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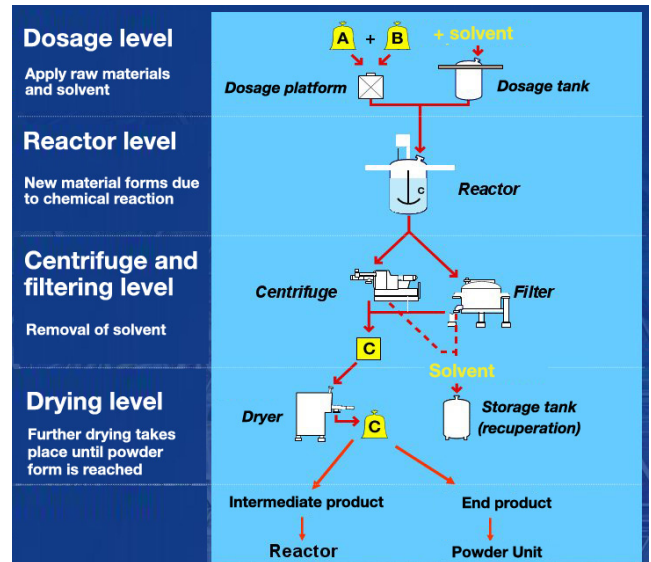
Accurate Measuring of Solvents

Location: Geel, Belgium
Order Date: March, 2006
Completion: September, 2006
Industry: Pharmaceutical
Product: RotaMASS Coriolis

Executive summary

The Geel plant of Janssen Pharmaceutica is a chemical synthesis plant which makes primary API's. This is done through use of an extensive number of solvents. In order to load the batch reactors with the right quantity of solvent, there was a need for highly precise mass flow meters. Even though this customer had no experience with RotaMASS, we succeeded in selling 18 pieces.

Janssen Pharmaceutica is part of Johnson & Johnson, the largest company in the world in the field of healthcare. The company has three facilities in Belgium. The facility in Geel is known for the production of active substances (called API or Active Pharmaceutical Ingredients) for the medicines that are manufactured in the facility in Beerse. The facility in Olen only provides quality research.



The facility in Geel has four production plants in which various reactions can be carried out: for this reason they are called multipurpose plants.

The process generally consists of the following components:

- Various raw materials, originating from tanks or storage are brought together with the necessary solvents and auxiliary substances.
- Large reactors of between 1000 and 6000 liters form the heart of the production process. Here chemical reactions take place between the different raw materials and a new substance is formed.
- By means of centrifuges or filters, the solvents that are required for the drying reaction are separated out of the remaining product. The majority of these solvents are recycled and stored in tanks.
- Finally, the product is dried to remove the last traces of solvent: resulting in a dry powder.

For the final products, the story hasn't finished yet. In order to be able to measure these powders correctly and add them to medicines in small quantities they have to have the right consistency and grain size. To that end, the facility in Geel has a separate department, the powder unit, where the active substances are ground and sifted.

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A Yokogawa RotaMASS is used to precisely measure the recuperated solvents that are pumped from the tanks to the various reactors. RotaMASS is a mass flow meter based on the Coriolis effect.

The reasons why a Coriolis mass flow meter was chosen speak for themselves:

- Working with weight measurements and/or differential pressure transmitters for extremely accurate measurements, from tanks of 10,000 up to 16,000l with a product density variation of between 0.7 kg/l and 1.5 kg/l, is very difficult.
- The customer recognized the following advantages: reliability, accuracy, guaranteed draining system, easily cleaned system, no moving parts, directly built into the pipelines, low pressure losses.

The advantages of Yokogawa on top of the arguments mentioned above were:

- Where other suppliers offered several types of equipment to meet the demand, the Yokogawa solution consisted of one type of equipment from the same product range.
- Bad experiences with 304 stainless steel housings (brown deposits) were an argument for looking at alternatives. Yokogawa was the only manufacturer who was prepared to take a flexible approach to the manufacturer of the measurement pipe housing in 316L stainless steel and who could also manufacture this model.
- Sufficient incidental quality-related arguments in favour of a compact equipment with a low weight, small dimensions and simple installation instructions even under mechanical stress conditions.
- Rapid transportation (24 hours) of basic components.
- The guarantee that measurement would not fail in the presence of gas bubbles. A simulation showed that up to 50 volume percent air in a two inch meter results in a measurement error, but the meters kept functioning. The measurement error can be reduced most by holding the last correctly measured value when larger quantities of air pass through the meter. When the gas bubbles disappear, the actual correctly measured value is adopted again.

In the meantime, the meters have already been operating for several months to the great satisfaction of the users.

If you want to know more, please go to:

<http://www.yokogawa.com/flid/FLOW/rota/flid-rotamass-01en.htm>

