

## §2. How to Product, Use, and Export Photovoltaic Power in Developing Countries

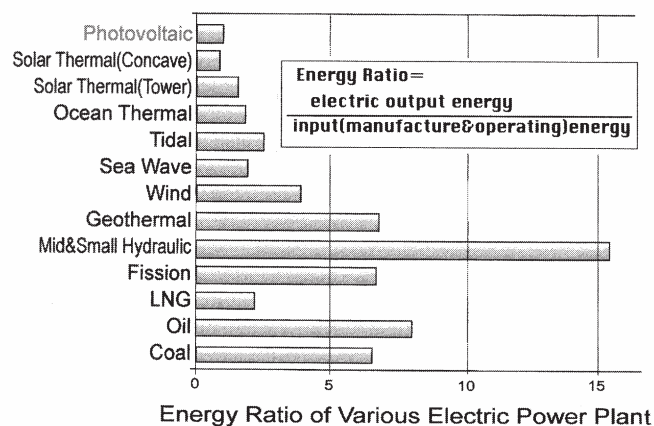
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In order to resolve the problems of energy and the environment of the world, We proposed a remarkable plan which is endorsed by Japan Committee for World Year of Physics as the Japanese Action Plan. This Action plan is presented in "The World Conference on Physics and Sustainable Development" which was held in Durban, South Africa on October 31-November 2, 2005.

This conference was a unique opportunity for the international physics community to come together and formulate a plan for tackling some of the large problems facing the world, and gave the physics community the chance to begin to focus on how we can work with colleagues in the developing world to bring more benefits to their world.

### 1. The sun brick as footstool of photovoltaic power plant.

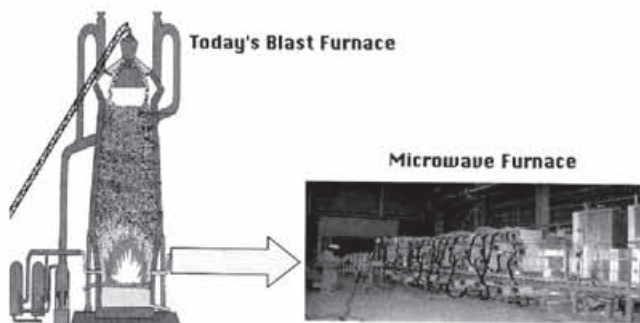
The major drawback of photovoltaic electric power plant is low energy ratio, because enormous footstool of solar cells requires extremely large production energy. We propose to employ the simple sun brick or the one of which surface is burnt by microwave. Then we can expect abundant photovoltaic power with reasonable energy ratio in many developing countries.



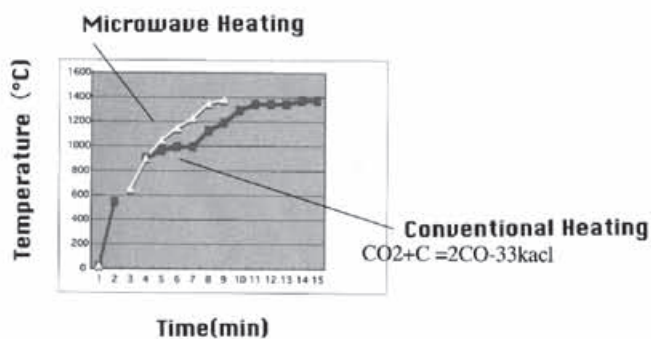
### 2. In-situ metal manufacture using microwave.

However, at present we have no method to store or export such abundant electric energy. Therefore we propose in-situ use of the electric power by converting it into microwave. Recent experiments suggest that the metal (e.g. Fe, Al, Ti) manufacture by microwave is possible, and this may have

many advantages, i.e. high efficiency, pulse operation, weak scale dependence, and excellent environmental safeguard characteristics.



### Deoxidization of Iron Ore by Microwave Heating



### 3. Energy export in Mg

We also propose energy export by converting electric energy into chemical energy, i.e., Mg or Na manufacture by microwave. Recent experiments show that hydrogen gas and steam of high temperature and high pressure are produced, when Mg powder is burnt in the water within a boiler. The ash MgO or Na<sub>2</sub>O can be refined into Mg or Na by micro wave i.e. Mg or Na recycling is possible.

