

How to Set Up a Lean Manufacturing Layout on a Budget

Lean manufacturing is all the rage these days, not surprising given the immense benefits it provides in terms of waste reduction, cost efficiency, and higher profitability. Considering the global market scenario, more and more organizations are going to implement lean manufacturing principles now. Small and medium enterprises especially face the need to maximize profits by eliminating waste. However, setting up a new lean manufacturing facility by building a factory from scratch requires a significant amount of funds. So we will discuss how to align operations into a value-stream layout within the existing facility.

1. Get the right personnel

Since the project team will be tasked to re-engineer the facility to transform it into a lean enterprise, it should be led by your lean leader who's an **experienced project manager**. They should evaluate the strengths and weaknesses of the current system. Typically, the team of personnel should consist of the lean leader, the manufacturing engineer, a working leader or supervisor, a senior level machine operator, and a representative from the materials/logistics organization.

2. Design and implement a layout

This is the most important step as here it is defined how the facility will operate. A layout with the proposed changes must be developed with the project team. It must outline all aspect of factory design like navigation pathways, cell arrangement, electrical service, workstation docks, and storage spaces. The plan must also include risk and safety assessments, refined budget, upgrade requirements and facility structural modifications. Then, the viability of the design layout must be tested. A popular approach to project management by lean companies is developing a tollgate process.

3. Set up a material handling system

An integral part of lean manufacturing is an efficient material handling system. A basic premise of lean manufacturing is shortening the time taken to manufacture

the product. This is the concept of Just in Time delivery to complete customer orders faster, minimizing waste in the manufacturing process. The ability to do this partly depends on how materials are moved across the production floor. A lean manufacturing process should ensure materials are moved quickly, safely, handled without damage, and are defect free. Material handling equipment such as [articulating jibs and industrial manipulators](#) could be incorporated in the facility to ensure smoother handling of materials.

4. Ensure the safety of the system

Since it is a newly developed facility with a changed layout and different practices, ensuring its safety is important. The electric wiring, placement of equipment and machinery must be regulated and checked for safety. The workers should be thoroughly trained to work with the lean facility. They should also be informed about the safety regulations and policies of the facility. This will avoid accidents or injuries in the workplace.

Lean manufacturing is the future of manufacturing. A lean manufacturing layout can be set up on a budget without making a huge expenditure.

How a smart factory is a flexible factory?

The term 'Smart Factory' describes a highly digitalized and connected production structure where machinery and equipment are able to improve processes through automation and self-optimization. It is a factory where physical production processes and operations are combined with digital technology, smart computing, and big data to create a technology-driven system for companies that focus on manufacturing and supply chain management.

It is derived from 'smart manufacturing,' which is a category of manufacturing that employs computer-integrated manufacturing, high levels of adaptability and rapid design changes, digital information technology, and more flexible technical

workforce training. This includes the material handling devices that have evolved to accommodate more predictive planning and more flexible business needs. Trends such as Industry 4.0 or the fourth industrial revolution have made this transformation of the supply chain possible.

How is a smart factory a flexible factory?

The basic idea behind a smart factory is flexibility. The [internet of things \(IoT\)](#) creates an interconnection between the devices. The system intelligently applies big data to create a responsive and self-improving environment for the factory of tomorrow. Central to the smart factory is the technology that makes data collection possible. This is enabled by intelligent sensors, motors, and robotics present on production and assembly lines that the smart factory puts to use. The aspect of data collection has many implications:

Quality

The smart factory has self-optimization as its key feature. It can predict and detect quality defect trends and can help to identify the human, machine, or environmental causes of poor quality. The system generates data and analyzes it to reveal asset performance issues that can require some kind of corrective action. Thus, it leads to a better-quality product with fewer defects and recalls. In other words, it is a flexible system that changes itself for quality.

Lower cost

Smart manufacturing results in more predictable inventory requirements, more effective hiring and staffing decisions, as well as reduced process and operations variability. Moreover, the transformation of supply chain in this system provides an integrated view of the supply network with quick responses to sourcing needs. These factors immensely help lowering the cost of manufacturing.

Sustainability

Smart factories provide operational efficiencies, which ultimately result in a smaller environmental footprint than a traditional manufacturing process. For example, conveyor systems consume energy by running continuously even when there is no load. In a smart factory, key areas are frequently stopped in order to activate only the needed resources. By employing variable speed drives in

conveyors, energy efficiency can be increased up to 30%. Furthermore, higher process autonomy results in less potential for human error, including industrial accidents that cause injury.

Conclusion

Smart factory is a flexible factory as it helps the manufacturing ecosystem to autonomously sense the context, adapt to constraints, and organize pre-emptive action to achieve business goals. Predictive analytical tools generate data and intelligence from the customer, supplier, equipment, and production data, which can then be acted upon. It brings all the elements of a factory including [material handling devices](#) to perform at maximum efficiency and lower waste.

Is Your Manufacturing Line Ready for Articulating Jibs?

Articulating jibs are extremely popular positioning devices. There are different kinds of articulating jibs for different uses such as articulating jib arms, articulating jib hoists and articulating jib lifters. Many organizations prefer articulating jibs because they can be easily paired with overhead cranes. Overhead cranes offer a host of benefits such as

- Better space utilization
- Improved safety
- Precise load handling
- Enhanced ergonomics.

These are the factors to know if your manufacturing line requires articulating jibs:

Need for reaching inaccessible areas

If the manufacturing line demands frequent reaching in inaccessible areas of the

workplace, an articulating jib might be just what you need. Certain workplaces require items to be carried to areas that aren't easily accessible. These areas might be hard to reach due to work cell obstructions, such as columns, racks, conduit or equipment. In such a case, a [conventional jib boom](#) or workstation rail system isn't very useful. An articulating jib has the capability of easily reaching inaccessible areas due to two swivel arms that can rotate independently. It is an extremely useful device in manufacturing lines as it provides ease and efficiency.

Specific mounting requirement

The best feature of an articulating jib is that it can be mounted anywhere. You can mount an articulating jib on the ceiling, on the wall, on a pedestal or on a trolley. Depending on the layout, it can be mounted on any of these platforms to provide maximum efficiency. So, almost every manufacturing line is ready for an articulating jib. It can also be installed in a low headroom facility with ease. The second arm of this articulating jib crane can be mounted above or below the first arm depending on the headroom requirements of the facility.

Requirement of space

Organizations that want to free up their valuable floor space certainly should consider articulating jibs. Installing these will free up their valuable floor space of workers walking around with material loads. Articulating jibs are overhead devices, so they don't use much of your floor space.

Pick heavy objects & maneuver around obstructions

In some facilities, there is a need to pick heavy objects while maneuvering around work cell obstructions. In that case, an articulating jib hoist is the answer. It is a device that has an air hoist attached to its second arm. In facilities with low headroom, this is a perfect device as it won't interfere with conduit or obstructions coming down from the ceiling. It can pick and place heavy objects easily.

Horizontal and vertical positioning

In some manufacturing lines, vertical and horizontal positioning of material loads is required. For such facilities, an articulating jib lifter is the ideal device. It is an

articulating jib with an air balancer built into the second arm. It has the reach-in capabilities of an articulating jib crane with the stability of an air balancer. It makes the handling and lifting of parts easier due to the pneumatic balancer.

In conclusion, almost any manufacturing line is ready for articulating jibs as they can accommodate any kind of facility. Whether it's an [articulating jib arm](#), an articulating jib hoist, or an articulating jib lifter, they are flexible devices and are very useful.

7 Attributes of Successful Material Handling

Material handling is an important aspect of manufacturing and warehousing, so much so that it can affect productivity and performance of an organization. In that case, it is imperative to use material handling to the best of its capacity. This can drive business growth and mold the organization into an efficient and successful operation and requires in-depth knowledge of all kinds of material handling equipment available. For example, knowing what kind of a jib crane will be better for a particular lifting operation or whether an articulated jib lifter or an inline lifter will be more crucial to the efficiency of the operation. So let us find out the 7 attributes of successfully using material handling.

1. Planning

Define a plan that outlines the objectives and goals of the organization. Identify the process design, layout, and methods, keeping in mind current restraints and future requirements. Based on this, design the material handling system using a team approach; do this by taking inputs from your suppliers, consultants, management, engineering, computer, finance, and operations specialists.

2. Ergonomics

It is important to consider ergonomic factors like [eliminating repetitive motion](#), reducing manual labor, and adhering to safety standards. While

assigning tasks and equipment for material handling, worker capabilities, limitations, and safety must be taken into account.

3. Space Utilization

Effective space utilization is the key to successful material handling. The entire area of operation should be organized and de-cluttered. Having a layout that makes the best use of material handling equipment can maximize space.

4. Systemizing the Processes

Systemizing your processes is the key to a successful implementation of material handling systems. A well-defined system with laid down protocols makes it easy to perform the material handling tasks with efficiency. Coordinate and integrate all material handling processes across the entire enterprise. Consider all material movement when you plan and systematize.

5. Simplify the Operation

Material handling operations should be simplified by reducing, combining, or eliminating as much excess movement as possible. Keep in mind that the shortest distance between two points is a straight line, so design your operation according to the layout. For example, move finished goods directly to the shipping dock rather than through the warehouse, if possible.

6. Focus on People

Even if your material handling system is highly automated, there will always be an operator or user of the equipment involved in the process. Proper training of the staff is a must to achieve your material handling goals. Implement new technology while keeping in mind the experience of the staff. If your employees are well-trained on the successful use of material handling, half of the work is already done.

7. Effective Maintenance

When it comes to material handling equipment, effective maintenance is imperative to successful implementation of systems. When investing in material handling equipment, account for the cost of consumables, training, installation, setup, maintenance and repair.

In conclusion, a systematic approach to material handling is necessary. Integrating and using these seven attributes on every kind of equipment right from the forklifts to [articulating jib lifters](#) is how you can practice successful material handling.

Are Overhead Lifting Solutions a Better Return on Investment Than Other Equipment

Overhead lifting solutions have gained a lot of popularity since they were introduced due to the benefits they offer. More and more organizations are installing overhead lifting equipment in their production facilities and warehouses. This brings us to the question - Are overhead lifting solutions a better return on investment than other equipment? Let's explore.

Cost-effective

Overhead lifting equipment does not come at a hefty price like conveyors or Automated Guided Vehicles (AGV's). Overhead lifting equipment is cost-effective. Overhead lifting systems also comes in different devices and variants, which can be chosen from to suit your requirements s, there is lesser investment in overhead lifting devices than other lifting equipment.

Better Space Utilization

Unlike forklifts that have to navigate back and forth through aisles, overhead handling equipment takes the product up and over obstacles. Obviously, moving over straight pathways is more efficient than roundabout paths to get from one point to another. This saves up the time taken to carefully navigate through or around aisles, columns, equipment and other obstacles—cranes, monorails,

balancers and hoists save transport time for an overall increase in operational efficiency. Moreover, overhead equipment does not hinder the work happening on the floor as it operates overhead.

Less Maintenance Required

Overhead lifting equipment oftentimes requires less frequent maintenance and servicing than other types of material handling equipment utilized for load transport and placement. Furthermore, they utilize fewer moving parts, making their service and upkeep quicker and easier to complete. This reduces downtime, labor, service parts and other costs associated with equipment maintenance and repair when compared against floor-based transport options.

Longer Lasting

Overhead lifting devices like cranes, hoists, and monorails are made of high quality, durable, heavy-duty and long-lasting materials. Having life spans of decades, these systems are built and engineered for a longer lifespan and feature far fewer wear and service points than other floor-based transport equipment options. Hence, the cost of replacement is saved on overhead lifting solutions.

Value Retention

Overhead handling solutions often retain their value. Depreciation rate is not as high for cranes, hoists and monorails as it is for other equipment. In fact, because nearly all overhead handling systems are integrated into the building's structure as a permanent upgrade, they may increase the value of the facility.

Reduce Costs Associated with Accidents

Employees move in and out of manufacturing facilities and shipping/ receiving areas multiple times throughout a normal workday. Overhead Lifting Systems work within a specific area above the floor. These solutions limit an employee's exposure to potential accidents caused by dangers like forklift traffic. This could potentially save the costs associated with OSHA citations, lost work time, replacement of an injured employee, medical expenses, increased workers' compensation rates, and potential lawsuits. These issues cost employers large amounts of money every year making overhead handling solutions the most practical and cost-saving option.

Hence, it can be concluded that overhead lifting solutions are indeed a better return on investment than other equipment. Check out our extensive range of overhead lifting solutions [here](#).

Facts about Hoists and their uses

A hoist is a mechanical or pneumatic device used primarily for raising and lowering heavy loads and material handling of freely suspended (unguided) loads by means of a drum or lift-wheel around which a rope or chain wraps. It usually consists of a block and tackle—a combination of one or more fixed pulleys, a moving pulley with a hook or other similar means of attaching loads, and a rope (or cable) between them.

Hoists are conducive to efficient performance in any manufacturing or storage facility. Hoists allow for loads to be moved throughout the facility without taking up valuable floor space as they operate overhead. Hoists are an ergonomic solution for heavy lifting of goods that reduce strain on the workforce.

Let's look at some useful facts on hoists and their uses in various applications.

Overhead Hoists can be classified on the basis of two factors - operation and lifting medium.

Types of hoists based on lifting medium:

- **Wire Rope** - Utilizing a wire rope to lift or lower a load, these hoists are driven by electricity or air.
- **Chain** - Outfitted with either link or roller chain to lift or lower a load, these hoists can be manually operated, pneumatically driven or electric powered.
- **Lever** - Operated manually by an operator who raises or lowers a lever to activate a ratchet and pawl configuration, this action enables the hoist to lift or lower the load incrementally, or to apply or release tension. They can be equipped with a chain, rope or web strap.

Types of hoists based on operation:

- **Pneumatically powered** - The pneumatic (air) powered hoists are operated by grasping and activating a control device. The control device has push buttons or levers that energize, through a series of valves and other air components, an air motor. The air motor transmits power through the hoist gearing to the hoist load chain sprocket or hoists drum; thereby, lifting or lowering the hoist load hook.
- **Electrically powered** - The electric hoists are operated by an electric motor that works on electricity.
- **Manually powered** - The manually operated hoists are operated by grasping and pulling a continuous hand chain suspended from the hoist. As the operator pulls the hand chain, the hand chain wheel turns and transmits power through the hoist gearing to the hoist load chain sprocket.

Uses of Hoists

- Assembly: Moving products through production processes or assembly lines
- Positioning: Securing a component for additional work
- Transportation: Loading finished products onto open trailers or railcars to be transported
- Staging: Holding work-in-process for remaining production processes
- Storage: Transporting heavy items to and from storage areas
- Warehousing: Moving large, heavy products to and from docks

Hoists are commonly used for the aforementioned applications in a number of industries like automotive, construction, commercial printing, manufacturing, newspaper, paper, steel, warehousing, and distribution.

Conco offers a range of Air Hoists by JD Neuhaus with different capacities to suit your needs. To know more about our hoists, [contact us](#).

Articulating Jibs Family

Articulating jibs or articulating jib cranes are one of the most versatile sets of equipment amongst material handling systems, great positioning devices to transfer loads where traditional jibs may not reach. An articulated jib crane has a joint at the midpoint of two swivel arms, unlike a straight arm jib with a single arm. It's because of this articulated jibs are typically easier to move than straight jib cranes. Articulating jibs are designed to reach hard-to-reach places and perform functions like:

- reach around work cell obstructions, such as columns, conduit or equipment
- reach into or under machinery and containers
- work around open doors and rotating close to the mast or building column easily
- lift loads around corners and columns
- service any point between the pivot anchor and the far reach of the boom
- perform large numbers of lifts where the space being utilized for these lifts can be limited to the radius in which the jib crane covers
- ideal option wherein manipulation of the load is required and where beams and columns are not to be removed
- can be mounted on your floor, wall, ceiling, or bridge crane according to your requirements
- support nearly any type of end-effector tooling, air balancer or hoist

At **Conco**, we are proud to offer to you not just the basic articulating jib cranes but also a range of devices from the articulating jib family, which can cater to different needs of different customers.

We manufacture the following kinds of articulating jibs:

Articulating Jib Arms

The **Conco**® Articulating Jib Arm (AJ) is the classic device in the lineup of our articulating jibs family. A device built to last and perform lifting tasks in a robust way, the **Conco**® Articulating Jib Arm is one of the best the industry has to offer.

Articulating Jib Hoists

The **Conco®** Articulating Jib Hoist (AJH) is two device's utility rolled into one. It features a unique design, offering the advantages of one of our basic articulated jibs, integrated with the strength to lift and position all types of payloads. With the hoist located behind the second arm, the Conco® AJH is ideal for low headroom application and has the ability to maneuver around objects with full reach-in capability.

Articulating Jib Lifters

The **Conco®** Articulating Jib Lifter (AJL) is a horizontal and vertical positioning device, with an air balancer built into the second arm. The AJL is ideal for reaching into inaccessible areas where headroom limitations preclude the use of a conventional balancer. This gives you the functionality of an articulating jib with the stability of an air balancer.

These innovative devices are also able to be fully customized to better suit your needs and specifications. To check out the entire product lineup from our articulated jib family, click [here](#).

Articulated Jib vs. Straight Arm Jib

Jib cranes are horizontal positioning cum lifting devices which are used for complex and repetitive lifting tasks in confined areas. The jib or boom is the horizontal operating arm that extends from the crane. They can reach places that are usually inaccessible by human workers. There are two types of jib cranes - straight arm jibs and articulated jibs. The straight arm jib crane has one horizontal jib (or boom) that offers limited range of motions. On the other hand, an articulating jib has two swivel arms that can lift loads around corners and columns, and reach into or under machinery and containers.

A straight arm jib provides for 360° of rotation with one arm. On the contrary, in an articulating jib, the primary boom arm provides 200° swivel and the outer arm allows for up to 360° of rotation. Hence, an articulating jib is more flexible and can reach more places as compared to a straight arm jib. Articulating jib cranes

are ideal for situations where loads need to be transferred where straight arm jibs cannot reach. An articulated jib crane has a joint at the midpoint. This allows the jib to wrap around obstructions and approach a wall, where a straight jib might not be able to operate.

Articulating jibs are easier to move than straight arm jibs. In case where the loads need to be manipulated with, they prove to be a better choice than traditional jib cranes. They are able to maneuver loads around obstructions, open doors and rotate close to the mast or building column easily. When beams and columns do not need to be removed, articulating jibs are beneficial. Conventional jib booms or XY workstation rail systems are unable to work around work cell obstructions, such as columns, conduit or equipment. In the production facilities where simple lifting of materials is required, straight arm jibs are the better option as they can do the required job with ease.

Articulating jibs can be floor-mounted, wall-mounted, ceiling-mounted, or mounted on a bridge or track system. Therefore, they can be installed in any way like straight arm jibs providing great flexibility.

When it comes to the cost aspect, articulating jib cranes are obviously more expensive than traditional jibs. So for organizations with simple material handling requirements and less budget, straight arm jibs could be the ideal option.

Conco® has been one of the leading suppliers of articulating jibs of various kinds. We have the following offerings:

Articulating Jib Arms: A horizontal positioning device used for reaching into accessible areas

Articulating Jib Hoists: A device with the advantages of an articulated jib combined with the strength to lift and position all types of payloads

Articulating Jib Lifters: A horizontal and vertical positioning device, with an air balancer built into the second arm

The Conco® Articulating Jib Arms have leveling features built into the design along with many other options for providing brakes and power to the air balancer, hoist, or air lift that is attached to the end of the arm. To know more, contact us on (712) 841-4548.