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TAKtics

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In This Issue:

New Product: Tube Shearing System for Small Diameter, Short Length Tube Applications

When new challenges are presented to our TAK team, we respond with our best efforts to provide an efficient and economical solution. Such was the case when a potential customer brought us an application that involved processing pure copper tubing from a continuous coil into shear cut lengths. Currently, the "ferrules" they were producing in high volume were being precision saw cut. The kerf resulting from the saw cut process resulted in a loss of the material, and required an additional tumbling operation to remove burrs. The tubing, with an OD of .100", ID of .082" and corresponding wall thickness of .009", had to be shear cut without collapsing or deformation of the ends. And as a further benefit, eliminate or minimize the secondary deburring requirement.

Our thought was that although the quill-on-quill shearing concept employed on the standard TAK Pneumatic Feed and Cut System supports the OD of the tubing, it would be necessary to develop a concept of supporting the ID surface of the tube to prevent it from collapsing as a result of the shearing pressure. That meant supporting the ID surfaces on both ends of the shearing station. So, calling on collective past experiences of our team members, a system was devised to support the tube ID in both positions. The "floating arbor" concept proved to provide the support necessary to prevent the stationary end of the tube from collapsing, while feeding the tubing over a pin within the travelling die did the job on the other end. The result was a very economical tube shearing system that automatically straightens, feeds, shear cuts and ejects a "ferrule" without deformed or collapsed ends, requires very little or no deburring, and does not produce the scrap that would result from the kerf of a saw cut.

The major observation that we made during the development of the Tube Shearing System indicated that the quality of the cut ends and operating efficiency is directly related to the dimensional consistency of the tubing. The arbors that support the ID must be a slip fit. Too tight, and feeding issues result. Too lose, and the cut quality suffers. If the ID and OD of the tubing are not concentric, it also can create feeding and cut quality issues. So the "garbage in/garbage out" phenomenon definitely applies. However, we have found that most small diameter tubing processors are able to provide material that will run acceptably in our system. Depending upon the product tolerance specifications, it may be necessary to inspect the tubing ID/OD, and when processing it, match it with the appropriate sizes of arbors and quills.

Contact us with your specific tube shearing requirements, and we will be happy to review the application and offer the recommended TAK solution.

Note: If your volume requirements don't justify purchase of the equipment, TAK Enterprises can also quote on running your parts on a contract basis.

You can email your application requirements to us directly at:

S_griffing22@takenterprises.com

Shear Cut Copper Tube Ferrules

Special Cutter Head Provides Motions to Support OD and ID on Both Ends of Cut Surfaces to Minimize Distortion and Provide Burr-Free Shear Cut

TAK #2 SFC Tube Shearing System

Max Tube OD: .250"
Max Shear Length: .375"

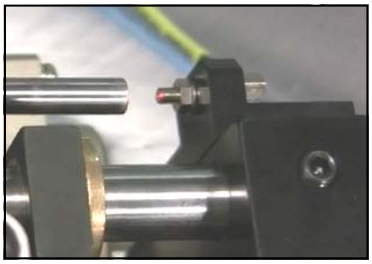
Click on the link below to see the Tube Shearing System in operation :

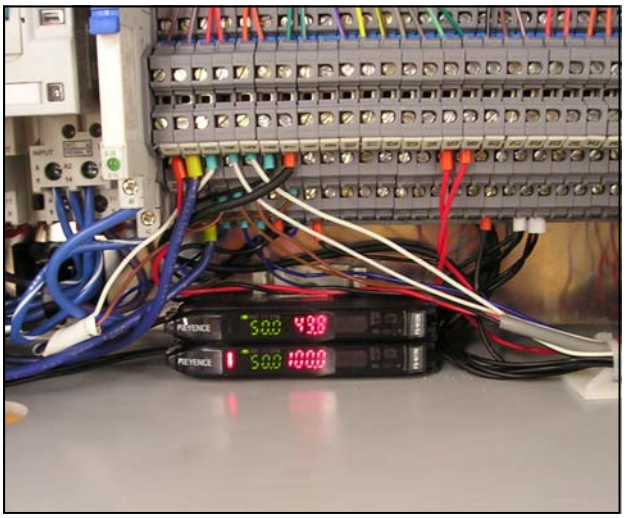
http://www.takenterprises.com/VideoLibrary/Video.asp?VideoID=45&CategoryID=

Back by popular demand: View our Anniversary Publication:

http://www.takenterprises.com/Customer-Content/WWW/CMS/files/TAK.pdf

Product Update: New Short Feed Capabilities on Pneumatic Feed and Cut Systems





The need for accurate, short cut length capabilities on our line of pneumatic feed and cut systems has become more and more evident recently. Typically, feed lengths below .040" long are not achievable due to the style of sensors used in our standard design to detect the full forward and full return strokes of the feed carriage. The light beam sensors in our standard design require approximately .020" of travel to break the beam and generate a signal. Since these light beam sensors are used in the forward and return positions, this meant that at least .040" of total stroke was required to satisfy the forward and return positions. Hence, setting the feed stroke for length requirements below .040" long have not been possible, at least not without a lot of effort and fine tuning.

Several applications involving cut lengths that were shorter than the current minimum length settings that could be achieved using the existing sensors dictated that we look into a redesign. The solution proved to be the employment of non-contact programmable sensors that function by detecting the level of reflected light from a surface. The ability to sense minute changes in light value with these types of sensors made them the ideal choice to implement the technology into our standard design.

Using these programmable sensors provides the ability to achieve feed strokes down in the .005" range. This proved very effective for shear cutting fine wire and strip applications to lengths sometimes less than their diameter or thickness. It is important to note that the feed carriage stroke is set to travel between positive stops, so the accuracy and repeatability is not compromised when either type of sensor is employed. The ability to generate a signal from a very short travel is required simply to be able to actuate the solenoids on the pneumatic valves so the proper sequencing of the operations is maintained.

You can view a short stroke #2 SFC Pneumatic Feed and Cut System in operation at the following link:

http://www.takenterprises.com/VideoLibrary/Video.asp?

TAKniques -Case History-

Cut-To- Length System with Batching Conveyor Provides Segregated Lots of Cut Wire Lengths

Case Objective:

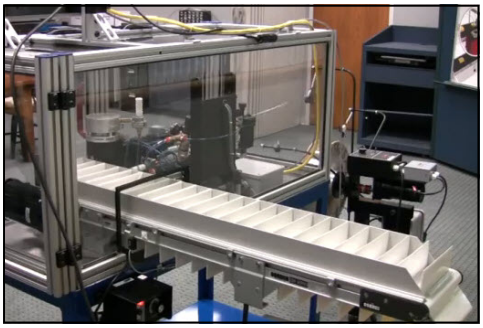
Provide automated system to produce straight cut wire blanks in segregated lots of 50 pieces for end user.

Case Specifications:

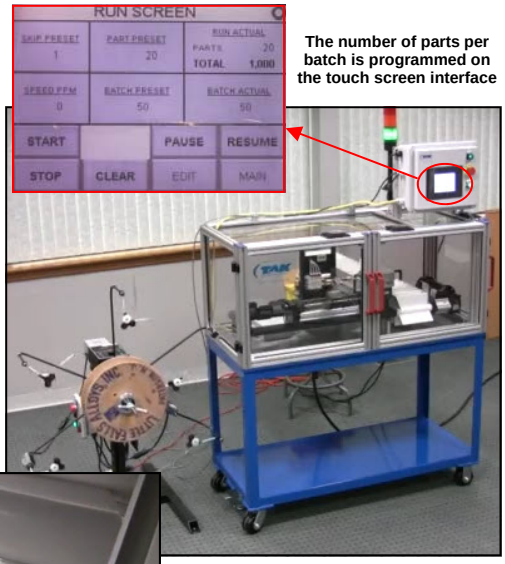
Material: Tin Coated 1/2 hard Beryllium Copper
Wire Diameter: .028"
Shear Length: 6.000" +/- .003".
Throughput: 115 ppm

Solution:

A standard TAK #2 SFC Pneumatic Feed and Cut System was incorporated with a lugged conveyor, timed to index a defined amount after the programmed number of batch cycles has been attained. The wire, provided on a spool, is loaded onto a TAK Fine Wire Payoff and pulled through a #1 PWS 4 Plane Precision Wire Straightener to insure the wire is straight prior to shear cutting. The feed carriage grips the wire and advances the 6.000" feed length between positive stops to maintain the length accuracy and repeatability. The wire is in position above the lugged portion of the conveyor when the cutter cylinder actuates. The next feed cycle pushes the previously cut blank out of the quill-on-quill shear tooling, which drops the cut blank onto the conveyor. After a programmed number of strokes, in this case 50, the machine pauses, the conveyor advances, and the cycle starts again. Sensors detect the location of the conveyor lugs to insure the compartment is located accurately in the wire drop position after each conveyor advance cycle.



A standard conveyor with a lugged belt is used to provide compartments for segregating the batches



The number of parts per batch is programmed on the touch screen interface

Wire feeds into position above the conveyor compartment. After the shear cut, the next feed cycle ejects the cut wire and it drops into the conveyor compartment

Sensors are used to locate the conveyor lugs after each advance

To view the system described above in operation, click on the following link:
http://www.takenterprises.com/VideoLibrary/Video.asp?VideoID=44&CategoryID=15