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Working Party Productisolatie en Zuivering (Downstream Processing)

In 2012 the working organized one event:

On May 23rd an evening symposium on drying was held in the Regardz Eenhoorn congress Center in Amersfoort. The symposium was entitled: "Freeze drying and spray drying, industrial perspective". We invited Jack Nijholt from *MSD Animal Health* in Boxmeer to present the development and optimisation of freeze drying processes. Marc Vorage from Avebe and David Hollestelle from Nizo were invited to share their experience on spray drying technology. About 30 people, mainly from the industry, showed up at the symposium.

Jack Nijholt presented lyophilization, which is a technique that is used at MSD Animal Health to stabilize live vaccine products. Although the technology is time consuming and expensive it is used for a significant number of products, not only at MSD Animal Health but across the pharmaceutical industry. The presentation included a case study of how the lyophilization cycle time of a product has been reduced, from the start of the project until implementation of the developed lyophilization cycle in the production environment, using a lean six sigma approach. Furthermore, recent developments in freeze drying technology were highlighted and evaluated against the pressure of producing more product in the same time frame. Jack Nijholt's presentation resulted in an active discussion with the audience.

Marc Vorage and David Hollestelle gave a duo presentation. David started off with a general introduction on spray drying. Marc Vorage took over to discuss the practical aspects. This included protein stability, fouling issues and predictability of nozzle performance.

Special attention was paid to heat integration. Spray drying is an energy intensive process, typically 30% of the cost of the unit operation is energy consumption. As a rule of thumb only half of the energy used for heating the incoming air is subsequently used for water evaporation. The other half is lost by the (hot) vent gasses of the dryer. Polymer heat exchangers are under development to recover part of the energy from the vent-gasses to heat-up the "cold" incoming air. After Marc's introduction to (novel) type heat exchangers, the audience was asked to discuss in small teams the most efficient way to implement heat integration for spray driers. Some groups were asked to present their ideas to the audience.

After the small work shop David introduced the Dutch Drying Institute and invited the academics and industry to actively participate in this institute. The speakers were thanked for their contribution and the discussions were lively continued during the drinks afterwards.



In 2013 the working party will participate in the Werkgroependag (in combination with the KNCV Spring Meeting, June 25, Nijmegen) with a session named *Nature Inspired Ligand Development*

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for Bioseparations. In autumn there will be a minisymposium in the evening about continuous processing, e.g. continuous beer brewing.