

Selecting the best finishing system

After the products and materials to be finished have been considered, the next area to investigate is the facility.

by Richard C. Peters

Frequently, finishing the product is the only thing manufacturers consider when investigating what finishing equipment to purchase. However, there are often questions regarding the facility, employees and extra costs that need to be answered as well.

For example, if the plant doesn't have room for a long flatline, but a flatline is the best method for application, then some changes in the facility have to be considered.

Two common design problems that manufacturers fail to recognize when choosing finishing equipment are ceiling clearance and roof strength.

Ceiling clearance

Overhead finishing systems are difficult to install if the mounting height is less than 14 feet. However, portions of an overhead conveyor can be installed to flow through idle areas of a plant and travel in and out of the finishing area several times. This can sometimes offset the disadvantages of lower ceiling heights.

Towlines usually require higher ceiling clearance. Since the pass line of the top of the carts will elevate the work piece, usually between 12 and 24 inches, and the towline is best suited for heavy and tall units, adequate overhead clearance is often an issue.

The tallest unit has to be able to enter the spray booth without hitting the sprinkler heads or metal panels of the booths and ovens, including vestibules. Fixtures such as oven circulation fans, louvers, burners and lights must be a safe distance from the work piece.

Roof strength

An existing factory usually has a fixed amount of utility support available. Steam, compressed air, natural gas and electricity are the primary components for finishing equipment. If these utilities are mounted in the ceiling, the vertical clearance can be further reduced.

Roof loading to support these utilities is frequently overlooked.

The weight of exhaust stacks and the weight of roof-mounted utility equipment, such as air make-up units, should be anticipated for any finishing system.

Adjusting shortcomings in existing plant infrastructure can reduce installation delays and ensure optimum processing operations.

Because finishing equipment is often purchased prior to knowing if the sprinkler system will support the equipment demands, an insurance underwriter will raise this question. This leads to very real potential for increased hazard insurance premiums.

Extra costs

If a system is purchased because of equipment replacement, modified capacity or enhanced capability, some of the following issues that may need to be considered in the total project budget are:

- Pump room and storage
- Recirculation system
- Air make-up equipment
- Permitting
- Testing and experimental costs
- Spare parts
- Waste streams
- Adequate structural loading
- Site storage

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Factory flow

An effective system also requires thinking about where the items to be finished are coming from and going to.

Often times, designated loading and unloading stations are located contrary to where they are best suited. This creates problems such as reverse-flow and other inefficiencies resulting in confusion and delays.

Another consideration is whether the product will be assembled before or after the finishing applications. Manual, towline and overhead lines most often facilitate assembly completed before finishing, whereas flatline systems usually require assembly after finishing.

Complexity of the final product and process flow through the plant may be a major element in the final equipment selection. Some existing facilities may not be able to reverse process flow or relocate departments. Others may need to modify product construction and assembly fittings.

A major project to re-engineer complete product lines can be costly and interfere with planned production volumes.

Employee requirements

Depending on the type of equipment selected, the total number of required employees can vary greatly. A long towline can require 20 or more people to be fully staffed. By comparison, a flatline may require only three to 10 people to run efficiently.

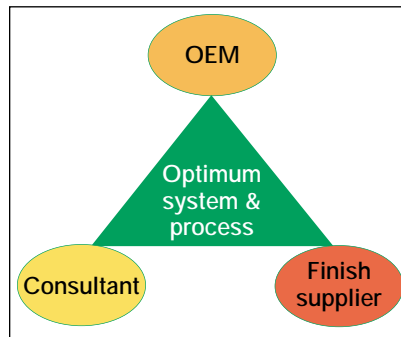
Maintaining a fully staffed system is often a daily chore for management. Total labor estimates should consider turnover and absenteeism that can elevate daily worker requirements.

Employees' capabilities should also be considered. A common mistake is to place entry-level employees in the finish room until they become more experienced. The mindset is that their potential learning curve mistakes will not be as damaging compared to working in other departments. Yet, it's the last operation performed prior to

the consumer seeing the product. Therefore, it is counterproductive to place inexperienced employees so close to the consumer.

Another frequent problem is maintaining good, reliable sprayers. One alternative is to select equipment, such as a flatline, that usually does not require talented sprayers.

The best selection of equipment may be a combination of systems. For example, a small flatline can finish secondary components and a larger towline or overhead line can finish primary parts. Another combination may include several manual booths used in combination with a larger towline or flatline system.



The best finishing system is a team effort involving the major sources of support and expertise: the consultant, finish supplier and OEM.

However, it is important to realize that balancing production throughput between multiple finishing centers simultaneously can be difficult and cumbersome. Errors in administering two or more finishing systems can cause delays, contribute to increased handling damage, increase labor requirements, affect total finish material usage and emissions and create non-matching parts with the same applied finish.

The best finishing system is a team effort involving the sources of support and expertise: the consultant, finish supplier and OEM. These three should interact on your behalf to develop the best conditions to meet your objectives and take you through the planning, selecting, purchasing and implementation stages with optimum results.

Selecting equipment

No matter what characteristics a manufacturer's finishing requirements demand, being aware of how to select the best equipment can make a significant difference to successful finishing. It is vital to evaluate the product, finishing materials, equipment, facilities and permitting requirements prior to purchasing any finishing system.

Once a system can provide all the desired finishing characteristics and meet all the criteria established throughout testing, the manufacturer should have success with no hidden surprises.

Used finishing equipment

Because of potentially high capital investments, some manufacturers investigate purchasing used equipment. However, finishing equipment, unlike many other types of woodworking machinery, is usually not sold as factory reconditioned.

Therefore, it often is impractical to consider major cleaning and replacement parts for finishing equipment merely because of the elements that comprise a major system.

Problems nearly always exist in trying to match existing equipment to your specific finishing schedule(s). The size of booths may be too small for the your desired line speed. The ovens may be steam heated and only natural gas is available at your site. The exhaust stacks may be too large in diameter to fit through the bar joists at your plant. Open line sections may not be long enough for proper sealer sanding or other hand operations. The list of potential hazards is endless.

Most second-hand equipment is purchased as is, where is, and the buyer must be aware of the consequences of integrating that equipment into his variations or specific needs. ▲