

Simulation

Modelling, Design and Optimisation

Exyte – your plant designer and plant manufacturer

Exyte is a leading international plant design and manufacturing company in the life science industry. Experienced specialists develop “state-of-the-art”-solutions for you – from consulting, concept and design to turnkey implementation.

See the future today

Simulation tools offer a clear presentation of complex process dynamics. Future production processes can be considered and optimised today. We can carry out simulations of new constructions, conversions and expansions for you in short order. Take the leap from static Excel calculations to dynamic process simulations. Our simulation is based on a long-standing experience. We are looking forward to planning and optimising your production process

Support during the entire planning phase

Production facilities in the biotech and pharmaceutical industry must be prepared for the future today. Global markets, extensive product ranges, complex production processes and short cycles are core challenges. Our process simulation offers different possibilities for planning, layout and optimisation of your process through all project phases and in special case studies.



Our services in the area of simulation

- Dynamic process simulation with INOSIM Expert
- Batch process plan (Gantt chart)
- Determination of the number of equipment and their main parameters with reliable results
- Media and capacity analysis
- Design of generator and disposal systems
- Optimisation of logistics and storage
- Detection of process bottlenecks
- Statistical analysis

References

BIOMM | Beiersdorf | CSL Behring | DSM Biologicals | Pfizer | StroviTel

Behavior of Complex Systems

Interpretation and Optimisation

Process

- Technology
- Batch volume
- Product yield

Facility

- Number of:
- Inoculum rooms
 - Bioreactors
 - DSP suites

Simulation
Statistical
Analysis

Production
Capacity

Organization

- Production time available
- Maintenance
- Plan efficiency
- Shift model

Sales Forecast

- Typical distribution in product yield
- Custom demand for different technologies

Statistical analysis: A powerful tool

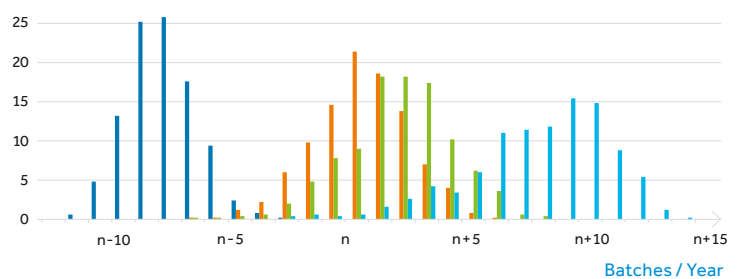
Statistical analysis is an underestimated tool that offers multiple advantages. Complex processes with many influential factors can be examined. However, this method goes far beyond a worst-case analysis. With random variations of process parameters or the inclusion of disruptions, potential problems can be detected and eliminated at an early stage.

A guarantee of high flexibility and low expenditure

The production capacity of companies in contract manufacture is influenced by all kinds of factors. Varying process scales, process technologies, volumes and product concentrations have an effect on production times and resource requirements, as described in the above figure. Statistical analysis as additional tool guarantees significant results. Hundreds of simulation runs can be evaluated with little effort. In the current case study(*), a production facility was supposed to be adjusted to deal with increasing product demand.

(*). A. Kaya, A. Uebele, A. Seeger, H. ter Maat and D. Estapé, A Statistical Approach to Expanding Production Capacity, BioProcess International Journal, 11(3), pp. 54–59, 2013.

Probability (%)



Shift Model: ■ 16/5 ■ 16/7 ■ 24/5 ■ 24/7

Distribution of processed tasks per year with additional downstream suite and various layer models (in working hours per day, 5 or 7 working days per week)

A solid basis for decision-making

Thanks to the results of the statistical analysis, the customer is able to make a well-considered decision. The client also has a clear understanding about the effects of the shift model on future processes (right figure). The simulation results line up with current real production numbers.

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