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Safer, Greener, Faster and *Cheaper*

Q&A with Paul Hodges, Chairman of NiTech Solutions

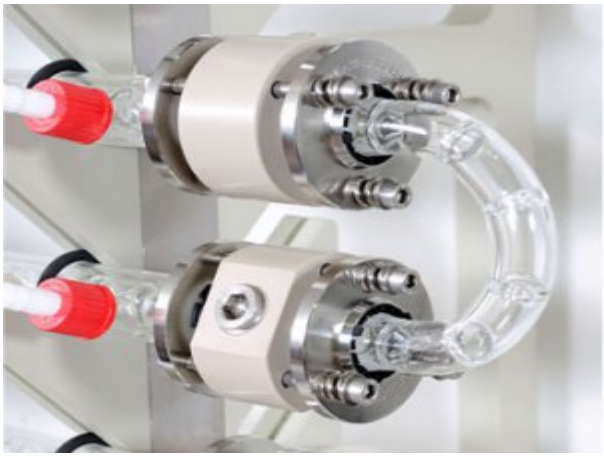
NiTech Solutions is a spin-out of Scotland's Heriot-Watt University, Edinburgh. The company designs and licenses new reactors and crystallisers based on patented baffled reactor technology. Paul Hodges is NiTech's Chairman. He previously worked for 17 years at ICI.

LEIF: What's NiTech's innovation? What do you do that other companies can't do?

Paul Hodges: It's all in the mixing. We don't stir. We oscillate. Like all the best inventions, ours is quite simple really. The IP is built around continuous reactors that are tubular and baffled. Rather than manufacture chemicals by stirring pots in old-fashioned capital-intensive batch processes, NiTech oscillates molecules (which can be chemicals, pharmaceuticals, agrochemicals) to create continuous reactions in glass, metal or plastic tubes with baffles.

LEIF: What's a baffle?

PH: A baffle is just a very clever form of a washer. By inserting baffles in tubes, we create eddy currents when we oscillate the flow with a piston. This creates perfect conditions for continuous reactions and crystallisations.



LEIF: From a layman's perspective, can you explain the difference between conventional stirring and NiTech's oscillating.

PH: Everyone can relate to stirring sugar into a cup of tea. That's exactly what you do in a reactor, albeit on a much bigger scale. The bigger the stirring vessel becomes, the more dead spots you have where the stirring is not having effect, and the more inefficient it becomes. In a reactor, it is not so easy to change direction, like you can with a spoon in a cup of tea. In oscillation, you are effectively creating lots of little cocktail shakers that allow you to mix all the ingredients very thoroughly and achieve much better mixing. The more shakers you have, the better the mixing. This is why James Bond liked his vodka martinis 'shaken, not stirred'.

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LEIF: Ingenious

PH: Very. To the best of our knowledge NiTech is the only company in the world that can do continuous reactions and crystallisations with liquid, gas and solid materials over reasonably long periods of time. This is an environmentally friendly innovation that will reduce costs, reduce energy consumption and increase quality in the manufacturing of a very broad range of products in the chemicals, pharmaceuticals, food and drink, and biotechnology industries. From high value pharmaceuticals to cheap and cheerful commodities, NiTech reduces costs and increases quality.

LEIF: How do you make money?

PH: Our business model is based on licensing. We sell laboratory and pilot units to our customers and then do the design and licensing for full-scale units.

LEIF: Who are your customers?

PH: We are just moving out of the development stage at the moment. Typically, we sell to large European and North American chemical and pharma companies. For example, Sanofi uses our technology in one of the world's largest continuous pharma production plants, where our continuous reactor is used as part of key synthesis step handling three phases. In June this year, Bayer Technology Services bought one of our units, having identified it as a potential key technology for the future. Our technology is also being piloted by several other large companies ahead of potential full scale applications. The technology was also the inspiration behind the UK/Scottish government's £120m investment in the new Continuous Manufacturing and Crystallisation Centre at the University of Strathclyde, which is helping companies to gain practical experience in the use of our technology.

LEIF: What are your plans for the near future? What do you need?

We're looking for further early adopter customers to accelerate our growth. We believe that in time NiTech can transform up to around 70% of the relevant processes. But of course, it takes time for the majority of prospective users to become aware of the potential benefits. We're currently identifying these early adopters and will be very glad to hear from more.

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