

# IN-HOUSE BELT SPLICING WORTH THE INVESTMENT?



It's well known that food processing is no easy feat and constantly requires expert navigation through major challenges and obstacles. One of the challenges is making sure all processes meet the ever-changing food and hygiene regulations set out by Australian law. The other is to increase the productivity of your operation to maintain profitability and ensure production stays up and running.

With competitive overseas markets on the rise, such as the extravagant growth of cattle exports from Brazil and North America, as well as projected growth of Australian lamb and mutton exports through 2019, it's more important than ever to ensure productivity is at its optimum. Not only to future proof your facility for rising competition but also to ensure you have the means and capacity to keep up with demand. Regularly evaluating your operation in order to pinpoint new ways to boost efficiency and productivity is the only way to keep up with the tumultuous landscape of food processing.

### THE DOMINO EFFECT OF UNSCHEDULED DOWNTIME

Conveyor belts are one of the most crucial parts of a food processing operation. Without them, labour costs would be an unmanageable expense - much larger than the cost of maintaining your equipment to ensure it's working at optimum levels of productivity. Maintenance does cost money, but unscheduled downtime can result in lost labour hours, missed delivery schedules and huge amounts of wasted or quarantined product.

One way to surpass the challenge of unscheduled downtime is to bring belt splicing in-house with the use of a portable splice press.



### MODERN ENGINEERING AND TECHNOLOGY STANDS UP TO TRADITIONAL MECHANICAL SPLICES

Laurie Shorten, product manager from Flexco, says that traditionally, presses were bulky and designed specifically for professional use, making them unsuitable to be used directly on belts at a food processing facility.

"Traditional presses not only required specialised training, but also weighed as much as 136kg with a lot of different parts, making them complicated to use and impossible for a single person to lift safely. They also use open water tanks to circulate cold water through the press and cool down the belt after splicing. These water tanks and hoses can harbor bacteria and create serious sanitation challenges," Shorten explained.

Shorten continued, "Recent technological advancements mean there are now advanced presses available that can be safer and more productive, are simple to use, and maintain the highest level of sanitary standards."



Shorten outlined a number of reasons why considering a new press for in-house belt splicing is the right move for food processing operations, including:

- 1) The ability to respond immediately to a damaged belt – your facility won't be subjected to the schedule of an outside vendor
- 2) The opportunity to perform routine maintenance when it is least disruptive – maintenance can be planned around production and shift schedules
- 3) Having better control of safety/sanitary conditions – limit the number of outsiders coming into the facility, equipment cleanliness, and exposure to external contaminants
- 4) The amount of money you can save – ensure your facility only incurs a one-time cost for all future endless splicing needs

### HOW MUCH CAN YOU SAVE BY SPLICING IN-HOUSE?

Not only can you save money by eliminating the need for external resources – you also save time by splicing in-house. Best-in-class splice presses can splice belts in as little as eight minutes, as opposed to traditional presses, which can take up to 55.

How much can you save by handling splicing in-house? A simple cost exercise comparing the expense of shutting down for external splice maintenance to in-house technicians using a portable splice press revealed that substantial savings are possible.

	Shutdown Cost	Time Saved	Money Saved
Step of Process:	\$1,000/hour	40 minutes	\$666/per join
	\$2,500/hour		\$1,666/per join
	\$5,000/hour		\$3,333/per join
Active Cycle Time			
Step of Process:	\$1,000/hour	20 minutes	\$333/per join
	\$2,500/hour		\$833/per join
	\$5000/hour		\$1,666/per join
Setup & Takedown			
Total	\$1,000/hour	60 minutes	\$1,000/per join
	\$2,500/hour		\$2,500/per join
	\$5,000/hour		\$5,000/per join

### STATE-OF-THE-ART TECHNOLOGY FOR MAXIMUM PRODUCTIVITY

Flexco has made pioneering advances in engineering mechanical splice presses that increase safety, are easy to use, and improve productivity.

Flexco's recent technological advances have been incorporated into updates to the wildly successful Novitool® Aero® Splice Press.

### Recipe Development

Recipe development is one of the most challenging parts of in-house splicing – especially when there is insufficient technical information available. Most belt manufacturers will provide a recipe recommendation for some splice press model, but not all. When a recommendation does not exist, having a proven and methodical approach to develop a splice recipe can save a lot of time and money while simultaneously optimising splice quality. TPU and PVC splice recipes vary greatly. A good analogy to visualise the difference between the two is that TPU is a liquid which flows like water, whereas PVC can be more likened to flowing molasses. Because of this great variance, care must be taken to ensure the right temperature, heating and cooling processes are practiced for the best quality splice. The following table provides a summary of important differences to consider when splicing both TPU and PVC conveyor belts.

Characteristic	TPU	PVC
Transition from Solid to Liquid State	Sharp; immediate at melt temperature	Slow; Gradually changes as temp increases
Typical Splice Temperature	160C	175C to 180C
Melt Viscosity	Low (flows quickly)	High (flows slowly)
Typical Splice Pressure	0.8 Bar	1.3 Bar
Splice Dwell Time	Depends on belt thickness For thicker belts (belt including splice pads)	
Splice Pre-Heat Time		







To combat the problem of constantly inputting splice recipes, which leaves room for human error, the Novitool Aero Press features a recipe management tool. Users can manually enter recipes, allowing full control over customisation of the recipe. Alternatively, recipes can be imported via USB flash drive. More than 1000 recipes can be stored and segmented into categories for easy organisation. Users can recall saved recipes for specific belts, providing consistent, high-quality splice performance. Having recipes stored on the splice press means that anyone can operate the press at any time, without requiring prior knowledge of the conveyor belt characteristics.

#### *Air Cooling*

Air cooling is an innovative escape from traditional water cooling methods. In food production applications, the threat of bacteria harbouring in water is a major concern, which is one of the reasons Flexco only engineers air cooled presses.

The second reason is quality.

"Our testing has found that the quicker you cool down the belt, the less the material shrinks and the stronger the splice," explains Shorten.

Traditional water-cooled splice presses do not have the same ability to control heating and cooling processes as the Aero press does. The press can set different temperatures for both top and bottom heating elements, allowing users to modify the splice parameters to achieve ideal splicing results for the belt. As the press allows for more control over the heating and cooling process, the splice has a superior and stronger finish.

#### *Custom Voltage and Sizes*

Voltage is an often overlooked consideration when purchasing an in-house press. When choosing a voltage for your press, consider the voltage of your power source, if you'll be using an extension cord and the time of the day as well as the year. Certain times of the day and year, like midday during the summer, will have higher demands for power due to the increase in demand because of running air conditioners. When making the decision of what voltage capacity to consider, note that voltage only affects the time it takes for the press to warm up. Dwell and cooling time is not affected by a lack of supplied power.

The Novitool Aero press is available in widths of 625 mm, 925 mm, 1225 mm, 1525 mm, 1835 mm, and 2135 mm, meaning the press can be used in most conveyor operations. The presses are also offered in multiple voltage ranges, including the option of operating the 625, 925, and 1225 models with a single-phase 240V 10amp power source.

### **TECHNOLOGY AS A DRIVING FORCE IN THE FOOD PROCESSING INDUSTRY**

Technology is a driving force of innovation today, challenging even the most established companies to modernise and reimagine how to become more productive. Increasing efficiencies in just one area of your operation can have a huge impact on your bottom line. Updating splice presses to the latest technology and bringing that expertise in-house is a simple change you can implement today.

To learn more about how in-house belt splicing can benefit your operation or to request a demonstration, contact Flexco.

Contact Flexco:

**W:** [www.flexco.com.au](http://www.flexco.com.au)

**E:** [marketingau@flexco.com](mailto:marketingau@flexco.com)

**P:** 1300 098 4235



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