



Come the Revolution

Rifkin: "For the first time in our history we have within our grasp a ubiquitous form of energy"

As noted in the leader, Jeremy Rifkin made quite an impact when he gave his presentation on the hydrogen economy at the Clean Cities conference in Palm Springs in mid May. As the author of *The Hydrogen Economy**, he was bound to argue the case for hydrogen and the demise of the fossil fuel era. However, bearing in mind that he is also an adviser to various governments around the world, including Romano Prodi, the European Commission president, then what he says carries a fair amount of weight.

There are always two elements when societies go through fundamental changes, he argued. On the one hand, there is the communication change, and on the other is the energy change. They do not necessarily happen at the same time, but one is the enabler of the other. He gave as examples the advent of the printing press in Europe followed many years later by the arrival of the steam engine. Had James Lock invented the steam engine but everything was still being written in longhand, said Rifkin, then the first Industrial Revolution would not have happened. He also quoted the telephone preceding oil that helped launch the second Industrial Revolution. He then argued that the huge advances made in digital and web communication over the last 10 years is the "command and control" for the new energy revolution – hydrogen.

He said that while estimates of peaking – ie when more than half the world's oil resources have been used up – have been set at 2037, new figures are now bringing that date forward to 2010. "The bottom line," he said, "is we're consuming three barrels for every five we find."

He then argued that fuel cells hold the answer, outlining a timetable very similar to that of Larry Burns, GM's vice president of research & development and planning, when he presented the HyWire, "a power-plant on wheels that is sometimes used as a car" late last year.

"Always watch General Electric" was Rifkin's cry, pointing to the fact that this power company is already heavily into fuel cell technology and has partnered with Plug Power of Latham, New York to outfit commercial businesses and homes with stationary fuel cell plants. This plan is already being put into effect.

"Virtually all of the players in the new energy game are looking for a radical new way to deliver electricity, called distributed generation (DG), to address the cost questions and pave the way to a new energy era," Rifkin writes in his book. "DG turns the conventional logic of how to deliver electricity on its head." He writes of the time when millions of end-users connect their fuel cells into local, regional and national hydrogen energy webs, using the same design principles and smart tech-

nologies that made possible the World Wide Web. Energy, he asserts, will begin to be shared – peer-to-peer – creating a new decentralised form of energy use.

"As the price of fuel cells and accompanying appliances continues to plummet with new innovations and economies of scale, these products will become far more broadly available, as was the case with transistor radios, computers and cellular phones. The goal ought to be to provide stationary fuel cells for every neighbourhood and village in the developing world. ... No longer will Third World nations have to be dependant on the flow of crude oil.

"The hydrogen economy is within sight," he writes. "How fast we get there will depend on how committed we are to weaning ourselves off oil and other fossil fuels. If we simply toy with or delay the transition in the belief that there is plenty of cheap oil left to supply our needs well into the middle years of the 21st century, we may find ourselves wholly unprepared to make a timely transition were global oil production to peak in the next few years.

"For the first time in human history we have within our grasp a ubiquitous form of energy, what proponents call the 'forever fuel'. Hydrogen will eventually be as cheap as personal computers, cell phones and palm pilots. When that happens, the possibility opens up to truly democratise energy, making it available to every human being on Earth."

Power companies are going to have to come to grips with the reality that millions of local operators, generating electricity from fuel cells on-site, can produce more power more cheaply than can today's giant power plants. "When the end-users also become the producers of their energy, the only remaining role for existing power plants is to become 'virtual power plants' that can manufacture and market fuel cells, bundle energy services and co-ordinate the flow of energy over the existing power grids." æ

* *The Hydrogen Economy* is published by Tarcher/Putnam, a member of Penguin Putnam. www.penguinputnam.com