SUBMISSION FROM DR WIN RAMPEN

I am the co-founder and Managing Director of Artemis Intelligent Power Ltd, an engineering R&D company that spun out of the University of Edinburgh in 1994 and which ultimately was acquired by Mitsubishi Power Systems Europe in late 2010.

It has been suggested that my experience - both as someone coming from academia and as the founder of an entrepreneurial technology company - could be of use to your committee's thinking process.

There are two potentially beneficial outcomes of the current rise in renewable energy activity in Scotland. The first is the obvious one. Developers, installers and maintainers of the infrastructure equipment that allows us to harvest the inexhaustible energy from the sun are able to make a reasonable living. But this is a fairly transient and transportable effect.

The second outcome is the creation of new technology within Scotland which, as happened with the offshore oil industry, can keep providing value to the Scottish economy over the very long term, as we license manufacture and support our machinery for use worldwide.

I have always maintained that it is the second outcome that we must fight for. We have made a good start on wave and tidal current energy and offshore wind is looking favourable, though it would appear that almost all of the wind turbine suppliers are foreign owned.

There are several key requirements for the growth of these technologies within Scotland - infrastructure, supply chain and investment are often quoted. But there is another major aspect. This is the continuing supply of keen and intelligent engineering graduates who have been properly equipped with the requisite skills and who have individual and collective passion for engineering and the creative possibilities that it offers.

It is at this point that my views may be seen as somewhat contentious. As an employer of such graduates over the past 18 years, I am deeply disappointed. Not with the intelligence, nor enthusiasm, of local graduates, but with their training at university.

By my reckoning this has come as a result of an insidious UK process which, until recently, was called the Research Assessment Exercise (RAE). It seems to have dumbed down our universities by prioritising the wrong goals. The RAE valued journal paper publications at the expense of everything else. Engineering departments depended on getting a high RAE score for their funding. Predictably they started to hire academics who were good at churning out large numbers of journal papers. This has been good for journal publishers but often there are only minute differences between papers. What matters above all has been their quantity and not their quality.
Of course these new academics weren’t necessarily good at teaching, innovation or working with local industry - each of which could be seen as at least as valuable as writing journal publications. A significant proportion of academics hired into engineering weren’t qualified or practising engineers - indeed it seemed that there were very few experienced engineers who could satisfy the new recruitment criterion. The new engineering academics came from other STEM areas but rose to the top of the heap during the selection process because of the large number of papers they promised to bring to the forthcoming RAE. I personally see that over the past several decades there has been a profound and sad divergence between the practice of engineering and the university study of engineering. Many engineering academics have no experience as engineers.

Imagine going to your local surgery and being seen not by a doctor but by a hairdresser.

Not all countries are equally afflicted. Artemis has hired many French and German students during its expansion. They often seemed better prepared for the real work of engineering and many of them have gone on to become valued employees.

So now that our engineering departments have been stuffed with journal paper authors, how do we fix this? As far as I can see one of the simplest ways is to ensure that the teachers of engineering are actually practising engineers themselves. The Institute of Civil Engineers has already taken a step in this direction - informing universities that a certain proportion of their staff must be Chartered Engineers in order to maintain course accreditation. The Mechanical engineers seem rather timid in this direction - but I think government needs to give them a push, and perhaps the IET as well.

This approach may make me seem an apologist to the professional bodies. I am not - I’d like to see government lean on them such that they are emboldened to force the universities to shape up. The accreditation lever is a powerful tool but it is not being wielded.

Scottish higher education was once the envy of the entire world. Perhaps we can restore its position?

Incidentally, the views I’m expressing are entirely my own and do not necessarily reflect those of Artemis or MPSE.

Dr Win Rampen
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