

ADVENTUROUS SPIRIT

NOLAN FELL TALKS TO PHIL DORAN, A PARTNER AT VENTURE CAPITAL FIRM CORE TECHNOLOGY VENTURES

Many might think establishing a new venture capital firm now is madness, but Phil Doran is sure the timing is perfect. Core Technology Ventures, which Doran has formed with partners Simon Robeson and David Wright, is a specialist VC, concentrating on raising capital to develop fuel cell technology.

“It’s a good point to set up a VC firm,” he says. “Valuations are more realistic than they were two or three years ago and we’re not carrying debts.”

The fuel cell is a technology that could change the world. By generating electricity and heat through the chemical reaction between hydrogen and oxygen, a fuel cell’s efficiency is not limited by the thermodynamics of the Carnot cycle. Even if a hydrocarbon like methanol is used the CO₂ emitted is far less per unit of power than with conventional generators or internal combustion engines. If pure hydrogen can be used, fuel cells could eventually be a key part of a carbon free energy system. Fuel cells also have the benefit of emitting virtually no pollutants such as sulphur dioxide, nitrogen oxides or particulates.

Doran can hardly contain his enthusiasm for fuel cells’ potential and his excitement at being involved in the field. An economist by training, for 15 years he worked at UBS Warburg, eventually specialising in investments in alternative energy technologies. Although always interested in environmental issues, it was the motor manufacturer Ford’s decision in 1997 to buy a minority stake in the Canadian fuel cell company, Ballard Power Systems, that sparked his imagination.

“This was the trigger,” says Doran. “Ford was effectively saying we don’t think batteries will make it as a technology for zero emission vehicles. I tried to persuade UBS to invest, but they, along with other banks, thought commercialisation was too far away.”

Meanwhile Daimler Benz also invested in Ballard and other automotive companies began programs to develop fuel cells vehicles. Suddenly there was momentum and stocks rocketed. But as the high tech bubble burst in March 2000, it became clear that fuel

cell stocks were hugely overvalued and development was going to be a long haul. Stocks crashed, money for development became scarce and companies retrenched. The banks had made the right decision.

SLOPE OF ENLIGHTENMENT

Doran explains this series of events as part of the Gartner hype cycle (Fig 1). Ford’s investment was the technology trigger, with the peak of inflated expectations being reached in March 2000. Doran is confident fuel cells have now passed the trough of disillusionment and are on the slope of enlightenment. With venture capital timing is everything.

From ’97 to ’99, Doran immersed himself in fuel cells and in trying to persuade UBS to invest in the technology. Eventually he accepted the bank’s point-of-view that the commercialisation of fuel cells is too far away for them to get involved. However he had learnt a lot in the process.

“I now speak fuel cell reasonably well and am fluent in finance,” he says. “There aren’t many who speak both. I decided to move down the financial intermediation chain into venture capital.”

Even in a booming investment climate this would be a brave decision. Europe is more risk averse than North America and Core Technology is European based, with Robeson and Wright in London and Doran living in Germany, but the lack of fuel cell quoted companies in Europe could be an opportunity; at

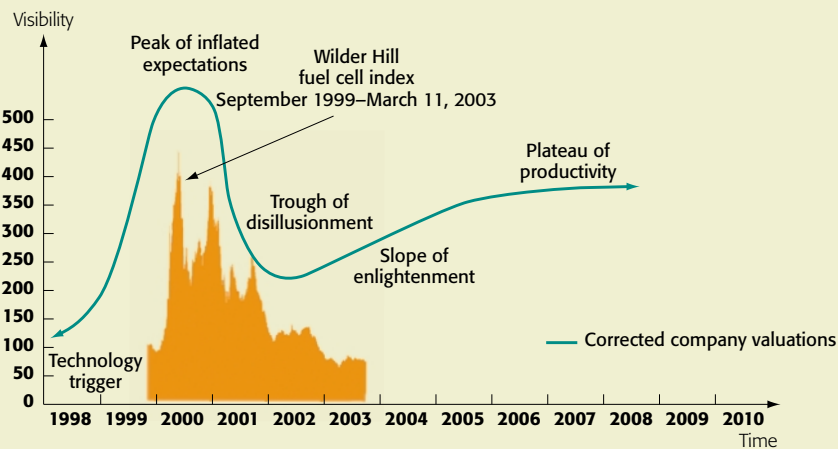
some point some must emerge.

“One of the problems in Europe for a VC is that there is no exit,” says Doran. “We don’t have a fuel cell quoted sector; the European Commission must think about this. A VC comes in at an early stage and lets go after the company has developed. This is called the exit and it usually happens when a company goes to an initial public offering (IPO) or a trade sale.”

This does not put off Doran. The technology is now so advanced, he argues, new technologies and their associated companies are going to emerge. He is convinced now is the time for the European Union and its member governments to back the technology or risk finding the rest of the world has stolen a march.



FIG. 1 THE GARTNER HYPE CYCLE



DIFFERENT DRIVERS

There are currently about 700 stationary large-scale fuel cell systems operating around the world. The vast majority of these are in North America and Japan. Fuel cells are generating 40MW of energy in the US. In Europe the figure is 12MW, with 9MW of this in Germany. North Rhine Westphalia has a quarter of the German figure. The UK has one 250kW fuel cell operated by Woking Borough Council. Doran despairs at this lack of commitment. Germany in general and North Rhine Westphalia in particular, are the exception to the European rule.

“The UK Government needs to provide stable policies; at the moment there is no fuel cell policy,” he says. “North Rhine Westphalia has government support and cash.”

Part of the reason for Europe’s apparent lack of commitment is the different drivers pushing technologies in North America and Europe. Ford’s commitment to Ballard was a response to Californian legislation calling for large numbers of zero emission vehicles. This demand is a result, largely, of air pollution in Los Angeles and fuel cells appeal because of the fact they do not produce NO_x and SO₂. In Europe, the focus is on reducing CO₂ emissions due to concern over climate change and governmental commitments to the Kyoto treaty. Investment has therefore tended to concentrate on renewable generation and especially wind power.

As well as government commitment, Doran believes companies cannot afford not to get involved. There are many companies that will be effected by the emergence of fuel cells. As well as the politicians, Doran is trying to convince companies this is something they have to be involved in.

“Core Technology Ventures is a specialist fund focused on seed and early stage fuel cell technologies within Europe,” he explains. “It has to be geographically focused because you are getting

involved in the beginnings of development out of universities or small teams. You can’t manage that from 5000 miles away. We are looking to invest in components, system developers and peripherals.

“We are trying to raise funds from corporate investors that can’t escape the fuel cell risk. Some companies could be negatively effected if they don’t do anything. They can’t keep their head in the sand. These include battery companies, electricity, gas companies and heating companies. All the German heating companies, such as Buderus and Waillant, are involved. There are also companies that are likely to be positively effected, such as chemical firms that can produce the materials.”

There are many materials issues to address and companies that develop high performance polymers, for example, could reap great rewards. Currently a proton exchange membrane (PEM) fuel cell operates at 80°C. If a polymer could be developed that allowed it to operate at 140-160°C, the power density could be increased and hence its size reduced. This is key to it realising its potential as an alternative to the internal combustion engine.

Given that North American and Japanese companies are well ahead of Europe in developing actual fuel cell devices, it is likely that European companies are going to have to exploit niches such as membranes, within the market. However from the investment point of view, finding the university start-up or company research team with the winning technology is a very risky game. This is the problem Doran hopes Core Technologies can address.

“We are offering companies ways to manage the market risk fuel cells pose,” he says. “They might think it is too early to invest in the sector; instead they can buy an option with us. Many companies have ‘the best technology in the world’. We offer a portfolio of these. If fuel cells are successful, we will be successful.”