

**Custom Power Task Force
7/20/93 Meeting
Vancouver, British Columbia**

- Meeting Minutes -

The meeting was chaired by Tom Key for Harshad Mehta. The meeting was held in conjunction with the Working Group on Distribution Voltage Quality (P1250), chaired by Dan Ward. An attendance list for the meeting is attached. The following are important points discussed at the meeting:

1. The minutes from the previous meeting in Columbus, Ohio were approved. This meeting resulted in the official creation of the Custom Power Task Force, reporting to the Working Group on Distribution Voltage Quality (Distribution Subcommittee, T&D Committee).
2. A previously presented paper "Power Quality: Utility vs. Customer Solutions" was provided as background information for the task force activities. The paper is included as an attachment.
3. Erich Gunther made a presentation on the "Power System Environment". Basic categories of power quality variations were described (Transients, Short Duration Variations and Interruptions, Long Duration Variations, and Waveform Distortion). Voltage Sags and Momentary Interruptions seem to be the most important variations affecting sensitive industrial and commercial customers. The presentation included preliminary results of a large monitoring project sponsored by EPRI to characterize power quality on distribution systems in the US. A hardcopy of the presentation is attached.
4. Mark McGranaghan suggested that the Custom Power Task Force meeting be used as a forum for sharing information on the latest projects involving custom power technologies. This type of exchange has been used very successfully by the HVDC Subcommittee to provide a forum for keeping people interested in the technology up to date on where it is being applied, problems, schedules, etc. The Custom Power Task Force can serve a similar role for the new technologies being developed and their applications.
5. Miklos described the advanced power conditioning technologies being developed for distribution system applications. These technologies form the basis of the Custom Power concept.
 - STATCON. The static converter is a shunt connected device which will provide reactive power compensation, harmonic compensation, and can include some energy storage. A +/- 2 MVar system for 15 kV systems will be developed by the end of 1995.

- Dynamic Voltage Restorer (DVR). This is a series connected device that will provide voltage regulation and should be able to even compensate for many voltage sags affecting customers. It will be fast enough to compensate for harmonic components in the voltage and even lower frequency transient voltages. A +/- 2 MVAR prototype for 15 kV systems will be completed by 1996. This system will be based on 1 MJoule of energy storage.
 - Solid State Breaker. The solid state breaker is being developed based on GTO technology and will be used for synchronous switching (e.g. capacitor banks), fast fault clearing, and automatic reconfiguration of distribution systems. This would provide the capability to switch a portion of a feeder to a backup supply within a quarter cycle, even during voltage sag conditions or momentary interruptions. A 600 Amp prototype for 15 kV systems will be completed for the fall of 1995.
6. Bill Moncrief provided a case history of custom power without new technologies. The case involved the supply to a Technology Park on the Georgia Power system. Many voltage dips due to cable faults from dig-ins were being experienced by customers throughout the distribution system. A fault on any feeder was affecting customers on all the feeders supplied from the bus. The solution developed by Georgia Power for this problem was implemented when a new substation was built for the area. One of two 56 MVA transformers supplying the substation supplied a bus designated as the "high reliability" bus. Only sensitive customers (high tech, etc.), were supplied from these circuits. "High reliability" meant that the circuits from this bus were completely underground and concrete-encased to avoid dig-in problems. Circuits from the other bus could have overhead exposure and were generally direct buried cables. Since this system went in service in 1982, the service experience for the "high reliability" circuits has been tremendous. This type of solution illustrates the role of system planning and understanding customer needs on the concept of custom power.
 7. Tom Key introduced the concept of a PAR for the task force - "Application Guide for Custom Power Distribution." A draft of the PAR will be completed for the next meeting by Tom Key. There was some discussion regarding whether or not it is premature to develop an application guide for technologies that don't exist yet. Most of these objections were resolved and the concept was approved.
 8. The next meeting will be at the Winter Power Meeting in New York City, February 1, 1994.

Attachments:

1. Attendance, Membership
2. "Power Quality: Utility vs. Customer Solutions"
3. Erich Gunther Presentation - "Power System Environment"