

An Integrated System Solution for Supply Chain Optimization in the Chemical Process Industry

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The talk gives an overview of various aspects of addressing the complex scheduling problem within the chemical process industry involving batch production. The application described considers network of production plants with interdependent production schedule, multi-step production with multi-purpose facilities and chain production simultaneously involving multiple plants. The problem was addressed in three distinct aspects: (i) a system provided scheduling solution from a genetic algorithm based optimizer, (ii) a mechanism for collaborative planning among the involved plants, and (iii) a tool for manual updates and schedule changes. The tailor made optimization algorithm simultaneously considers alternative production paths and facility selection, resource specific production parameters and lot sizes, setup and cleanup times. The collaborative planning concept allows all the plants work simultaneously as partners in a supply chain. The shared information based on the similar production schedule models allows transparency, greater flexibility and reduced response time as a whole. The user interface allow monitoring production schedule graphically. The custom built utilities allow manual changes to the production schedule and investigation of various what if scenarios and support marketing queries like available to promise based on the production schedule information. The experience with this system solution based on several realized applications in the chemical industry will be summarized.

Keywords: *Supply chain management, APS-system, collaborative planning, detailed scheduling, optimization, genetic algorithm, available to promise, campaign scheduling, multipurpose multiproduct batch plant, chain production*