

The information and data contained in this document were prepared by a technical committee of the Association. The committee and the Association assume no liability or responsibility in connection with the use of such information or data, including but not limited to any liability or responsibility under patent, copyright, or trade secret laws. The user is responsible for determining that this document is the most recent edition published.

Installation

Scope

This TIP covers the main considerations required for the installation of a new or used flexo.

Safety precautions

Follow all manufactures safety precautions and directions.

Introduction

Due to ever-increasing labor and machinery costs, converters are finding it necessary to properly plan and prepare for every installation. A properly detailed outline including specific details of the installation, required parts and tools plus a well managed time schedule will ensure a very effective and expedient flexo installation. Pre-installation meeting including all the participants offer a great deal of value to the installation itself.

A first-rate installation does not always ensure excellent productivity. However, a poor installation will guarantee poor performance, high maintenance costs, production bottlenecks, and possible excessive setup times, all of which will be “built in” for the life of the machine. Another by-product of a poor installation will be the negative attitude of the flexo operating personnel, which could prove to be harder to correct than a poor installation.

The following text will provide general guidelines for planning, and general and specific details for preparing and installing.

Pre-purchase – used machine

Watch the machine running before you purchase.

Talk to the current operators (or with operators of similar machines) to see what they like/dislike about the machine.

Arrange to have machine disassembled and re-installed by the same competent crew. Have all electrical connections marked and tagged.

See if the selling plant has any extra spares; extra copies of manuals; revised electrical prints

Planning

Do a mechanical drawing to check total plant layout

To ensure best placement of the new equipment, there are several areas to consider:

1. Is there adequate space for planned as well as future auxiliary equipment, such as the prefeeder, bundler, semiauto stacker, squaring corner, infeed, and exit conveyors?
2. Is there access for pallets and space for future pallet dispensing or stacking device?
3. Will the main line conveyor and stacker handle additional volume without causing existing equipment shutdown?
4. Is it possible to locate the equipment away from high-noise areas?
5. Will overall placement fit into future total or partial plant automation?

6. Can you get lift trucks in for service?

Manufacturers' drawings and specifications

1. Are all of the mechanical and electrical drawings complete and up-to-date?
2. Do all of the electrical apparatus conform to state and local codes?
3. Is there adequate electrical capacity left in plant service?
4. If a mini-computer or programmable controller is used on the new equipment, does it have the capacity to communicate with a future host computer? Provide a link to your plant's network
5. Do the controls have battery-backed power supply?

Plant foundation and structural drawings

1. Are slab details and elevations available? If not, check floor thickness and reinforcement required for weight. Make test borings and obtain services of a local civil engineer for suggestions and approval.
2. Can existing drainage pipe be used or modified for pit area?
3. Is there adequate overhead support for sump lines, airlines, glue lines, water lines, and a water heater, trim ducts, and electrical runs?

Existing systems

1. Is there adequate cyclone capacity?
2. Can an existing scrap blower be modified with a diverter valve and sequencing system to avoid the added cost of a trim blower as well as additional electric consumption?
3. Can the air compressor handle additional capacity?
4. Will the wastewater disposal system comply with local pollution control agency requirements as well as with EPA requirements?
5. Is there adequate electrical capacity?
6. Check printing plate compatibility.

Evaluation of blue prints, proposed layouts, and general scheduling

1. Select and familiarize project leader and/or installation manager with all planning details as well as size, weight, materials needed, and skills and ability of on-site maintenance personnel.
2. Determine work to be subcontracted.
3. General scheduling:
 - a. Machinery arrival date.
 - b. Installing accessory equipment procurement.
 - c. Pre-installation.
 - d. Installation starting date.
 - e. Installation completion date.
 - f. Work with sales to ensure that they plan for business to keep machine busy.
 - g. Review with sales group the new machine capabilities including additional color stations, minimum and maximum sheet sizes, any new die cutting capabilities.
 - h. Review all crew and supervisor training.
 - i. Learn how to properly operate the new equipment

Preparation

The most detailed accurate planning will not ensure a smooth and trouble-free project without adequate preparation before installation. Extra effort to all details during preparation will considerably reduce labor; reduce or eliminate maintenance and operator complaints after the project is completed; help ensure total employee acceptance; and add the extras that make an otherwise mediocre installation a fine first-rate completed project.

Floor plan

1. Lay out a permanent centerline and datum line. Use piano wire to mark the centerline. Permanent 1-in. outside diameter brass plugs center punched are recommended.
2. Chalk out actual machine dimensions to make sure that side-to-side and end-to-end clearances provide enough space for future prefeeder and or semi-auto stacker. If a semi-auto stacker is planned, adhere to manufacturers' specifications for proper length surge conveyor.
3. Chalk in and permanently mark the scrap conveyor trim duct drop, and all air, hot and cold water, and glue line drops.

Pit and drainage system

1. Install pit and sump to manufacturers' specifications or to pre-engineered modifications as needed for a specific site. Mark site of pits to avoid accident.
2. Slope area between tracks toward drain to facilitate better drainage and to help contain wash water during cleanup.
3. In the event of future expansion, size pit and tracks for additional color units.
4. To provide a safer work area, install grating as soon as possible after pit completion.
5. To reduce sump and sewer line plugging in the pit and in other drain areas, attach 0.25 in. hardware cloth to sump gratings. Make horizontal sewer at least one size larger than drains.

Tracks

1. Recheck the new centerline and datum line.
2. Using the current track layout diagram outline. Predrill anchor holes 6 to 8 in. deep and 1.5 in. in diameter. Blow out holes and clean area before laying track. An alternative procedure to this is to use wedge anchors. Position tracks using the holes in the tracks as guides to bore anchor boltholes. This procedure will save at least one day of installation time. The floor must not be oil soaked and if a new pad, the concrete must be cured. Do not install flexo track over floor expansion joints.
3. Lay out and pre-drill lineshaft pedestal, folder frames, and counter ejector mounting holes.

Electrical

1. Locate main drive cabinets, run conduits, and prewire for final drop.
2. Place and anchor auxiliary control cabinets.
3. Install hangers for wire ways or troughs.
4. To facilitate faster and more accurate wiring, some manufacturers are currently using pre-wired cabinets and cables with quick-connect couplers to and from auxiliary control cabinets.
5. Fabricate guard posts for all cabinets, if forklift damage is possible.
6. Place lighting fixtures to provide an even distribution of light at approximately 50 to 60 ft. candles. Fluorescent and metal halide give good color rendition. High-pressure sodium should not be used because of its poor color characteristics. Supplemental skylighting, if feasible and practical, is a good source of light and will increase in benefit as energy costs rise.
7. If needed, order additional stop switches and feed interrupts for remote mounting at semi-auto stacker, along surge conveyor, at pre-feeder, etc.
8. Locate water resistant 115-volt receptacles on or near the equipment for convenient access by maintenance and operating personnel. Ground fault detection devices are strongly recommended. Ensure that you have an adequate ground. Add a local grounding rod if you are unsure.
9. Install a welding receptacle for quick access.
10. The location of the control desk must be within a minimum walking distance from the machine but without being an obstacle in the working zone. The best location is against the machine at the end of the folding section where the flexo folder gluer controls are installed.
11. If using magnetic plate cylinders, use non-magnetic fasteners and tools to be used on or nearby the machine.