

An EPRI Perspective -1996

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Another year has passed and it has been an eventful one both for the fuel cell community and for EPRI as well. On the whole progress has been positive, but the future is shrouded in an ever heavier mist. As Jim Kimball, my colleague from GRI, put it so masterfully last year in quoting from Charles Dickens: *Tale of Two Cities* "It was the best of times, it was the worst of times". That conundrum has continued into 1996.

On the positive side have been a series of technical accomplishments. The ONSI PC25C model (200KW - PAFC) has entered the market place and operational data will soon begin to quantify the magnitude of performance improvements over earlier versions. These earlier versions had already demonstrated superb reliability and power quality.

The Santa Clara demonstration (ERC-MCFC) completed a successful start-up. Within a weeks operation it had met output requirements of 1.8 MW AC into the local distribution grid. Presently the San Diego Gas & Electric power plant at Miramar(M-CP - MCFC) is undergoing stack installation. The 250kW stack was operated at 80KW (test facility limitation) for about 150 hours prior to shipment to CA. The newest Westinghouse SOFC technology, the air electrode supported cell (AES) has operated with negligible decay. This 25KW demonstration unit operated for more than 5500 hours at Southern California Edison and utilized reformed logistic fuels, DF-2 and JP-8, as well as natural gas. The planar SOFC developers also continue to progress in the construction and operation of small stacks. The potential for integrating SOFC's with combustion turbines (CT's) has both the fuel cell and turbine communities excited. EPRI analysis has confirmed that efficiencies greater than 70%, can be expected for some system configurations. This exceeds those projected for any other energy conversion technology. Polymer membrane fuel cells have also moved into the spotlight with the Ballard bus and its 205KW, H2 fueled, PEMFC powerplant nearing demonstration. The three automotive manufacturers, in their program with DOE, will begin to report on the performance of the stacks delivered by the eight PEMFC developers under contract to them.

So much for technology - of equal importance is how these events are being greeted by the electric utility industry. In general very positively but also impacted strongly by the corporate turmoil resulting from deregulation. Many utilities are increasingly uncertain what their role will be in implementing new generation technology and whether it will be from within the regulated or the non-regulated side. Their willingness, at this time, to

participate in expensive demonstration projects is clearly lessened - though they might become involved if some unique and/or economic benefit would accrue to them. A heightened sense of urgency for the application of any new technology is also clearly visible. If the technology can not be implemented within 2-3 years, most utilities are not interested. As much of the industry takes a wait-and-see attitude about their future and its relationship with technology development - there is a strong undercurrent of a continued need for information on emerging technology and its role in the evolving electric utility structure. However, it is clear that the broad utility interest in collaborative R&D, in potentially competitive technologies, for the good of the industry, and the public, can no longer be supported. The role for collaborative R&D remains primarily in pre-competitive basic research efforts. There is also room for collaborative R&D among a limited membership group whose ultimate business dealings will not be a threat to any of the participants. More and more the utilities want some recognizable return for their investment, This return can take many forms, but these must provide a clear advantage to the funder versus the non-funder. This change in philosophy is having a major impact on EPRI strategy and on how EPRI structures and manages its R&D programs. This includes its strategy in fuel cells versus other advanced generation technologies,

EPRI has given, in its membership offering for '97, the ability for a member to select from eighty two targets to structure their technical and financial involvement with EPRI. This ability to select in more detail what programs utilities support will obviously impact the nature of future programs. In response to this shift in the utilities; EPRI is working even more closely with its membership, and advisory bodies, to provide high value products and services they need to prosper in the competitive environment. In view of the structural changes within the utility industry, it can no longer be expected to provide the necessary market pull to bring emerging fuel cell technologies into commercialization. As EPRI is intimately involved with the electric utility industry restructuring, the Institute is in a unique position to bridge the evolving market opportunities and fuel cell developers by utilizing new commercialization initiatives,