

March 2021

... enabling distributed manufacturing

Building a sustainable future for pharmaceuticals

The UK government intends to build on the success of its pandemic vaccine rollout programme. The aim is to increase domestic manufacturing capacity and support the country's health resilience in future emergencies.

Giving the keynote address to last month's International Symposium for Continuous Manufacturing of Pharmaceuticals, Health Minister Lord Bethell said his aim was to encourage the pharma community to increase medicines production in the UK, and to accelerate the adoption of continuous manufacturing. He highlighted the government's view that the pandemic:



"Presents us with the perfect opportunity to build back greener. There is a lot that the medicines manufacturing industry should be doing, such as adopting technologies and approaches that lower the carbon footprint of the manufacturing supply chains. I know that progress is being made, and the Government would be very interested to hear how we could support you to do more in the race to Net Zero."

"We need to attract global medicines manufacturing investments that deploy the latest innovations that are sustainable, highly productive, consistently high quality, and are long term projects with job security."

His view was endorsed by Johnathon Marshall of PwC, who suggested that:

"Continuous manufacturing could be the enabler for onshoring pharmaceutical manufacturing and helping to achieve Net Zero targets".

Marshall noted that the US industry alone probably loses \$50bn/year due to the inefficiencies of batch production. Continuous manufacturing can help to eliminate these losses via improved process consistency and time-based batch control. It can also improve API purity by 40% and increase energy efficiency by up to 50% - whilst reducing manufacturing carbon footprint by up to 80%.

The key to success would be combining:

- ❖ Financial incentives and support from government, in terms of investment in skills and education to bring in the best talent; and
- ❖ Pharma industry involvement via the development of micro factories to achieve production at a reasonable cost.

NiTech's highly efficient, modular systems will be an ideal component in these.

NiTech granted oscillator patent

NiTech has recently expanded its patent portfolio. It now includes an innovative new engineering solution for process fluid oscillation in pilot/production scale Continuous Oscillatory Baffled Reactors and Crystallisers.

The new patent builds on our experience with oscillating pistons in the lab-scale DN15 units. It provides a practical solution for larger pilot and industrial-scale units.



A NiTech DN43 full-scale COBR/C

The successful patent is based on reversible gear pumps, which already have broad application in the chemical processing industry. It features newly developed control software, and enables us to offer an effective and reliable oscillator system across a broad range of production scales and applications.

Continuous hydrogenation paper published

Who says it is impossible to do continuous hydrogenation? The American Chemical Society published an important new paper on 14 January 2021 on continuous hydrogenation by Xiong-Wei Ni, Francisca Navarro-Fuentes and Mark Keane of Heriot-Watt University. The work was funded by the EPSRC Centre for Continuous Manufacturing and Crystallization (CMAC).



Prof Ni commented: "The paper describes the hydrogenation of 3-butyn-2-ol over Pd/Al₂O₃ catalyst. This model reaction was run in a continuous oscillatory baffled reactor (COBR) for over 12 hrs, at a rate of 19 ml/min. There was no catalyst attrition and no loss in catalyst activity for the entire duration at a target conversion of 95% ±1%."

Please [click here](#) to download the paper.