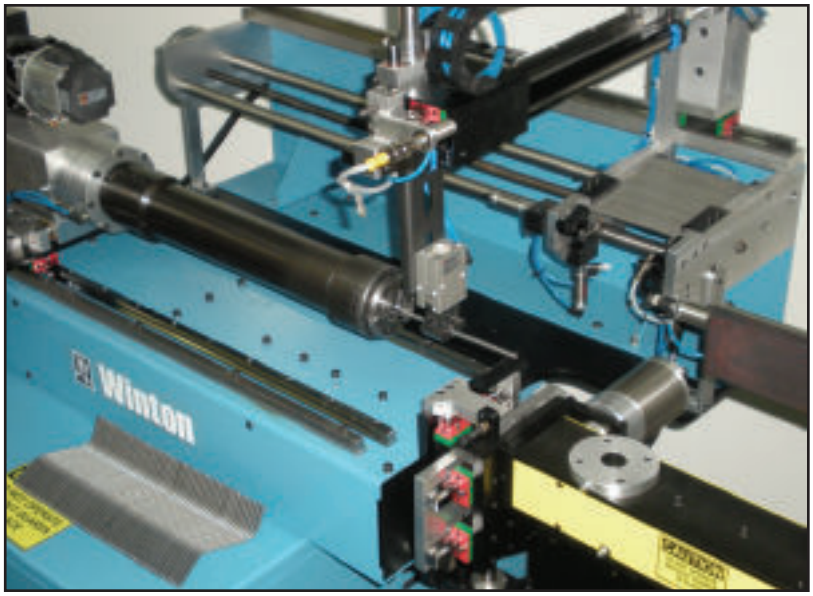
# DOING MORE WITH LESS

## Adding a loader to an existing process can increase capacity, free up labor

By George Winton, P.E.




**SHOULD** you use an autoloader or not? It's a good question. In short, a device that automatically loads a fabrication machine often can make the difference between an operation that is questionably profitable and one that is definitely profitable. Direct labor can be expensive and is susceptible to human error; neither factor helps the bottom line. A robustly designed tube loader, on the other hand, works at a consistent rate and loads tube the same way day in and day out. These factors can help the bottom line.

So, when should you employ a loader? The answer can vary widely from one company to the next. At the end of the day it is a financial decision. Integrating a loader into an existing forming process can free up an employee to perform a secondary operation while simultaneously making sure the loader stays supplied with raw material.

Believe it or not, an automatic loader has been known in recent years to save a few U.S. manufacturing jobs. How is that? Well, automation can move a job from red to black, thus allowing an equipment operator to take on new responsibilities. It can be that simple.

### TYPES OF LOADERS

Loaders come in various shapes and sizes. The simplest of all loaders is the human loader. The next level up is an automated single-stick tube loader that feeds a fabrication system at an exact moment in the fabrication cycle. A more sophisticated type is a magazine loader, which can hold a short supply of blank tubes. Beyond a magazine loader is a world of hopper loaders; bundle loaders; and programmable, robotic loaders. Selection is based largely on the fabricating process.

**Cutoff Machine.** Saw-type cutoff machines often are used to cut long lengths of raw tubing. These blanks can range from several feet to 40 ft., and occasionally longer. Commonly used loading devices for a cutoff machine are the magazine loader (see **Figure 1**) and bundle loader.

A magazine loader can hold about a dozen tubes before it requires operator assistance. Conversely, a bundle loader is designed to hold between 100 and 400 sticks of tubing. When tubes are delivered in bulk bundles, the bundles often fit right into a bundle loader, thereby reducing the labor needed to hand-load the sticks into the system.

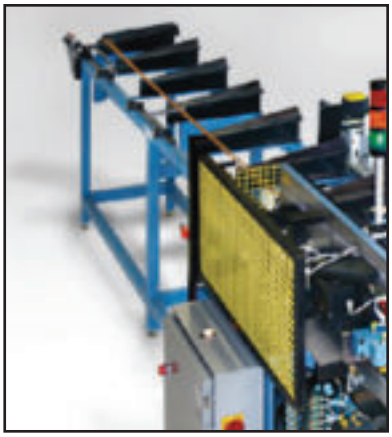


**Figure 1**

*A tube cutoff machine makes use of a magazine loader. Operator assistance is required to keep the magazine full of tubes.*

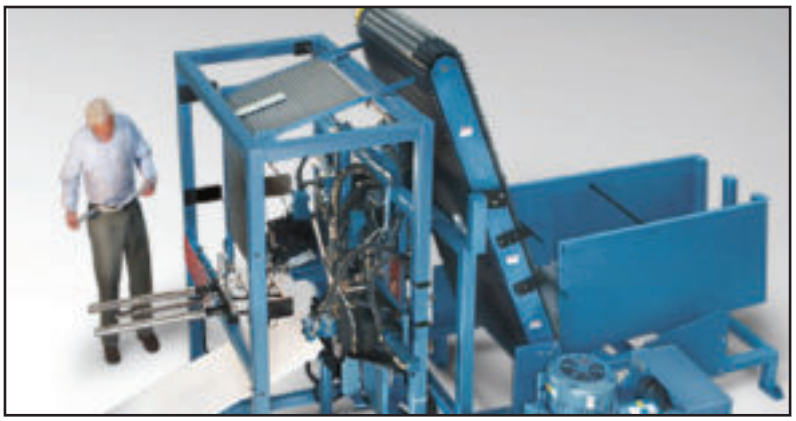


**Figure 2**

*A tube bending machine accepts tube delivered by a hopper loader.*

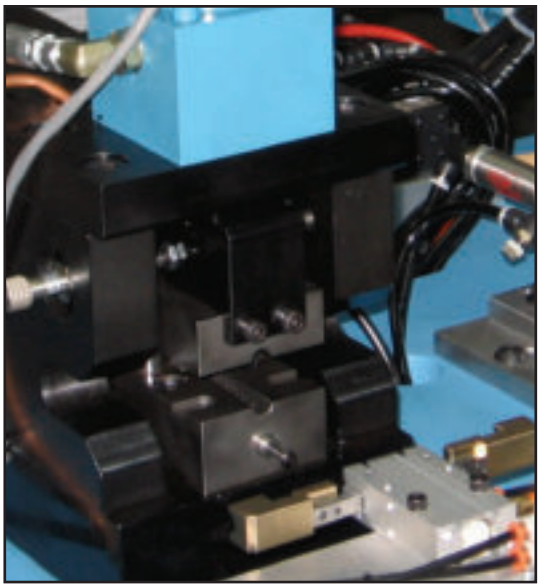


**Figure 3**

*Some custom end formers can be loaded automatically from one side and automatically unloaded from the other side, making automation easier and decreasing the cycle time.*

**Tube Bender.** Some CNC tube benders work with precut lengths of tubing, but some don't. Over the years all types of loaders, including a hopper loader (see **Figure 2**), have been used to feed a tube bending system.

As with all loaders in most applications, consistency is critical; presenting the tube to the bender consistently influences the part quality. This is where a robust loader design can make all the difference.

Some bending processes pull tube from a bulk spool. In this case, the equipment manufacturer outfits the machine with the capability to draw material from the bulk spool.

**End Former.** Much like CNC tube benders, tube end forming machines can be loaded and unloaded in a variety of ways. Bear in mind that standard tube end formers often require a custom-built loader/unloaded (see **Figure 3**). This is because most modern end forming machines are designed to load a tube, form the tube, and then unload the tube along the entry path. Using one path for loading and unloading increases the cycle time.

Loaders are not suitable for every application, but if you have a process that isn't solidly in the black, an automated loader might be worth researching.

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