WHY CAN’T I SLIT ADVANCED HIGH-STRENGTH STEELS ON MY EXISTING SLITTING LINE?

Some service centers are attempting to slit higher strength materials using conventional slitting equipment, thinking they can run light gauges through a heavy gauge line, reduce the number of cuts or run at slower speeds. This typically results in significantly lower production rates, unacceptable slit edges and loosely wound mults. Additionally, there are safety requirements associated with processing coils with higher UTS.

If your equipment supplier says all you need to do is buy the next size up, then you are getting some bad advice. You want the right components, properly sized and engineered to work together.

Herr-Voss Stamco’s HS²T™ is a slitting line specifically designed to run AHSS, so there are no compromises.

WHAT NEEDS TO BE CONSIDERED WHEN SLITTING AHSS?

The first difficulty encountered when processing AHSS is on feed up. High-strength steels are much stiffer and threading can be very challenging. The higher the UTS, the more difficult it is to control the entry end. HS²T™ takes this into consideration, safely and efficiently allowing an operator to not only contain the coil while unwinding, but also flatten the strip for feeding into the slitting process. The next hurdle is the actual slitting process. Putting the required torque on the slitting process is important and vital to success. Even more important is the rigidity and size of the slitter. Slit edge quality is a problem on higher strength materials. Slitter tooling also breaks down at an accelerated rate, causing more tooling changeover as well as more tooling grinding time. HS²T™ achieves superior edge quality due to the precise rigid design of the slitter head as well as the redesigned
knives, which provide for a more gradual cut. HS²T™ also allows more cuts per coil, which eliminates coil re-runs or double pass slitting on specified material thicknesses.

Another challenge with running high UTS material is that the tension required to rewind the coil is much higher than the rewind tensions for lower UTS material. In fact, rewind tension increases exponentially with regard to the UTS of the material. To achieve the proper rewind tension, HS²T™ employs Herr-Voss Stamco’s Strand Extensioner® which is derived from our precision leveler technology. The Strand Extensioner® provides additional tension beyond what a Tension Stand can provide so the coil can be wrapped safely, efficiently and accurately. This also allows the rewound slit mults to be safely packaged and transported to downstream operations.

HS²T™ has truly achieved the requirements to create a safe and efficient slitting process for the new Advanced High-Strength Steels.

**WHAT SPECIAL REQUIREMENTS NEED TO BE CONSIDERED FOR SLITTING ALUMINUM?**

While processing aluminum, it is of utmost importance that the surface critical nature of the material be taken into consideration. From pay-out to recoiler, the full line must be evaluated. The line must also be made to handle larger coils, as most aluminum mills roll much larger coils than typical ferrous mills. Herr-Voss Stamco has extensive experience with aluminum slitting lines and can provide you with the solutions best fit your needs.

**YOU MENTIONED THE STRAND EXTENSIONER®. CAN YOU TELL ME MORE ABOUT IT?**

Herr-Voss Stamco developed the Strand Extensioner® many years ago to provide a safe method of slitting without the requirement for an expensive looping pit, at the same time offering a competitive advantage by providing shape correction to the strip.

The reason traditional slitting processes need looping pits is due to the difference in thickness from the center of the strip to the edges, which is termed “crown.” These thicker center strands rewind at a larger diameter than the outside strands, resulting in the outside strands drooping and requiring a looping pit. The Strand Extensioner® is similar to a precision leveler in that it has a series of small diameter work rolls with adjustable backups. By creating differential path length, the Strand Extensioner® extends the center slit strands to the apparent length of the outer strands eliminating the need for a looping pit.

Customers who operate a Strand Extensioner® in their slitting line have discovered additional benefits beyond not needing a looping pit: improved strip shape, reduced slitter induced crossbow, knockdown of slit edge burr, quicker and safer tail-out because all the strand ends are the same length and the ability to steer the strands into the recoiler resulting in tightly wound straight walled coils. It also reduces the tendency of splits.
to cross at the recoiler. They are producing slit mults that are of better quality than the master coil!

WHAT SHOULD BE CONSIDERED WHEN PROVIDING SHAPE CORRECTION IN A SLITTING LINE?

Shape correction in slitting lines was first pioneered in the early 1980s with the advent of Herr-Voss Stamco’s Strand Extensioner®. While leveling material in the slitting process has become more prolific since then, not all leveling solutions are created equal. To provide shape correction, you must first consider what material needs to be leveled, as well as the material thicknesses and yield strength. Once this has been established we can begin to properly size the Strand Extensioner®.

While sizing the Strand Extensioner®, important decisions need to be made on the work roll size, frame stiffness, roll spacing, backup spacing and backup support rigidity. Another major consideration is sizing the recoiler for the proper amount of torque. This is critical to ensuring the full potential of the Strand Extensioner® is realized. One additional key consideration in shape correction within a slitting line is the number of work rolls included with the Strand Extensioner®. Having the optimum number of rolls in a Strand Extensioner® or Precision leveler is critical to success. It would be very easy to utilize fewer rolls within the leveler or Strand Extensioner®, which would mean less required torque from the recoiler, but, as with many other things in life, nothing is free. If too few work rolls are included, the Strand Extensioner® may not have enough differential path capability, which in turn means less leveling ability. On the flip side, too many rolls can have a negative impact. Herr-Voss Stamco has designed and manufactured thousands of Levelers and we utilize this expertise while taking all of these factors into consideration so that the optimum leveling solution is provided.

ARE THERE ANY SPECIAL CONSIDERATIONS NEEDED WHEN SHAPE CORRECTING ALUMINUM WITHIN THE SLITTING PROCESS?

In a word, Yes! As with many other materials, when sizing a leveler or Strand Extensioner® for aluminum special attention needs to be paid to the roll size, roll spacing and recoiler torque. Functionally, the roll configuration must also be different. Considering the surface critical nature of aluminum, most Strand Extensioner® work roll arrangements have a 5 or 6 high configuration. That is to say that there is a set of intermediate rolls between the work rolls and the backups on either the top, bottom or both. Aluminum can also leave an oxide on the rolls that most other materials do not. This requires a special work roll finish and coating. Operationally, aluminum also requires different entry and exit settings than steel. For ease of operation, Herr-Voss Stamco provides an automated set up feature called Punch’N Go which allows operators to set the Strand Extensioner® with the push of a button.

DO ALL THE HERR-VOSS STAMCO SLITTING LINES OPERATE WITHOUT A LOOPING PIT?

No. Herr-Voss Stamco provides a full suite of slitting lines, including full loop slitting. Our loop slitting lines come with our industry-leading Synchrowind tension device, providing the very best roll tension the market has to offer. As innovators of the loop slitting line, we continue to offer that technology as well as the Strand Extensioner®.

Our slitting lines include high-strength slitting (HS²T™), Strand Extensioner® slitting, loop slitting, heavy gauge tube slitting and aluminum/stainless steel slitting.

CAN I UPGRADE MY EXISTING CONVENTIONAL SLITTING LINE FOR HIGH-STRENGTH STEELS?

That depends on the specific grade of AHSS required to be run on the slitting line, as well as the specifics of the equipment. In some cases, a conventional line can be modified to run some degree of high-strength steels. As the innovator of slitting AHSS, Herr-Voss Stamco knows what it takes for equipment to be operationally successful and can assist you in determining the best solution.

Thomas Smrekar, Manager, Customer Solutions with Herr-Voss Stamco.
If you’re going to talk the talk, you need to walk the walk!

Innovative solutions that are Industry Tested and Accepted.

High Strength Slitting Technology (HS²T™)
Currently processing 250,000 psi steel!

Strand Extensioner® Slitting
A history of successfully slitting without the need for a looping pit!

- High Strength Slitting
- Aluminum / Stainless Slitting
- Strand Extensioner® Slitting
- Loop Slitting
- Heavy Gauge Tube Slitting

The Best Solutions Based on the Best Technologies
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