All The Right Pieces

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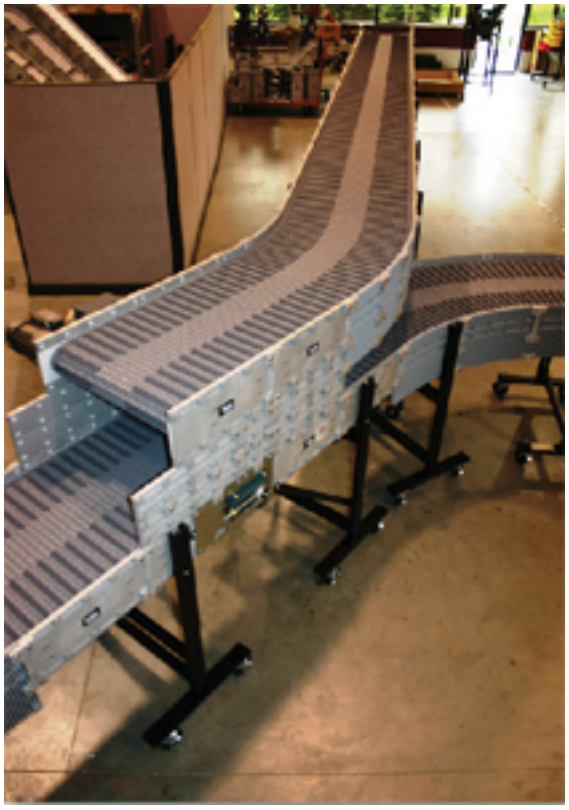
Modular production systems have gone past just Lego-like pieces of equipment or construction plans, and into the very fabric of many processing plant's design for growth.



Modular approaches to new equipment and processing plant construction is not a new concept. However, the enhancements in many areas, along with their increased frequency of use, have driven these concepts to the top of many facilities' plans for increasing production, while cutting costs and improving overall production efficiencies.

For many, especially those in the pharmaceutical and medical device fields, continuous improvement strategies and lean manufacturing principles are best realized in modular approaches to new equipment investments. This can be seen in their ability to expand output while growing efficiency and reducing costs.

Going with the Flow

Just to clarify, modular equipment refers to machinery that can be quickly interchanged in order to accommodate greater and more varied production, while reducing line changeover times. A simple example could be lengthening or

shortening a conveyor belt, while a bit more complex application may be found in changing out mixing and feeding mechanisms in order to handle varying feedstocks for producing a different product with the same equipment.

While the implementation of modular equipment approaches doesn't work for every plant, due to unique production specialties or basic facility layout constraints, for those who have implemented such an approach, the benefits seem to sync well with lean manufacturing principles. Some benefits include:

- *Customization.* Perhaps the biggest benefit of modular equipment is how much easier it can be to customize a piece of equipment to fit the specific needs of a processor's customer. Instead of making full-blown changes to a production line, a modular approach to equipment investment allows for more of a plug-and-play technique that permits many, especially contract manufacturers, to handle the varying needs of many different products. This has proven especially key in the food and pharmaceutical marketplaces in which economic factors have produced significant private-label growth.
- *Quicker line changeover.* In conjunction with the customization benefit, modular equipment dynamics allow for quicker line changeover by simply rolling out one piece of equipment and rolling in another. This entails the right planning in setting up production flow, and as long as equipment is easy to clean and on casters, many plants have been able to hasten their transition from one product line to another with minimal downtime.
- *Easier investments.* It can be easier to invest in various pieces of the puzzle over time, as opposed to purchasing every piece of equipment for a specialized process all at once. The modular approach allows for meshing what a plant needs with what it already has in expanding to handle more and more product lines. This can prove to be a key benefit whether you're a contract manufacturer looking to either increase your business with a particular customer, or a corporate facility that can now take on more work in validating the facility's capabilities when it comes time to merge production in the name of cost cutting.
- *Slower build-up.* Just as a modular approach enables many facilities to spread out their capital expenditures, it also allows those getting into less established markets, such as biofuel production, to gradually accelerate their production equipment investments as demand, hopefully, increases.

One Lego at a Time

Many processors are also realizing that the benefits of a modular approach to equipment purchasing can be realized with a modular approach to construction projects, especially in adding or expanding clean rooms. A growing number are looking at the advantages of modular or pre-fabricated clean rooms, due to:

- *Predictability.* Modular clean rooms have predictable implementation schedules, which can be crucial when adding or expanding a line.
- *Costs.* Traditional construction projects cannot ensure certain cost controls,

while modular components can.

- *Avoidance of contamination.* Because they're constructed off-site and only assembled at the facility, modular walls and ceilings avoid the inescapable attributes of construction with dry wall. The most prominent of which is the dust, metal and other particulates that can linger in the air and throughout the ducting for up to six months after the project is finished. In clean room settings, this can add costs in the form of recertification or obtaining third-party auditing approvals.
- *Cleanability.* Once a room is qualified, installing a new piece of equipment or changing the configuration of a modular room is cleaner, which, for many, adds to the flexibility benefit of a modular approach.

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