

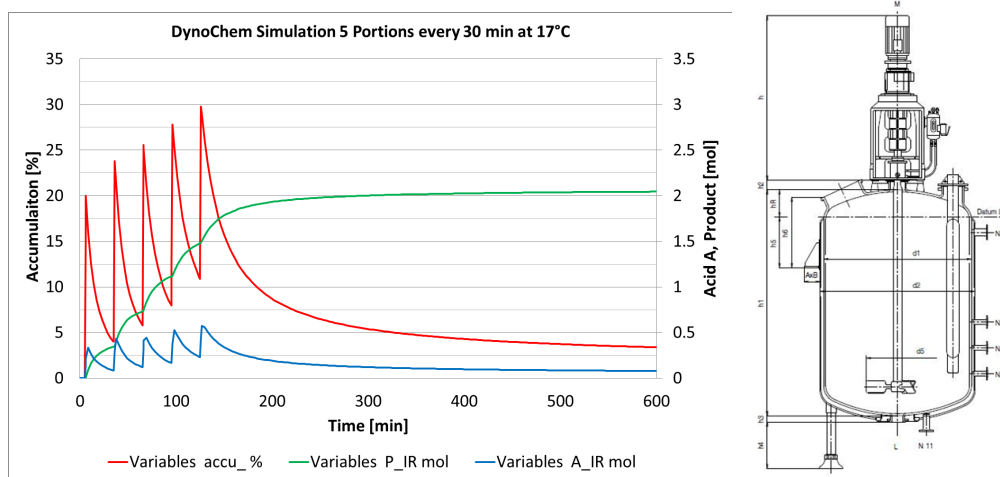
“From Lab to Plant – achieving better process performance on scale using new lab technologies and data management tools”

Andreas Boudier, Bernard Berger, Michael Levis

Process Development & Technology, Siegfried AG, Zofingen
andreas.boudier@siegfried.ch

The quest for safe, robust, economic and ecologically sustainable chemical processes has been the major task of process development chemists, engineers, analytical and safety experts. [1-3] In the past decade PR&D experts have largely profited from laboratory hard- and software tools that support the challenging task of designing the optimum process parameters in a multi-variable space. Hereby understanding the chemistry on a molecular level (kinetics of desired reaction and by-product pathways) is one important key to achieve the quality and yield targets. Also physical operations (e.g. mixing, crystallization, filtration and drying) have a major impact on manufacturing costs and product quality and require much attention already on lab and pilot scale prior to commercial scale manufacturing.

Case studies from Siegfried process development and technology laboratories will be presented highlighting the successful application of reaction kinetics, calorimetry and process simulation in re-designing chemical processes and successfully scaling them from lab to plant scale. Applied soft- and hardware tools as well as their efficient combination for collecting relevant data for process performance will be highlighted in this talk.



[1] Practical Process Research and Development – A Guide for Organic Chemists; Anderson, N. *Academic Press*, Second Edition, 2nd edition, 2012

[2] Thermal Safety of Chemical Processes – Risk Assessment and Process Design; Stoessel F.; Wiley-VCH, 1st edition, 2008

[3] Jimenez-Gonzalez, C.; Ponder, C. S.; Broxterman, Q. B.; Manley, J. B. *Org. Process Res. Dev.* 2011, 15, 912