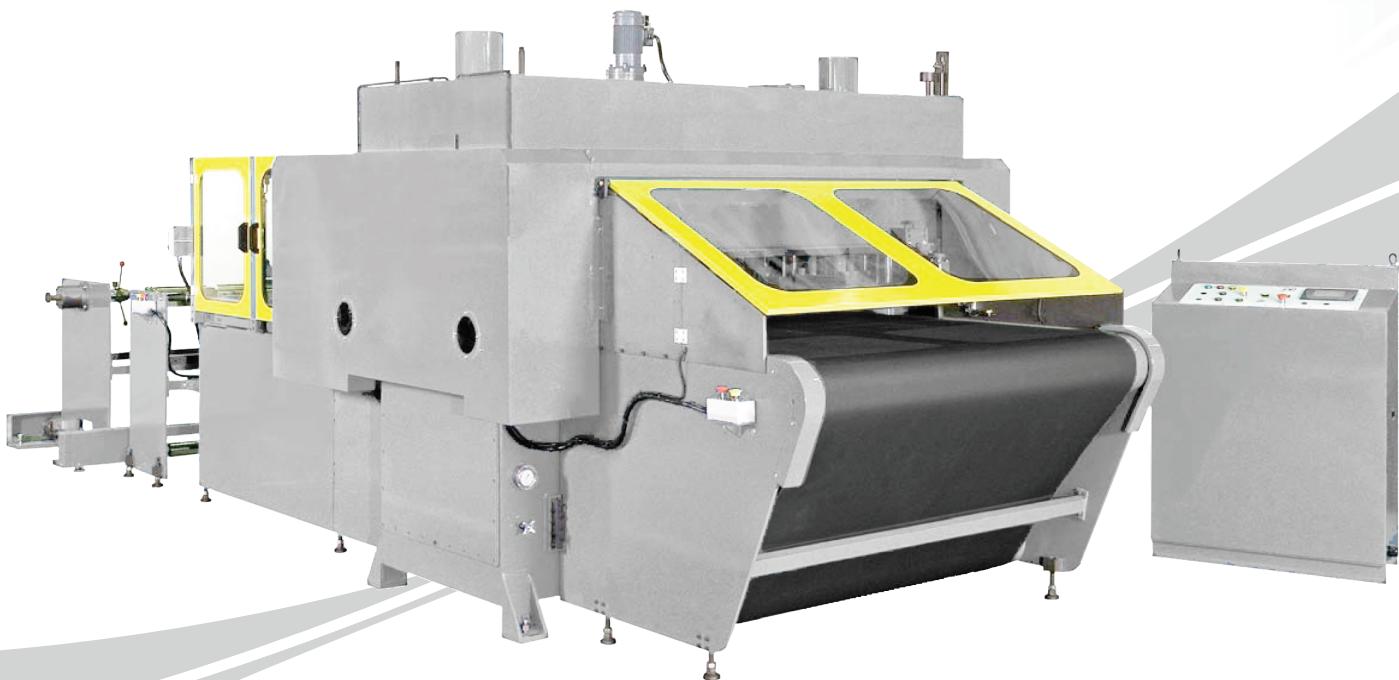


FEEDS & SYSTEMS



Hudson Cutting Solutions offers a range of cutting presses that span from simple clickers to large area heavy tonnage full beam models. While basic clickers and traveling head machines are usually self-contained and sold at competitive pricing to handle the basic production needs of various industries; larger machines often need to be augmented with material feeding equipment to customize them for specialized tasks. Many of Hudson Cutting's larger models are designed and built in a modular fashion, allowing us to tailor a specific size and tonnage unit to handle specific applications.

Automation

One of the phrases heard repeatedly from customers is "I want to automate." These goals are increasing productivity and reducing operator input. Feed mechanisms can help in achieving these objectives. A feed mechanism continuously supplies the machine with fresh material, allowing for a continuous process. In the die cutting industry, the feed is used to introduce and/or position the raw material ready for cutting, and the die or tool cuts the shape.

FEEDS & SYSTEMS

Automation (Continued)

The “simplest” feed mechanism available is a human operator. The operator hand places material blanks on top of a die, or a die on blanks, cycles the machine, and then removes the cut pieces, and repeats. In all cases, the first issue is deciding which press will best suit each purpose, and that can be determined based on the size of the part that needs to be produced, the material from which it will be produced, and finally the desired quantity. Analysis of these points normally dictates the size and type of machine needed, along with anticipated tonnage necessary for the press to impose on each cutting stroke. Deceptively simple, but we also need to review and understand how the material in both its raw and cut states will be passed through the cutting process. Factors such as weight, thickness, rigidity and whether the material will be cut in single or multi-ply fashion, all have consequences on what might be the correct, but not necessarily optimum, way of getting the material into and back out of the cutting sequence.

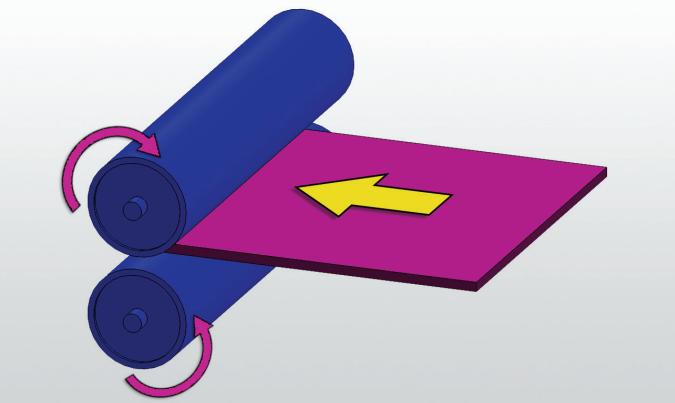
The difference between sheet and roll goods can and often does impact on our choice of feed mechanism. Sheeted materials are generally either hand placed or batch fed processes, whereas roll materials normally involve continuous or through feed mechanisms.

Nip Roll & Pinch Roll

Often, one of the least expensive feeds is the Nip Roll Feed, Often, one of the least expensive feeds is the Nip Roll Feed, or Pinch Roll Feed. These comprise of an upper and lower driven roll that serve to drive the material being fed between them in the direction the rolls are rotating. In the simplest of cases, the lower roll is set at a fixed height and the upper roll is variable, relying on gravity to set it at the thickness of the material between the two rolls. This process is where the terms Nip or Pinch roll were derived.

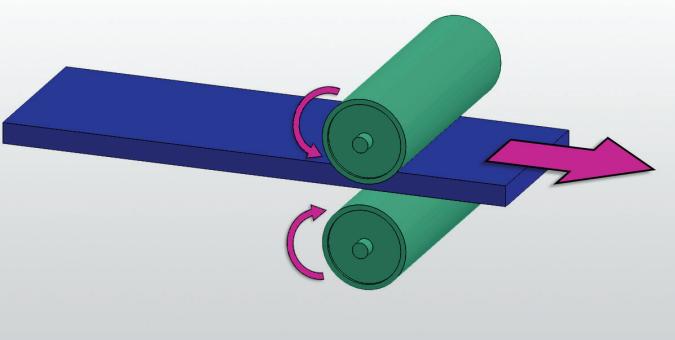
While simple and highly effective, it should be noted that the material is driven by frictional forces from the surface of the rolls coming into contact with the faces of the material being fed. Thus, such mechanisms are not necessarily suited when feeding multiple plies of material or slippery material.

Nip (Pinch) Roll



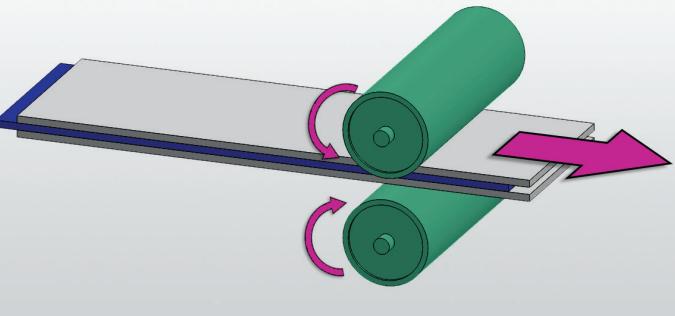
Single-ply materials, or those with good surface adhesion, are well suited for Nip Roll feeding (below).

Nip Roll Feed Single-Ply



Slippery materials, particularly in multiple configurations tend to dislocate during feeding (below).

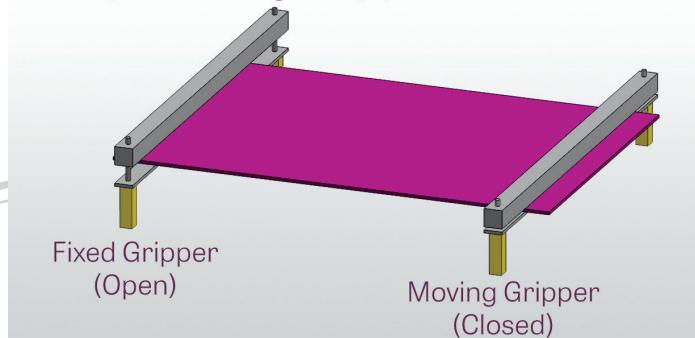
Nip Roll Multiples



Reciprocating Gripper Feed

Reciprocating Gripper, or Beam Clamp, feeds provide an alternative to Nip Roll feeds. These generally comprise of a fixed position gripper and a secondary moving gripper that can be moved backwards and forwards while remaining parallel to the fixed gripper. The actual amount of motion is usually adjustable so differing lengths or increments can be used. Each of the grippers feature pneumatically operated cylinders at either end to cause the upper beams (grippers) to open and close as required, and normally at least one gripper is closed, securing the material being fed at all times, so it cannot “fall backwards.”

Reciprocating Gripper Mechanism

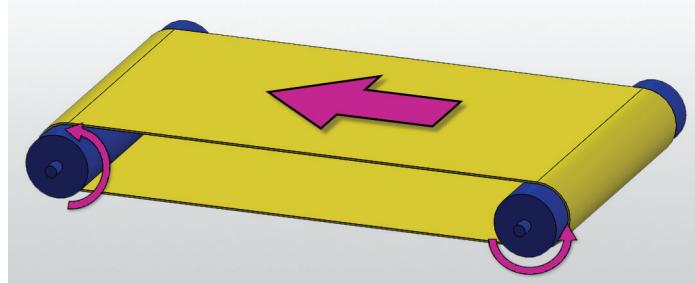


A typical sequence of operations:

1. Fixed gripper opens and moving gripper is closed.
2. The closed moving gripper moves toward the open fixed gripper, drawing the clamped material with it.
3. Once the moving gripper had drawn the material forward the set increment, the fixed gripper closes.
4. The moving gripper then opens and returns to initial position before it re-closes. The sequence then repeats.

In this cyclic fashion material is fed in a series of repetitive increments into the press cutting area.

Continuous Belt Transport/Cutting



Conveyor Belt Systems

Nip Roll and Beam Clamp Feeds are two simple feeding techniques that push the material from the rear in a forward motion. However if the material is limp, or has a tendency to stick to the cutting surface or any other surface that impedes production, a conveyor belt system can provide the necessary solution.

While conveyor belts are a common concept, they are also often used to supplement the gripper feeds previously described. When used in conjunction they offer a supporting platform for the body of the material as it is drawn forward towards, and into, the press. Generally these belts terminate at the edge of the cutting area. Hudson Cutting offers such systems where a single in-feed conveyor is located at the in-feed side of the press to push material across a “fixed” cutting surface.

As an alternative there are also Synchronous Conveyor Belt Systems where a similar mechanism is affixed to the egressing side of the cutting area to aid in the removal of the material. However, each of these mechanisms requires that the material is able to move, both before and after cutting, across a stationary cutting surface.

For materials that are unable to be fed in such fashion, or tend to stick to the cutting surface after cutting, there is the Continuous Cutting Belt System. This system utilizes a special Nylon belt that not only serves as the transport mechanism, carrying the material into and out of the cutting area, but also provides the surface on which the cutting action takes place.

Like all cutting surfaces, continuous cutting belts are considered expendable. In some instances, they can be costly and often are time consuming to replace. However, for certain applications they can often provide a sensible means of automatically producing die cut parts that would otherwise have to be handled manually. Thus Continuous Cutting Systems are more efficient and eliminate labor intensive production methods.

Adjustable Positive Stops

Whenever a Continuous Cutting Belt System is used, Adjustable Positive Stops are usually necessary to protect the machine.

FEEDS & SYSTEMS

These devices are normally located at each of the four corners of the cutting press, usually external from the identified cutting area, and serve to limit the closure point of the press to a precise and repeatable area. These vital devices protect against premature wear or failure.

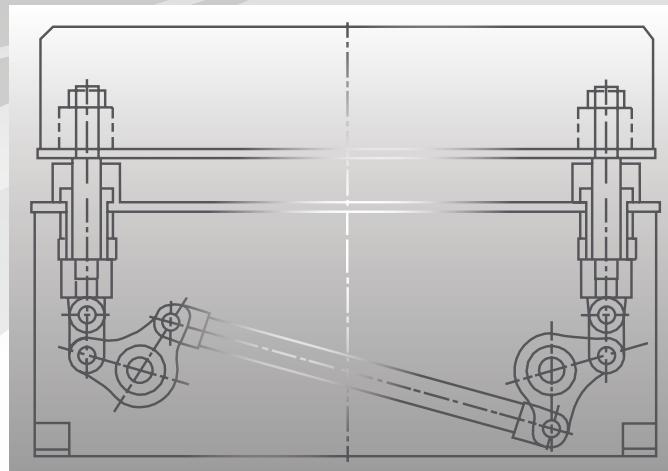
A continuous cutting belt needs to be thin in order to loop around the entire press, however over-driving the tool through the belt needs to be avoided to maintain the life of the belt. As mentioned, belt replacement is frequently neither inconsequential nor inexpensive, and "stops" are designed to prevent over penetration of the cutting die into the belt surface. Ideally, zero penetration of the belt would be achieved, but this is only possible with materials that tend to "burst" as the die is "pressed" into them. For other materials, the objective is to reduce penetration to a minimum in order to prolong the useful life of the belt while maintaining cutting accuracy. Hudson Cutting works with

its diverse range of clients to determine the most cost-effective options available to them, and will help determine which options and solutions will best fit the project.

Hudson Cutting Solutions is a division of IPSUMM Inc. and offers a variety of products, services, and solutions for the die-cutting, die-less cutting, splitting, and skiving industries. Hudson was founded in the mid 1920's and brings its 100+ years of footwear machinery experience to a wide array of industrial cutting implementations available today. Hudson Cutting works in close collaboration with some of the top press manufacturers, including Sysco Machinery Corporation, USM, and Samco-strong to provide the leading offering of innovative machinery. For more information or to contact a representative please visit www.hudsoncutting.com.

Full Beam Presses

Our Sysco line of Full Beam Presses uses rugged mechanical linkage mechanisms to tie two or more operating cylinders together, which preventing misalignment. This ensures the full power of the machine is available during the entire press closure sequence, without concern for where the load is placed beneath the head and bed.



The Sysco line of Full Beam Presses are available:

- ▶ In a wide range of sizes
- ▶ In tonnages up to 400 US tons
- ▶ In various stroke and daylight capabilities

In addition to the mechanisms highlighted above, we have a myriad of other optional mechanisms, which can be integrated to suit your application(s):

- ▶ Air Floatation
- ▶ Optical Placement/ Alignment
- ▶ Sheeters
- ▶ Board Feeds
- ▶ Pad Shifters
- ▶ Stackers
- ▶ Chases
- ▶ Pick and Place mechanisms
- ▶ Table feeds
- ▶ Gravity Conveyor Systems
- ▶ Scrap Removal systems
- ▶ Touch Screen Control panels
- ▶ Guillotines
- ▶ Oil Coolers
- ▶ Vacuum Loaders
- ▶ Kiss Cutting
- ▶ Web-Handling equipment

Our modular options and advanced CAD/CAM capabilities enable us to develop and supply you with a tailor made system specific to your requirements.

This company reserves the right to supply products that may differ slightly from those described in this publication.