. He presented a model that accounts for the causes and impacts of sags along with solution methods.

5. Performance Measurements *outline enclosed*
Mark McGranaghan, Electrotek Concepts, Inc.

Mark was not present at the task force meeting, but he did put together a draft of his chapter for the minutes.

6. Case Studies
Ashok Sundaram, Electric Power Research Institute

Ashok gave an update on the installation of the first field trials of the solid-state breaker, being developed under contract by EPRI. He also presented a brief methodology for his

chapter, explaining that he will be able to draw upon his work with both the EPRI Distribution Power Quality Project and EPRI's custom power initiative.

7. Engineering Issues *outline enclosed*
Paul Stecuik, Power Technologies, Inc.

Paul was not present at the task force meeting. However, he did forward an outline to the task force secretary, which was distributed in Portland. Time did not allow a discussion of his chapter.

8. Bibliography
John Sullivan, Sullivan Consulting Group

John was not present at the task force meeting.

9. Economics
Larry Morgan, Duke Power Company
Ram Mukherji, Private Consultant

As time was short when Larry made his second presentation, he was not able to elaborate much on his economic model. However, he stressed that the model's importance would be driven by the needs of the electric power end-user. Ram also gave a brief introduction to the methodology he would be using to complete this section.

Action Items

Action	To be completed by:
1. Resubmit PAR by 11/3/95	Dan Sabin
2. Remove proprietary information from chapters submitted for minutes	Dan Sabin
3. Submit detailed outlines delivered to secretary by 12/1/95	Guidebook Chairmen*
4. Secretary to review outlines, reorganize to remove overlap, and distribute them by 12/18/95	Dan Sabin
5. Chapter chairman to have written detailed sections for working meeting in Baltimore on 1/21/96	Guidebook Chairmen
6. Chapter chairman to make presentations to task force on 1/23/95 at IEEE PES 1996 Winter Meeting	Guidebook Chairmen

*The *Guidebook Chairmen* are Neil Woodley, Dan Sabin, Larry Morgan, Mark McGranaghan, Ashok Sundaram, Paul Stecuik, John Sullivan, and Ram Mukherji

Next Meeting

The next meeting of the Custom Power Task Force will be at the IEEE PES Winter Power Meeting in Baltimore, Maryland, on Tuesday, January 23, 1996.

Membership List Verified

An effort was made to verify the custom power task force mailing list by Dan Sabin in early August 1995. Over one hundred names were on the list, an unprecedented number for a task force still considered in its infancy. Dan mailed each member of the task force, asking them to state their level of membership in TF 15.06.05.01:

- member
- correspondence member
- guest

They were also asked to state what level of communication they wished to receive:

- agendas, minutes, and membership lists
- draft chapters of the guide book

Based upon the response of that mailing, in which the members were asked to respond via mail, FAX, or Internet email, xx names were dropped from the list and xx people were officially recorded as guests of the group.

Status	Count
Member	44
Correspondence Member	7
Guest	19
Unknown	13
Deleted	13

By 7 September 1995, fifty-seven responses were FAXed, mailed, or emailed to the task force secretary. Twenty-six names on the list were marked from member to correspondence member or guest due to an indication on either the Summer 1995 meeting attendance sheet or the August 1995 survey. Thirteen names were marked with an "unknown" status because they did not respond to the survey. Additionally, thirteen names were deleted due to (1) not responding to the survey, and (2) not signing the attendance sheet for neither the Winter 1995 meeting or the Summer 1995 meeting. Fifty-four people requested to be sent meeting minutes and announcements, while forty-six requested copies of the guidebook chapters. The thirteen members who were marked with an unknown status will not be sent any mailings. A number of members indicated an interest in distributing task force materials via the Internet; this option will be explored.

Attachments

Meeting Agenda, Custom Power Task Force Summer 1995 Meeting
Meeting Attendance, Custom Power Task Force Summer 1995 Meeting
Most recent membership list for the Custom Power Task Force

Draft Chapter for Section 1, 2, and 3 of the Application Guide
Draft Outlines for Section 5 and 7 of the Application Guide
Presentation related to Section 4

Submitted by:

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