



Photo: Wilho Worms

## Dr Richard Smokers: 'Daring to bet on more than one horse'

On Richard Smokers' desk stands a cast-iron head of a kid with red cheeks, snub nose and grey quiff, and the top of a Coca-Cola bottle on his forehead. He got this statuette when he returned to TNO on 1 April 2009 after three years away. As the strategic advisor for sustainable mobility he would be the new 'figurehead' for the Environmentally Sustainable Transport (EST) department, something that happened faster than he could have imagined, hitting the eight o'clock news on 3 April on the topic of electric cars.

### **You immediately became TNO's 'Mr Electric Vehicle'?**

'Well, I hope not. My intention is to focus on sustainable mobility in the broader sense, to establish a strategic vision of where we want to

be in 2050 and how we can get there. The electric car is a feature of that landscape but it is not the only option. When I spoke on the subject of electric cars at a conference in Amsterdam, there was still quite a bit of hype in the market and the TV news journalist really wanted to get some comments from an independent expert.'

### **Is the electric car not the only mode of transport for the future, then?**

'Probably not. In the first place the CO<sub>2</sub> emissions of conventional cars can still be significantly reduced in the shorter term. In the longer term we will have to switch to more sustainably produced energy carriers, which leads to cars powered by electricity, biofuel or hydrogen. But sustainable public transport is, for instance, also a good option. And since one or

other option may fall by the wayside in the sustainability race to 2050, it's important to bet on more than one horse.' (see page 14)

### **How long have you been working on the electric car?**

'Seventeen years already. I got into it more or less by chance. After getting my PhD in physics in 1992 I did my national service equivalent at the Policy Studies group of the Netherlands Energy Research Centre (ECN). After a few months a client asked ECN to adapt a German brochure on electric cars for the Dutch situation. I got the job. I spent three months investigating the literature, making spreadsheets and building graphics. That produced a report on the energy and environmental aspects of electric transport, which in the Netherlands kind of made me the

## PERSONAL DETAILS

### EMPLOYED AS:

strategic consultant on sustainable mobility,  
TNO Science and Industry, Delft

### BORN:

22 September 1964 in Eindhoven

### EDUCATION:

1982-1987: physics, Eindhoven University of  
Technology

### PhD:

1987-1992: Radboud University, Nijmegen;  
subject: macroscopic quantum effects in  
solids at low temperatures

### PREVIOUS WORK:

1992 - 1996: researcher at ECN, Petten  
2006 - 2009: senior consultant, CE Delft  
consultancy firm, Delft

### TNO EMPLOYMENT:

1996 - 2006 and since April 2009

### MARITAL STATUS:

Since 1995 married to Sonja Hardenbol (43),  
advisor and manager at BuildDesk  
consultants, Delft (sustainability in the built  
environment)

### CHILDREN:

Iris (12), Tycho (10)

### HOBBIES:

cooking, music, bird-watching, tennis, board  
member of the Pijnacker Association for  
Conservation and Environmental Protection

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one-eyed king in the country of the blind. The report enabled me to acquire two international projects on electric cars and so I created my own work for when my national service ended. One of those projects concerned the establishment of a database for exchanging information between a large number of field tests with electric vehicles taking place at the time in various European countries.'

### **Why did you join TNO in June 1996?**

'I was already working closely with TNO people and they encouraged me to apply. This appealed to me because it would get me closer to R&D and allow me to work with first-hand knowledge. Moreover, I had had enough of commuting between Amsterdam and Petten. Living near the TNO Delft premises since 1996 means that I can usually cycle to work.'

### **What did you do at TNO at that time?**

'I started at the APT – Advanced Powertrains – group that had just been established and clustered policy-oriented research in the field of conventional cars and new technologies. This group of people grew fast from five to twenty.

*'I want to do what I can to help realise a sustainable mobility system in the future. What is needed for that is a drastic transition in terms of technology, behaviour and the structure of the mobility system.'*



Part of APT focused increasingly on engineering R&D – it is still around but is now located at the TNO premises in Helmond in the southeast of the country. Under my supervision, the EST department split off and incorporated the more policy-gearred studies. One of our key activities was, and still is, to carry out large test programmes for the Ministry of Housing, Spatial Planning and Environment (VROM), in which we perform measurements on cars driving on today's roads. These cars are tested in our lab and their owners are given suitable replacements. We check whether the cars still comply with the requirements by which the model was approved and we measure the emissions according to real-life driving patterns. Over the years a large database has been created containing data on what cars emit in all kinds of driving conditions. On the basis of this we have developed the emission factors model VERSIT+ that is used to study the effects of traffic flow on the air quality, among other things.'

### **Does EST research anything else?**

'Absolutely. We also assess what new technologies will be doing in 2020 or 2050. And we develop test procedures to measure the energy consumption of electric or hybrid vehicles, for instance. A third important path for EST is studies and consultancy for the development of European emission standards. I got involved myself in 2004 in the supporting studies for the European Commission in preparation of European legislation on CO<sub>2</sub> emissions from cars and vans. This means agreeing that in the year *x* new cars may only emit on average not more than *y* grams of CO<sub>2</sub> per kilometre. So, how low can you push the target, what technologies enable the necessary reductions to be made, what are the costs and when can they be applied? How should the legislation be structured and what kind of impact will the measures have on the various car manufacturers? We have recently acquired a new European Commission framework contract for further studies over the next four years as well as a project in preparation of CO<sub>2</sub> legislation for trucks. We are working with several parties on this, including the consultancy firm CE Delft. This CO<sub>2</sub> research has been a constant factor in my work over the past five years.'

### **How did three years at CE Delft come about?**

'EST was heading for the city of Helmond in 2006 along with all the other automotive research. My wife, Sonja, and I were not keen on moving there. So I looked around and CE Delft wanted to take me on. I continued my work on vehicles and emissions there, albeit with a more economic slant. I still worked a lot with TNO. Last

year I was asked to return to EST as a kind of *libero*. The EST group had stayed in Delft after all, had grown bigger than ever and was looking for ways of boosting its societal impact. And I had come to the conclusion that after seventeen years of making spreadsheets and writing reports, enough was enough. I wanted to be more in the centre of the societal debate and make a more tangible contribution to achieving sustainable mobility. TNO's offer was right in line with this. I left CE for TNO on amicable terms.'

### **What is your current challenge?**

'Seems pretty clear: to do what I can to help achieve a sustainable mobility system in the future.'

### **What concerns you the most?**

'To restrict the impact of climate change to a maximum of two degrees warming we will have to have reduced our CO<sub>2</sub> emissions by eighty per cent or more by 2050. With the failure of the climate summit in Copenhagen fresh in the mind, I question whether we can have an adequately sustainable mobility system in forty years.'

### **If you were not in this job, what would you have done?**

'Towards the end of my doctorate I mulled over becoming a designer. I have always been good at drawing and painting and have always enjoyed designing and making furniture in my spare time. But I doubted whether I would have the creativity to do that forty hours a week. In the end, the desire to do work with societal relevance tilted the decision for what I am doing now.'