Material flow simulation

Investment security even with complex production systems
Material flow simulation enables the clearly arranged, transparent design of complex systems. Individual plants and transport systems are depicted using a dynamic computer model. The simulation model generated is a fast, reliable tool which enables the rapid discovery and verification of optimization models. In particular flexible systems involving frequent retooling processes down to batch size 1 production can often only be reliably planned with the aid of simulation models. The model supplies a reliable statement about productivity, throughput times, buffer storage occupancy and capacity utilization in bottleneck areas. Alongside plant parameters and control of the plant concept, influencing variables from the upstream and downstream process are also included.

**INPUT upstream process**
- Faults
- Irregular delivery periods
- Cutting plans
- Part sequence
- Dynamic material flow

**INPUT downstream process**
- Irregular material withdrawal
- Missing operating staff
- Downstream process is a bottleneck
- Limited buffer capacity
Graphic animation also makes for better understanding of complex sequences, and so provides motivation for improvement. However, simply considering the plant concept and its parameters is not sufficient. Instead, the operational organization and planned sequences in the company also have to flow into the simulation model, as the more qualified the input data, the more precise and meaningful the results. Framework conditions such as the production sequence and batch sizes are essential influencing variables and have an enormous impact on the result.

The aim is to achieve a harmonized material flow along the entire value chain. This requires the interfaces, outline conditions and restrictions to be determined and defined in advance. The culmination of this process is an optimum outcome, taking into consideration not only the plant concept but also organizational framework conditions.
Benefits for you through simulation

When implementing new production plants, we aspire to reconcile your specific production requirements with key aspects of economy. HOMAG Group Engineering will devise the optimum machine configuration for your individual requirement using modern technologies.

The call for need-driven production systems increases not only complexity but also the demands made on the planning process. Complex production systems with irregular and ramified material flow processes or “breathing“ buffer storage areas can generally be analyzed either not at all or only very imprecisely using statistical computing methods. However, this degree of imprecision gives rise to substantial investment risk or forces costly “overdimensioning” of system components in order to ensure the desired outcome. In order to reduce the investment risk and to address demands for a lean production system, material flow simulation provides the ideal answer. This has evolved into a highly efficient tool within the plant planning process. Based on experience gathered over countless projects, material flow simulation has become an established element of almost every phase of system development within the HOMAG Group.

Using simulation technology at an early juncture will benefit you and help safeguard your investment right from the start.
Effective planning
When developing new products, the expected repercussions in production can be analyzed using the simulation model and the relevant consequences drawn – whether for the product or the production process.

- Interactive system optimization
- Avoidance of costly overdimensioning
- Minimization of entrepreneurial risk
- Effective support for presentation and discussion

Efficient planning
Using a simulation model, a production system can be analyzed right from the planning phase under realistic conditions and with actual production orders.

By using additional simulation experiments, the production system can be varied and optimized, for example by changing the size of buffer storage systems or performance parameters for system components, and reviewing the resulting impact on the overall system.

This helps ensure that target parameters are reached without costly overdimensioning of system components.

Material flow simulation provides the answers to “what if” scenarios.

- Reliable statements about productivity and throughput times
- Analysis and optimization of bottlenecks
- Sensitivity analysis
- Review of fault scenarios and minimization of consequences
- Fast, reliable verification of optimization processes
- Comparison of plants in different variants
Transparency across all planning phases

Even during subsequent operation of a production system the simulation model can be highly beneficial. For instance it supplies reliable planning data for calculation and production engineering. In addition, the model can be coupled with suitable optimization algorithms to then determine the optimum production sequence from the point of view of productivity or throughput time. In this way, a powerful tool is created for production control.

The simulation model renders the relevant influencing variables and their correlations transparent, creating the conditions for continuous optimization of the production system.

- Precise planning data for production engineering and calculation
- Efficient production control
- Optimized productivity
- Reduced throughput times
- Improved understanding of the system for all those involved
Offered services

With our experience, specialist expertise and up-to-date hardware and software, we provide valuable support in rapid solution finding, working with you to achieve your production targets.

Services provided as part of the planning phase are offered under sales number 8040. Services as part of the operating phase are offered under sales number 8044.

Contacts

If you are interested in finding out more or have any questions, please simply get in touch with us.

Michael Kratzert
Telephone +49 744313-3381
Michael.Kratzert@homag.de
www.homag.de
BARGSTEDT
Handlingsysteme
www.bargstedt.com

BRANDT
Kantentechnik
www.brandt.de

BÜTFERING
Schleiftechnik
www.buetfering.de

FRIZ
Kaschiertechnik
www.friz.de

HOLZMA
Plattenaufteiltechnik
www.holzma.com

HOMAG
Holzbearbeitungssysteme
www.homag.com

HOMAG eSOLUTION
Software
www.homag-esolution.com

LIGMATECH
Automationssysteme
www.ligmatech.com

SCHULER
Consulting
www.schuler-consulting.com

WEINMANN
Holzbauystemtechnik
www.weinmann-partner.com

WEEKE
Bohrsystème
www.weeke.com

A worldwide presence
www.homag-group.com