

The Importance of Process Flows & Layouts in FMCG facilities



“Measure twice, cut once”. Is your facility ready for production growth?

We have all heard the saying: “Measure twice, cut once”. In the fast-moving consumer goods (FMCG) industry, we use Process Flows, Material Flow Analyses, and Capacity Studies to “measure” and understand a process before commencing with detailed designs. A Process Flow is a sequential representation of a system and its components, including:

- Operations;
- Equipment;
- Inputs;
- Outputs;
- Timelines;
- People involved;
- Required resources.

Understanding the process in its entirety before commencing with any designs allows for an appropriate arrangement of these components. Once the process has been mapped, Material Flow Analyses can be used to quantify the flows and

take stock of all the inputs and outputs in the well-defined system. Capacity Studies are then used to identify any bottlenecks and size any potential new equipment.

Process Flows

The appropriate arrangement of components (e.g. equipment, sub-processes, etc.) in a manufacturing environment can significantly impact a company's productivity. Mapping the processes and regrouping the components according to their functions allows for continuous production flow, resulting in efficient space utilization and elimination of crisscrossing of process paths. This process helps all parties understand what process occur in a production facility, how each is achieved, what inputs are required at each point and what outputs are produced.



Material Flow Analyses

The inputs and outputs from each system as well as the information gathered from the Process Flows are used to establish the Material Flow Analysis. This process makes use of the Systems Approach, which involves grouping or segmenting processes such that available quantitative information can be used, and Mass Balances which accounts for the masses entering and exiting the systems. This can then be used to indicate the type of material handling systems required, spacing needs, line requirements and more.

The additional benefit of using Astratek Manufacturing Engineers is that this analysis can be used to understand where inefficiencies are found or where there are areas of high waste, something we often see FMCG production facilities overlook, and with our expertise we can assist you to address some of these issues and plan for the long run.

Capacity Studies

Correctly sizing and balancing a line to avoid bottlenecks has an immense impact on efficiency. A Capacity Study takes inventory of the resources and can be used to identify where there is available capacity or where additional capacity is required.

OEEs become a vital part of this exercise to establish how much actual capacity is required, opposed to the theoretical capacity available, once maintenance, changeovers, cleaning cycles

etc. are considered. It is also crucial to calculate and account for surges where peak seasons, shelf life, staff models, etc. are involved.

Capacity Studies are necessary in sizing new equipment accurately and form one element in choosing fit for purpose equipment. These Capacity Studies may also reveal insights into the processes and equipment that may otherwise have been missed. A Capacity Study can also provide very valuable insight into potential future growth, or act as a model to establish what is required to increase production to meet a certain demand. By considering the predicted future demand, the Capacity Study Model can assist in establishing where your bottlenecks will occur as you increase your production. The Materials Flow Analysis is then recalculated to establish the increased flow of material across your system.

At Astratek Manufacturing Engineers we have often seen production facilities quickly become too small with an increase in additional trolleys, pallets, etc. in between production processes.



The number of resources per work station/process is then established to provide a detailed view of the future system to the client and not just their immediate needs.

Layouts

The above processes all feed into the layout design. This design firstly needs to comply with food hygiene and building standards but also needs to account for the information gathered in the abovementioned processes.

The Process Flows are used in arranging equipment and spaces in a logical manor and such that all processes have been accounted for. Information from the Material Analysis is used to size production areas as well as areas that are often overlooked such as stores, sculleries and holding areas. Equipment selection and utilization is largely based on the findings of the Capacity Study. Further than these broad details, the three processes above feed into the finer detail of the design. Equipment is placed to ensure there is adequate spacing around equipment for cleaning as well as ensuring that all doors and hatches can open freely for maintenance and servicing while minimising the distance between interacting workstations.

Yard spaces, stores and the production floor are designed to account for the type, form and frequency that each raw material, packing material or work in progress (WIP) is delivered or produced. The same principle is applied in the

dispatch and warehousing areas for finished goods.

The Material Flow Analysis and Capacity Studies may be especially important for growing businesses as they give insight as to when increases justify automation, and can reach a break-even point, or when it may be pertinent to move to bulk deliveries of certain inputs/utilities (like gas cylinders vs tanks, silos etc).

With Astratek Manufacturing Engineers' approach of "measuring twice" and understanding a system as well as possible, with the added benefit of "seeing into the future" regarding future growth, we could save a company a significant amount of money when taking the "cut", and building a new production facility, upgrading/expanding a production facility.

To contact Astratek Manufacturing Engineers for assistance and advice regarding Process Flows, Material Flow Analyses, Capacity Studies and Layouts for your FMCG facility you can scan the QR code and complete the online form or e-mail us at info@astratek.co

