Dr David Wilkinson PEng:
Fueling Energy With Ideals

Richard L Rogers

The idea of community service as a duty — a belief absorbed from his parents while growing up on their Vancouver Island farm — is an integral part of the heritage of Dr David Wilkinson PEng, and one he has consciously applied in his personal life ever since.

But on a deeper level, the philosophy of using his talents and skills to benefit society has also guided his career and brought him to the unique position he now occupies as Vice President of Research and Development at Burnaby-based Ballard Power Systems, a company deeply imbued with a sense of being on a mission to save the world.

Of course you won’t find such fuzzy, feel-good terminology in any of Ballard’s corporate objectives or mission statements.

However Wilkinson, 2001 winner of the R A McLachlan Memorial Award — APEGBC’s highest honour for a professional engineer — shares with many of the company’s multinational, multitalented staff a deep awareness of both the serious, long-term environmental problems the world faces and the fact that the technology they are developing will likely be a major factor in solving them.

A Pragmatic Optimist

“The future vision, if we continue the way we are going, does not look good. You look at brownouts in California and the sustainability of energy supply. You look at countries like China with one of the fastest growing populations in the world. They’re looking to the West and seeing access to power they don’t have,” Wilkinson points out.

He continues: “Look at developing countries that will never be able to afford all the infrastructures for power distribution. Look at what’s happening to the climate with global acidification and the now verified rise in global temperatures and some of the other issues that are just on the horizon. These are all just the tip of the iceberg. These are all things that are telling us we’re going to have some major problems in the future and we should already be planning strategies to deal with them.”

Wilkinson’s environmental idealism is filtered through the disciplined mind of an engineer who has spent most of his academic and working life studying the problems of electrochemical power storage and generation. This has included early work with Ballard (1978-81 and later 1986-87) on lithium batteries, electrochemical research at the University of Ottawa (1981-86) and three years with Molli Energy (1987-90) as one of the leaders of its successful drive to produce the world’s first rechargeable AA-size lithium battery.

Facing page: Dr David Wilkinson PEng, VP of Research & Development at Ballard Power, is at the centre of breakthrough developments in fuel cell technology that are expected to be a major factor in addressing the world’s environmental problems (photo: Dina Goldstein). Left: David meets with Prime Minister Jean Chrétien at Ballard (with CEO Firoz Rasul in middle).
Wilkinson came into his own when he rejoined Ballard in 1990 as manager of core technology. Since then, he has been at the very centre of the research that has made the company the world leader in the development and application of zero-emission fuel cell technology for transportation, stationary power and portable power applications, and he now has his name on some 45 patents covering breakthrough developments in his field.

Developing Technology and People

Basically, fuel cells combine hydrogen and oxygen without combustion to create electricity, heat and pure water. The concept has been around for about 150 years, with NASA first using them successfully in the Gemini space program in the mid 1960s. However, comparing those early incarnations with Ballard’s latest generation fuel cell is like comparing an abacus to a computer.

For the past three years, Wilkinson has been in charge first as director then vice president of the company’s research program. As such, he has been overseeing continuing research on core technology, next generation technology and the first transition of some of the new technology from the lab to the marketplace.

Ballard’s collaboration with automotive giants DaimlerChrysler and Ford has produced several generations of fuel cell-powered prototype vehicles. Last year, Ballard achieved the commercial launch of its Nexa™ 1.2 kilowatt power module, designed for integration by original equipment manufacturers into a wide variety of industrial and consumer end product applications.

Wilkinson’s tiny office in Ballard’s new building, with its shelves of well-thumbed reference books, casually cluttered desk, posters and that indispensable engineering tool — the scrawl-covered whiteboard — is obviously well used. It is easy to imagine the tall, soft-spoken engineer spending endless hours there devising innovative ways to surmount the many roadblocks that have arisen over the past decade.

It’s also evident that his efforts to propel the technology forward are equalled by a desire to motivate, encourage and develop the people he leads. His exceptional qualities as an engineer and leader are reflected in the observations of Olen Vanderleeiden PEng, senior mechanical engineer at Ballard. “Dr Wilkinson acts as an excellent example to all professionals he comes into contact with,” says Vanderleeiden. “For me personally, he is a mentor and role model, and I strive to reach his level of professional excellence.”

Finding Time for Community

What’s hard to imagine is that a man so obviously dedicated to his work would find time for anything else. But over the years Wilkinson has managed to do so in what amounts to almost a separate career.

When he began his engineering studies at UBC in the 1970s, he also began rowing, competing on the varsity team from 1975 to 1978 and representing Canada from 1976 to 1980. During that time he rowed in many international competitions including the prestigious Henley regatta in England, the European and World championships and the Pan Am Games. Although he no longer competes, he still maintains an interest and is actively involved in both the Vancouver College and St George’s school rowing programs.

In addition, from 1991 to 1996 he was a leader with Scouts Canada, has held various positions with the North Shore Winter Club Marlins swimming club since 1990 (including president from 1996 to 1998), maintains an active and ongoing involvement with the St Stephen’s parish in Lynn Valley, and regularly does volunteer work with the Sisters of Charity and other organizations. On top of all that, he took up Taekwondo in 1997 and recently qualified for his First Dan black belt.

Asked how he has found the time over the years, Wilkinson laughs modestly. “Well, you know what they say — ‘if you want something done, give it to a busy person.’ Somehow, you just find the time. Sometimes it’s at the expense of other things but I’ve always believed that, if it’s worthwhile cause, it’s an enjoyable experience. I believe it’s really important to be involved in your community and to be an integral part of it. But it’s challenging, especially if you’re working 10 to 14 hour days, to find the time.”

Wilkinson places his Christian faith and his family (wife Susan and children
Eyes on the Future

It becomes clear that, for Wilkinson, the career rewards that his professional work has already generated — and will continue to provide — really do take a back seat to those he reaps from the creative problem solving in which he immerses himself, along with the knowledge that each challenge overcome is another step towards making the world "a much better place."

"Even if we were to fail tomorrow for some reason, the work we have already done here, and the direction the technology is going, will still have a huge impact on power generation in the world," he says.

He acknowledges that fuel cells have been touted for years as "the solution" to environmental problems and, after so many years of hearing such glowing predictions, it's possible some people are beginning to wonder when it will actually happen.

He points out that other power sources, such as today's internal combustion engines, have more than a century of development behind them. "If you look at fuel cell development in those terms, 20 years is not a long time. This is not an evolutionary technology; it's a revolutionary technology."

"In the automotive area, for example, when they make a fairly straightforward design change it's often a seven-year cycle and there's no technology change per se. So when you put it in that context fuel cell development is happening unbelievably quickly, but the market is very demanding and people are looking for that product."

With the first products now beginning to appear on the market, Wilkinson is confident that the technology is poised at roughly the same point at which personal computers were a few decades ago. With designs for fuel cells ranging in size from those small enough to power the tape recorder used for our interview all the way up to units already being used in field trials to power buses and trucks, and residential and industrial sites, he believes they will have become as ubiquitous and as indispensable as personal computers within the next 15 years or so.

After that, only time will tell if this modest but brilliant researcher and his equally talented colleagues truly will have saved the world.\]