



Session II: Process Development

Beyond Scale-up



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Vikas Vidwans is a Chemical Engineering Graduate with 40+ Years of experience in the field of process design. He worked for the first 15 years of his career in consultancy organisations to learn various design techniques before switching to project divisions of chemical manufacturing companies. Handling hazardous chemicals and converting a laboratory scale process to an operating plant is his passion. To make the process work at the plant scale in the very first attempt has always been his objective. He accomplished many such conversions in various fields including agrochemicals, polymers, pigments and petrochemicals. Mr. Vidwans currently heads the design function at Gharda Chemicals Ltd.

Abstract

A chemist does his best to get the product of best quality at the lowest cost. An engineer designs the plant set by doing a scale up on the basis of all available information. However, every process is unique and occasionally new challenges surface during start up. It is difficult to guess at what start up stage these surprises emerge. While finding a solution for the same is an art, it is invariably an engineering solution.

There is a need to study the process to avoid such unpleasant surprises and carry out some additional trials to get an idea of such challenges in advance. Only then can an appropriate solution be found. The trick lies in how well one can simulate the plant situation in the laboratory that gives unexpected results. This means that experiments need to be conducted in the laboratory by deliberately deviating from the standard operating procedure. Left to himself, a chemist unwilling to spoil even one lab batch, will reluctantly implement such a simulation by making only minor changes in the process thereby saving (?) that lab batch. As a result, one loses a chance to generate advance intimation of the challenges. Hence, the best way is for an engineer to witness such a batch and note the corrective actions taken, if any. The performance of a repeat batch conducted without any corrective actions can be observed.

This presentation will take a look at some challenges which are commonly faced and their likely solutions.