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The Hydrogen Economy: Clarificiations on Solar Cell Technologies

The problems mentioned by Dr. Fthenakis in the April 2005 issue (p. 5) are critical and we have to start to deal with them immediately. Any plan for developing technology on the larger scale can only use technology for which all problems have been reliably solved at least in the research stage. We can always later integrate successful research. At present, solar thermal energy has all the requirements for large-scale implementation in proven form. It can provide storage as well as back up. And the investment cost, including storage, is one third that of plants based on present solar cells.

Solar cells are important inventions, and further research should be aggressively pursued. But while the science is first rate, their promotion has not always been clear, and unless we face the real needs, it will be difficult to develop cells useful for large-scale energy.

Some clarifications that I would like to make are as follows:

1. Regarding Dr. Fthenakis' statement about the decreasing production costs of solar cells — The first solar panels made in primitive mass production cost $10–$12 a peak watt. Once real mass production was started, it dropped to $6. In the last 10 years, the price of solar panels have been steady at $4 a peak watt. To this price one has to add at least $2–$4 for installing the panels and connecting them to the grid. Furthermore, while the production of solar cells in the U.S. have been steady around 100 MW/yr, 60% of the production is exported and at least half of the rest is used for remote power and other uses. Thus despite very optimistic prediction by DOE, the market has not accepted them.

2. Regarding the statement that electricity from solar cells is useful for peak loads — Peak load occurs until 9:00 PM, and the power plant has to have back-up capacity to prevent potential blackouts. So all one saves is fuel, and without storage, large solar cells are not a solution for peak loads.

3. Regarding the statement that the problem of storage can be solved by advanced networks —Serious systems studies on how to do that, and what this means.

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