

## **PI IN DEPTH SCAN CHEMTURA NETHERLANDS AMSTERDAM NL**

### **A. Description of process in general terms**

Chemtura is manufacturer of a fine chemical which is now manufactured in batch. The Amsterdam site has plans to extend production on its premises in the near future.

### **B. Objective of In Depth study**

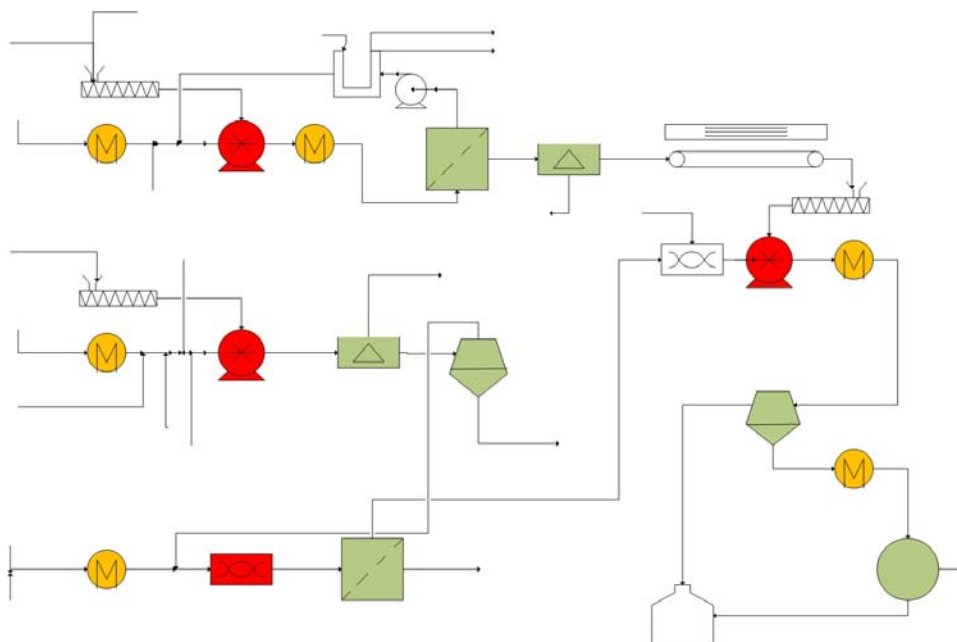
The scope of this PI In Depth study comprises of obtaining a conceptual Process Flow Diagram of a continuous plant applying intensified technology where possible.

### **C. Method**

During a Process Opportunity Analysis session the scope of the study has been determined and all batch process bottlenecks have been identified by a joined PI team. This team consisted of five Chemtura representatives with relevant skills and process knowledge and two external PI experts. This session was followed by the Process Intensification module, which consisted of a Diverging and a Converging module. These modules form the heart of the innovation process that PI brings about. Active participation of the Chemtura team members has lead to a Longlist of PI options that could be part of the continuous process. In order to make a selection out of these options, the Chemtura members of the team formulated company criteria for selection. Finally this led to several PI-alternatives and one Business Case. These have been detailed by the PI experts. Final findings have been reported to Chemtura Management in a wrap up Management reporting Meeting.

#### D. Results

The following Conceptual Process Flow Diagram has been presented to Chemtura.



The PI-specific technologies in these proposals are all commercially available although dedicated deployment needs to be tested. They focus on:

- Enhanced mass transfer
- Controlled two phase mixing and reacting
- High shear reacting
- Controlled particle growth during reaction
- Hydrodynamics and mass transfer

#### E. New insights for the company

Chemtura has substantial manufacturing know how of all of its processes at the Amsterdam site. Nevertheless, the in depth Process Intensification study generated new ideas for future process design.

#### F. In company follow up

Chemtura considers further elaborating on the concepts generated in this study.

#### G. External communication about the study

Chemtura has already been active in presenting the PI Quick Scan and In Depth findings on a non confidential basis (e.g. Presentation at “Chemiedag” 30-11-2010; interview in “Chemie Magazine” July/August 2011). It will continue to do this when appropriate.