CUSTOM POWER TASK FORCE

Meeting Minutes
7/26/94
San Francisco, CA

A meeting of the Custom Power Task Force was held in conjunction with the Distribution Voltage Quality Working Group meeting at the Summer Power Meeting in San Francisco. The meeting was chaired by Harshad Mehta.

1. **Introductions.** Attendees introduced themselves.

2. **Attendance.** An attendance list is attached.

3. **Membership.** Attendees were asked to update their addresses, phone numbers, etc. on the membership list passed around. The updated membership list is also attached.

4. **Minutes from New York** prepared by Tom Key were approved (enclosed). It was agreed that Dan Sabin of Electrotek Concepts would act as Secretary for the Working Group in the future.

5. **Chairman's Report.** Harshad announced that he has left EPRI and has formed a new company - Silicon Power Corp. He will remain as Chairman of the Working Group.

   Tom Key completed an outline for the "Guide for Custom Power Distribution" (enclosed).

6. **New Applications.** It was agreed at the last meeting in New York that a portion of the Task Force meeting would be used to let members and other attendees give short descriptions of current activities inthe Custom Power area.

   Ashok Sundaram has taken over Harshad's role in the Power Delivery Group at EPRI. He will be handling the Custom Power projects. Ashok gave a brief presentation on the Custom Power activities at EPRI (handout enclosed). The important custom power components being developed and applied include:

   solid state breaker (SSB)
   static condenser (STATCON)
   dynamic voltage regulator (DVR)
   thyristor-switched capacitor
   advanced static var compensator

The solid state breaker is based on GTOs and can be used as a breaker or current limiter. The first application will be at Public Service Electric and Gas Company.

The STATCON is based on IGBTs. It will have a capacity of +/- 2 MVA and could provide backup power in combination with an energy storage system and a solid state breaker. A host utility has not yet been selected for this test.

The DVR will also be rated +/- 2 MVA and a 1 MJ storage capacity is being implemented. Duke power is planning to be the host utility for the prototype DVR.

The advanced static var compensator is for 12.5 kV applications. It is rated 650 kvar/phase and uses a combination of thyristor-controlled reactor and thyristor-switched capacitors. A numberof utilities are installing these devices which are commercially available. Oglethorpe Electric is in the process of installing three units.

The **University of Washington** is developing generic models for the DVR and STATCON technologies. A case study is being performed for a 15 kV distribution system with an 8 mile long feeder that has a lumber mill at the end. Issues of voltage regulation during motor starting, capacitor switching transients, and harmonic distortion levels are being evaluated.

There was still considerable skepticism regarding the economic viability of correcting some of these problems on the utility system vs at the offending loads.

Mark McGranaghan presented a brief update on the Consolidated Edison case study to evaluate the economics of power quality improvement for two Manhattan customers. Monitoring and data collection for the customers has been completed and it wa agreed that a presentation on the economic analysis results would be provided at the Winter Meeting. A paper presented at the IAS I&CPS meeting on the monitoring results is attached with these minutes.

There was some discussion about the Statordyne and Holec technologies and whether they should be included in these discussions. Since they serve some of the same objectives, discussion is worthwhile. However, custom power technologies generally refer to power electronics applications.

The **U.S. Air Force** has purchased a number of superconducting storage devices (SSDs) from Superconducting Inc. This purchase is moving the SSD technology significantly forward in terms of commercialization.

7. **Working Group Status?** This issue was discussed and it was agreed that the task force should move in that direction. A number of task forces under a working

group would be possible as these technologies mature and application questions become important:

Custom Power Technologies
Modeling
Performance
Application Guides
Case Studies

8. **Guidebook Outline and Schedule.** It was agreed that the first priority should be development of a Guidebook on Custom Power Technologies. Chapter chairman were assigned for the Guidebook based on the outline developed by Tom Key:

Definitions - Neil Woodley

General Needs - Dan Sabin

Configurations/Objectives - Neil Woodley

Input/Output - Larry Morgan

Performance Measurements - Mark McGranaghan

Case Studies - Ashok Sundaram

Engineering Issues - Cheryl Warren

Bibliography - John Sullivan

Economics - Charley Williams/Larry Morgan/Ram Mukherji

9. **Action Items.**

The Chapter Chairman for the Guidebook should prepare outlines of their sections before the Winter Meeting.

The PAR form for the Guidebook needs to be submitted to IEEE.

10. **Next Meeting.**

New York
Winter Power Meeting
Tuesday

2:00-4:00 Custom Power
4:00-6:00 Distribution Voltage Quality