EditorialewE
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Hydrogen Energy — its constitutional contributions to the energy mix

From 16 to 21 May 2010 the fairgrounds in Essen, Germany will be opening the doors for the 18th World Hydrogen Energy Conference organized — under the aegis of the International Association for Hydrogen Energy — by the EnergieAgentur, NRW (www.WHEC2010.com). xxx papers have been submitted; xxxx attendees are expected. Hydrogen autos and busses will be displayed, a fuel cell steam boat will be shuttling on the nearby Baldeney See, and there are plans to have the first of its kind hydrogen-fuel-cell propeller airplane take off from an airfield in the vicinity. Essen, the capital of the Ruhr, and North Rhine-Westphalia, Germany's energy state, are actively hustling things along. Essen as the host city of the conference was selected on purpose: the city which over centuries wrote the energy history of the country will move on to the next chapter, adding to the world's mix the second (after electricity) secondary energy carrier — hydrogen.

Worldwide, technology developments are on their way, performing the transition to the up-and-coming hydrogen energy economy: reformers, electrolyzers, liquefiers, fuel cells operating from 80 to 900°C, mobile tanks handling pressures up to 700 bar, GH_2/LH_2-filling stations, pick-a-back-hydrogen/natural gas pipelines, and many more.

The inevitability of hydrogen energy is characterized by seven constitutional contributions to the energy mix:

- Hydrogen — like electricity — is, after its production, environmentally and climatically clean along the entire length of its energy conversion chain.
- Gasification of coal and combined cycles simultaneously and highly efficiently deliver hydrogen and electricity.
- Decarbonization of coal requires hydrogen.
- Low temperature fuel cells depend on hydrogen as their fuel.
- Environmentally and climatically clean LH_2 tanker shipping allows for the perpetuation of global trade in fossil fuels which have been decarbonised already at the mine mouth: trafficking in pollutants and potential greenhouse gases around the globe will be eliminated, the chore of removal will be transferred from the energy buyer to the energy supplier.
- Global renewable energy trade will only be feasible with the chemical energy carrier hydrogen as the storage and transportation means.
- Hydrogen energy exergizes; it makes more technical work available from energy.

If we take a look into a realistic energy future we see:

- On principle, electricity and hydrogen are generated from any kind of primary energy; the secondary energy regime gains importance.
- With millions of stationary fuel cells, a clean, efficient, virtual and decentral IT-controlled power station is constituted, competing with the central stations now in place.
- Millions of fuel cell autos not only deliver traction (mobile), but also electricity (stationary); the statistical driving to parking time ratio of today's entire fleet is ~ 1 : 23.
- All this will not been accomplished tomorrow, novel energies need their time, typically decades up to half centuries: Factually, it is always too late to start: So: www.itsHYtime.de