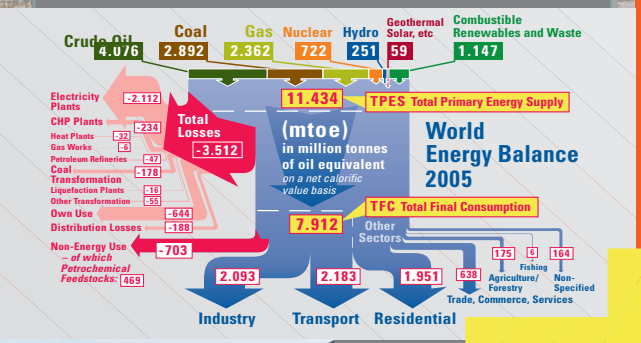
Direct Solar Hydrogen and Fuel Cells

General Energy Overview

Today's Energy Balance, especially the production and distribution of electricity, is rather uneconomical worldwide. **This situation can only be overcome by fundamental changes: converting to a decentralized energy system, harvesting all renewable energies.**



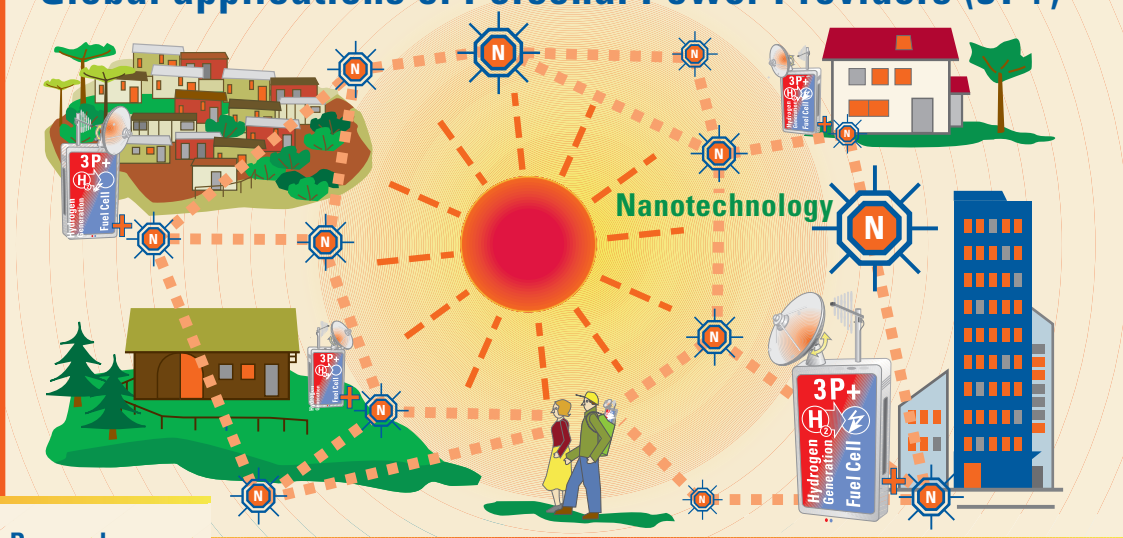
World population without access to electricity in 2008: 1.7 billion

Current Hydrogen Production

Today's production of hydrogen, its distribution, storage and utilization are dependent upon conventional technologies, which are not commercial feasible at this time. **All known technologies today produce "black hydrogen" based on fossil fuels, rather than "green hydrogen" via direct solar energy.** At present, no hydrogen is actually being used by the end consumer.

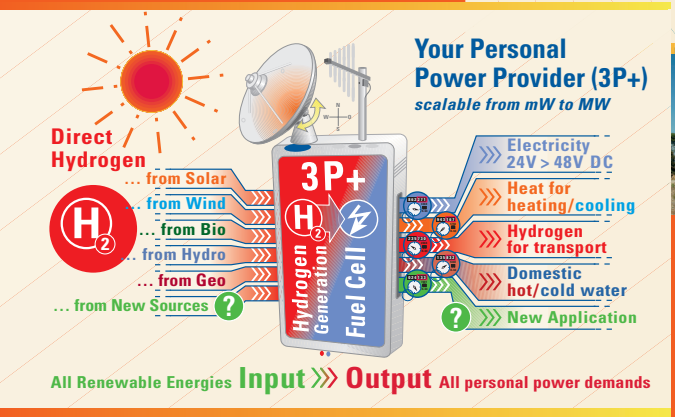
Virtual Power Plants
with Direct Solar Hydrogen and Fuel Cells

Global applications of Personal Power Providers (3P+)

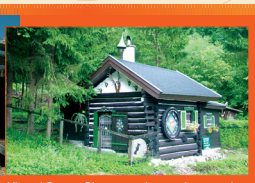


Future Hydrogen Developments

The target for future hydrogen production must be, to use all renewable energies to produce hydrogen directly with only one conversion step. A combination of new photobiological and photoelectrochemical processes has to be developed. Collected and stored in Personal Power Providers (3P+), the hydrogen is utilized in fuel cells to meet all personal power demands for electricity, transportation, heat and water simultaneously. Downscaled by nano technologies, it can be implemented into the daily life as Virtual Power Plants.



All sources of renewable energies have to be utilized



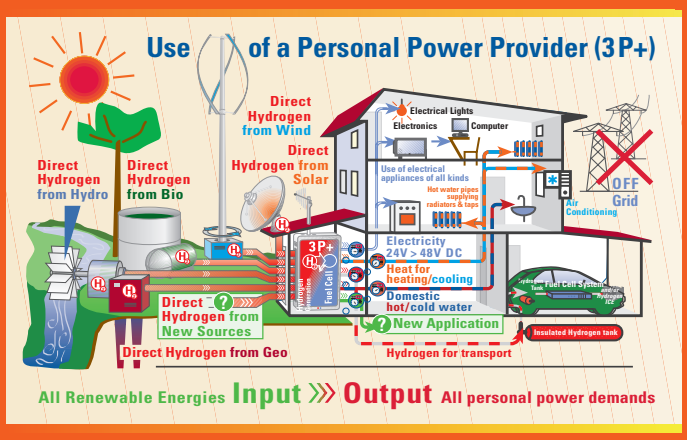
Virtual Power Plants can be used to supply remote buildings worldwide

Virtual Power plants can be used for electrification, transport and convenience

The overall efficiency of such new, distributed Power Supplies is far better than all of today's existing energy systems! Personal Power to the People!

Change of Perspective Needed

A new, global perspective regarding the production, distribution and use of energy is unavoidable and has to come soon. Mankind must be able to identify and overcome the obstacles in the efficiency of our existing electricity system. **In the end the user and the producer of energy has to become one in the same, combining solar and nanotechnology!**



Conclusion towards the Hydrogen Society

To create a sustainable hydrogen society, hydrogen has to become a common commodity: Produced from all "real renewable" primary energy sources, used and stored in Personal Power Providers (3P+), free of pollution and losses at the point of end-use. **Together with truly "green hydrogen", fuel cells can be used as decentralised, personal power systems in order to power our daily lives.**

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