



» Intelligent Factory Planning

Tailor Made Planning in Regulated Industries

The demands made by authorities, industry and consumers on the safety of medicines, food, cosmetics, synthetically or biotechnologically produced active ingredients and their production processes are constantly increasing.

At the same time, the price pressure on manufacturers is becoming ever more noticeable. As a result of this development, integrated and effective factory planning is more vital than ever for the highly regulated life sciences industries.

Nothing is more constant than change

The use of research, development and production facilities in the GMP-relevant area is subject to constant change. The framework conditions in the process industry and related sectors of the life sciences are changing rapidly.

Factory planning can become an issue for various reasons:

- New technologies – e.g. high-potent drugs, Conti processes
- Conversion of systems, e.g. due to new products
- Production adjustments due to new market requirements or up- / downscaling for changing demand
- Relocation of production
- Increasing requirements for energy efficiency

New is not always better

The shift away from traditional greenfield projects is already visible in many sectors. A shortage of resources, more complex approval processes and a shortage of skilled workers mean that new construction projects are not only taking much longer, but are also becoming increasingly expensive. The classic greenfield project is increasingly being replaced by brownfield approaches, in which existing plants are converted with a short downtime.

This does not necessarily have to be a disadvantage, as new does not always mean better. A cleverly planned conversion of buildings and plants is often significantly more profitable and faster, especially from an economic point of view.

Identify potentials for optimization

Many companies have grown organically and no longer have a comprehensive overview of the optimization potential lying dormant in their systems. In many cases, it is therefore worth going into detail and using analyses and simulations to first take a close look at existing operations.

A sure instinct and a lot of experience are required here, and there is often potential for savings, especially when it comes to energy management. A high heat requirement, for example, does not automatically mean that a new system has to be installed. Defective fittings, poor insulation and dead pipes are more common than you might think. Comparatively small changes can help here, such as shutting off dead pipes or replacing individual system components.

Further measures with regard to energy efficiency are e.g:

- Efficient motors and speed-controlled system components
- Elimination of load peaks through process adjustments
- Heat recovery measures, such as the use of waste heat for other processes
- Reusing of „used“ water, waste water treatment

Look at processes and plan based on activities

It is also worth taking a closer look when changing processes. The magic word here is „activity-based process planning“. Here, only what is actually needed is implemented and built, based on the process used. The starting point is always the analysis of the process, current activities and systems. Future processes are then defined, which forms the basis for the selection of suitable technologies. New or modified processes are described and a „design corridor“ for planning is created on this basis. Finally, planning is carried out on the basis of the newly acquired knowledge. A „short-cut design approach“ that jumps from the first to the last step and thus only considers the system level, ignores the actual process and its requirements and often leads to considerable additional expenditure due to unneeded system components or unnecessary conversions.

Use simulations specifically for optimization

(Process) simulations are essential when optimizing processes, systems or entire factory layouts. Changes to processes, new uses of facilities, the introduction of new raw materials, material and personnel flows – all of these can be put to the test with simulation tools and approaches for improvements can be developed.

This can result in changes to the layout of warehouses, production facilities or laboratories, for example, which shortens distances for materials and people and leads to better use of resources.

Plant cycles can be considered and process steps can be coordinated so that new capacities can be achieved with existing plants.

Putting the simulation before the planning process is worthwhile: either new constructions and conversions can be smaller or avoided altogether, or, if no capacity improvements can be achieved, the findings from the simulation can be incorporated into the planning of the new plant and ensure optimized planning from the outset.

Consult the experts

All these measures require experience, the necessary tools and expertise as well as people with fresh ideas and interdisciplinary thinking. Chemengineering has already been able to help many companies from a wide range of life sciences sectors to achieve intelligent factory planning through analysis, simulation and the incorporation of experience into planning, ultimately saving costs.

Talk to us. We will help you to develop new approaches, recognize potential and plan your factory optimally.



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