

# TotalFinaElf Partners with Nuvera to Optimize Hydrocarbon Fuels for Fuel Cells

*Agreement between major European energy group and leading fuel cell manufacturer signals continued interest in on-board fuel reforming for fuel cell vehicles*

**Milan / Cambridge, Mass., April 9, 2003** - Nuvera Fuel Cells, Inc., a leading global designer and developer of fuel cell and fuel processing technology today announced it has entered into an agreement with TotalFinaElf, one of the world's leading oil companies, to study the effects of gasoline on fuel processors and fuel cell stacks designed for the automotive industry.

According to the agreement, the two companies will identify constituents of reformat under variable reforming approaches that adversely affect PEM (proton exchange membrane) fuel cell life and, subsequently, quantify the impact. They intend to accomplish this by determining the characteristics of a reformer subjected to a wide range of process conditions (air, steam, and temperature), identifying potential PEM contaminants, and conducting tests with design gases to measure the rate of performance loss in a fuel cell stack.

"This agreement is in strategic alignment with our goal to rapidly advance the commercialization of fuel cells through the use of on-board fuel reformers," said William Mitchell, Vice President of Marketing, Nuvera Fuel Cells. "Our efforts with TotalFinaElf will significantly increase our understanding of the impact gasoline has on fuel cells, and, in turn, enable the development of optimized fuels for reformer-based fuel cell vehicles in the near future."

"As a global energy group, our ambition is to meet society's energy needs by offering an ever broader range of products and services," said Daniel Le Breton, H<sub>2</sub> - FC Task Force Manager for TotalFinaElf's downstream activities. "Our collaboration with Nuvera is further evidence of our intentions to draw on innovation and state-of-the-art technologies, such as fuel cells and fuel processors."

"The debate about the preferred fuel for fuel cell vehicles is far from over," added James Cross, Vice President of Technology, Nuvera Fuel Cells. "In contrast to hydrogen, liquid fuels exploit existing global infrastructure and have far superior energy density - while the role of hydrogen in niche fleets is assured, these facts will endure for decades to come."

The joint program, which commences immediately, will be conducted using Nuvera's Transient Reactor Facility in Cambridge, Massachusetts, as well as Nuvera's Fuel Cell Test Facility in Milano, Italy. Nuvera is currently exhibiting its 75kW fuel cell stack and 75kW gasoline fuel processor at the Hannover Fair in Hannover, Germany through April 12, 2003 in the Hydrogen and Fuel Cells Group Exhibit located in **Hall 13, Booth G58-2**.

## **TotalFinaElf**

TotalFinaElf (NYSE: TOT) is one of the leading oil companies in the world. With operations in more than 100 countries, the Group's activities span all aspects of the energy industry from Upstream - oil and gas exploration and production - to Downstream - refining and marketing of refined products as well as international trading in both crude and refined products. TotalFinaElf is also a major player in the Chemicals markets, through its branch Atofina.

## **Nuvera**

Nuvera Fuel Cells ([www.nuvera.com](http://www.nuvera.com)) is a leading designer and developer of fuel cell power systems, fuel processors, and fuel cell stacks for the automotive, distributed generation, commercial, and industrial markets. Since 1992, its fuel processors and PEM fuel cell stacks have been successfully tested and evaluated by major automobile and appliance manufacturers, research institutions, telecommunications organizations, and industrial and energy companies. Nuvera's fuel processors have demonstrated the ability to extract hydrogen from a number of liquid and gaseous fuels, including gasoline, ethanol, methanol, natural gas, kerosene, propane, butane, home heating oil, and diesel.