

The Hydrogen Economy

Making the Transition to the Third Industrial Revolution and a New Energy Era

by Jeremy Rifkin

Jeremy Rifkin is the author of the international best seller, *The Hydrogen Economy*, which has been translated into fourteen languages. It is the most widely read book in the world on the future of renewable energy and the hydrogen economy.

In his presentation on “*The Hydrogen Economy*,” Mr. Rifkin takes us on an eye-opening journey into the next great commercial era in history. He envisions the dawn of a new economy powered by hydrogen that will fundamentally change the nature of our market, political and social institutions, just as coal and steam power did at the beginning of the industrial age.

Rifkin observes that we are fast approaching a critical watershed for the fossil-fuel era, with potentially dire consequences for industrial civilization. Experts had been saying that we had another forty or so years of cheap available crude oil left. Now, however, some of the world’s leading petroleum geologists are suggesting that global oil production could peak and begin a steep decline much sooner, as early as the second decade of the 21st century. Non-OPEC oil producing countries are already nearing their peak production, leaving most of the remaining reserves in the politically unstable Middle East. Increasing tensions between Islam and the West are likely to further threaten our access to affordable oil. In desperation, the U.S. and other nations could turn to dirtier fossil-fuels – coal, tar sand, and heavy oil – which will only worsen global warming and imperil the earth’s already beleaguered ecosystems. Looming oil shortages make industrial life vulnerable to massive disruptions and possibly even collapse.

While the fossil-fuel era is entering its sunset century, a new energy regime is being born that has the potential to remake civilization along radical new lines, according to Rifkin. Hydrogen is the most basic and ubiquitous element in the universe. It is the stuff of the stars and of our sun and, when properly harnessed, it is the “forever fuel.” It never runs out and produces no harmful CO₂ emissions.

Commercial fuel-cells powered by hydrogen are just now being introduced into the market for home, office and industrial use. Hitachi, Toshiba, and other companies will be introducing the first hydrogen fuel cell cartridges into retail stores around the world in 2007. The small hydrogen powered micro fuel cells will replace traditional batteries and provide mobile power for laptop computers, cell phones, PDA’s, Mp3 players, camcorders, portable DVD players, hand-held computers, video games, and digital cameras. With this new energy source, computers can be powered for days at a time, where existing battery technology lasts only a few hours before needing to be plugged back into the wall socket to be recharged.

Similarly, manufacturing and service-related companies are just beginning to introduce stationary fuel cell power plants to provide back-up generation during periods of peak load or when the price of electricity on the grid becomes too expensive, or when the grid can’t keep up with demand surges, resulting in rolling brownout and blackouts. Indeed, when the massive 2002 power blackout shut down large parts of the Northeast and Midwestern part of the US and the New York City skyline went black, a newly erected skyscraper in Times Square remained fully lit and powered up because a stationary fuel cell power plant had been built into its infrastructure. The German company, Linde AG, recently introduced a hydrogen fuel cell power plant at the Munich airport.

The major automobile companies are spending billions of dollars on developing hydrogen fuel cell vehicles and are currently test-driving hydrogen cars, buses and trucks on roadways around the world. The first cars are expected in the show rooms for commercial sale in 2010.

The hydrogen economy makes possible a broad redistribution of power, with far-reaching beneficial consequences for society. In the new era, businesses, municipalities and homeowners could become the producers as well as the consumers of their own energy—so-called “distributed generation.” Even the automobile itself is a “power station on wheels” with a generating capacity of twenty kilowatts. Since the average car is parked most of the time, it can be plugged in, during non-use hours, to the home, office, or the main interactive electricity network, providing premium electricity back to the grid. If just 25 percent of drivers used their vehicles as power plants to sell energy back to the grid, all of the power plants in the country could be eliminated.

In order for millions of people to become producers, as well as consumers of energy, it will be necessary to redesign the power grid. That’s where the software and computer revolution converge with the new hydrogen energy regime. The same design principles and smart technologies that made possible the internet, and vast, decentralized global communication networks, will be used to reconfigure the world’s power grids so that people can begin to share energy peer-to-peer, just like they now share information, creating a new, decentralized form of energy use. The coming together of decentralized communications technology and distributed hydrogen energy technology marks the next great turning point in the way people organize the energy of the planet.

Hydrogen has the potential to end the world’s reliance on imported oil and help diffuse the dangerous geopolitical game being played out between Muslim militants and Western nations. It will dramatically cut down on carbon dioxide emissions and mitigate the effects of global warming. And because hydrogen is so plentiful and exists everywhere on earth, every human being could be “empowered,” making it the first truly democratic energy regime in history.

We are on the cusp of a third industrial revolution and a new energy era. Hydrogen is our common future.

Mr. Rifkin served as an advisor to Romano Prodi when he was president of the European Commission- the governing body of the European Union. In that capacity, he developed the initial strategic memorandum for the EU outlining the game plan for a hydrogen infrastructure across Europe. The plan he outlined was subsequently accepted by President Prodi and became the basis for a multi- billion dollar research and development initiative across the EU to wean Europe off of fossil fuel dependency, and into renewable energy and a hydrogen regime. Mr. Rifkin is now serving as the principal senior advisor to the leadership group of the European Parliament on the European Union Hydrogen Economy Initiative. Mr. Rifkin also advises the European Commission, the governing body of the European Union.

Mr. Rifkin is also currently advising Angela Merkel, the Chancellor of Germany, and Romano Prodi, the newly elected Prime Minister of Italy on energy and economic related issues. His position papers for Chancellor Merkel and Prime Minister Prodi have been placed into official energy policy for both governments. He is also an advisor to heads of state around the world.

In the U.S., Mr. Rifkin was recently asked to advise the Democratic Policy Committee of the U.S. Senate on how to develop an exit-strategy from oil and usher in a hydrogen economy for the country. Mr. Rifkin subsequently spoke at a lunch hosted for him in the U.S. Senate where he briefed all of the Democratic senators on how to address the energy crisis, global warming and the transition to renewable energies and a hydrogen based future. Mr. Rifkin has also been hosted by the Department of Defense. He has been asked by the Pentagon to lecture to the heads of R&D and Officers of Acquisitions of all five branches of the military services on new technologies that can prepare the country for energy security in a post-oil era.