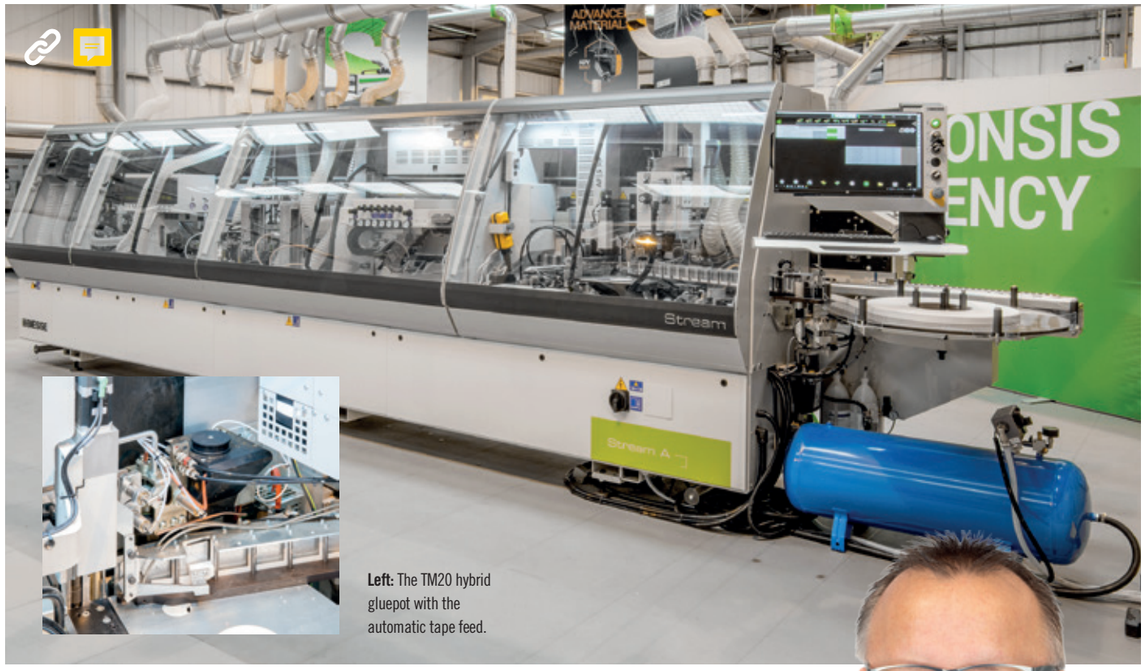
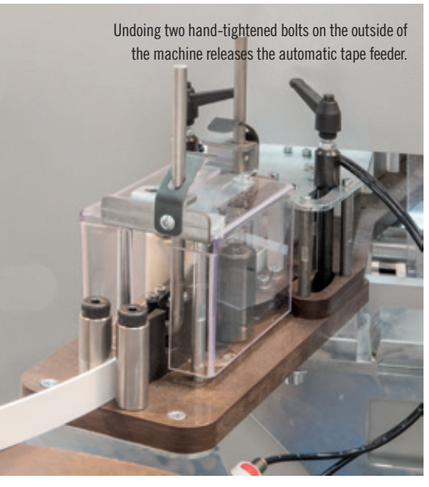


Left: The TM20 hybrid gluepot with the automatic tape feed.

When Zero is More

Malcolm Storey

Straight edges, curved edges – Biesse has a zero glueline solution for edgebanding of both.



Undoing two hand-tightened bolts on the outside of the machine releases the automatic tape feeder.

With more and more manufacturers upping their game and increasing the quality of the products they make, it's not hard to see the appeal of a zero glueline. Take a white board, use a white adhesive, put a white edge on it and in next to no time you've got a black line where dirt has got into the join. At best, it's ugly; unappealing. At worst, it's unhygienic – and especially in the bacteria and virus-conscious times in which we now live, that's not a very positive selling point for your furniture. It's certainly not one that would win you much favour in the health, education or hospitality industries where furniture not only has to be cleaned, it has to be disinfected as well.

There are numerous ways to reduce an unhygienic and unsightly glueline between the edging tape and the surface of a board but, unless you're going to encapsulate the entire board with a coating, there's only one way to eradicate it completely: fuse the two together so there is no join.

When lasers first came out, they were the only viable solution and the new generation lasers are exceptionally good. The problem is, for most manufacturers who don't have a massive budget, lasers are not a cheap solution. In fact, talking to Biesse's Brand Sales Manager for Edgebanding, Malcolm Storey, he is adamant you could buy an entire industrial edgebander equipped with Biesse's Airforce hot air system for the price of a replacement laser unit for a laser-equipped edgebander. That begs the question, if you are a smaller manufacturer, what are the options?

Biesse offers two solutions: Airforce for straight panels; Rayforce for curved components.

Available on every model from the Biesse Akron 1300 and Akron 1400 up to the larger Stream A Smart, Stream A, Stream B and Stream C machines, Airforce is Biesse's hot air fusion system for straight line edgebanding operations and it works very simply by blowing hot air at a temperature of between 520 and 580 degrees onto a co-extruded edging tape. The heat melts the co-extruded adhesive layer, affixing it to the edge of the board, and simultaneously welds the edge of the tape to the decorative material on the top surface to create an absolutely seamless finish. It even works with antibacterial and textured edging tapes, tapes up to 60mm wide and honeycomb materials where the top surface is thick enough to provide an area for the glue to adhere to.

"The important point to make here is that you must use a co-extruded edgebanding tape to get a zero glueline," says Malcolm. "Some tapes have an adhesive applied to the tape but with a pre-glued tape like this you'll see a glueline. There is a big difference between pre-glued and co-extruded tape. You see it at its worst when the glue joint yellows when edgebanding white on white. Sometimes, you can even pull the adhesive layer off a pre-glued tape."

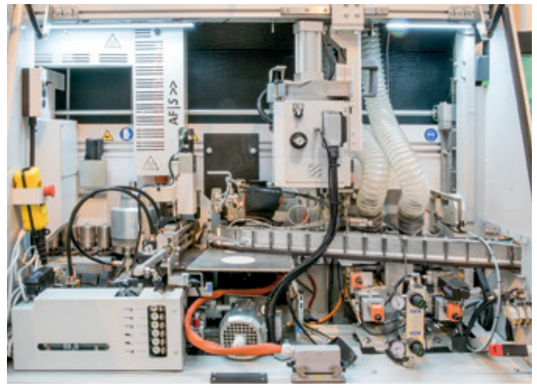
Even using higher quality edgebanding material, the lower temperatures required to fuse co-extruded edgebanding materials to the board are still extremely hot – in the order of 520 degrees Celsius. To cope with the heat on its Airforce-equipped machines, Biesse has replaced the more usual infeed device that cuts the tape and leaves it in place with an automatic tape feeder that retracts the edgebanding after it's been fed and cut so it doesn't melt. The added benefit is that when you change edging reels, you don't have to open the door. You push it into the feeder and it takes the tape into the machine automatically. The automatic tape feeder is supplied as part of Biesse's Airforce package. It can be removed if you want to apply larger solid lippings by simply undoing two hand-tightened bolts on the outside of the machine – a five-minute job for an unskilled operator.

With Airforce, because the adhesive layer is already co-extruded with the tape, cleaning and maintenance is much reduced. "There is no glue scraper in the program because there is no glue to scrape," says Malcolm. "There is very little maintenance compared with conventional hotmelt applications: you have to clean the tape infeed area but that's a general requirement whatever unit you're using."

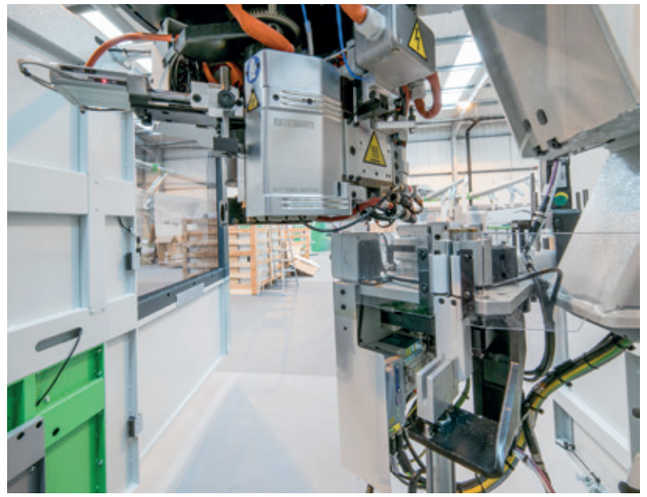
Airforce is a very safe system to use: "All Airforce-equipped machines have an additional receiver tank – two air supplies, one direct to the machine, the other onto a receiver tank – so if the machine ever goes into a state of emergency, or there's a power loss to the factory, there's enough air in the receiver tank to cool the heating element down and prevent it from burning out. It also guarantees you've always got the right volume of air at the machine."

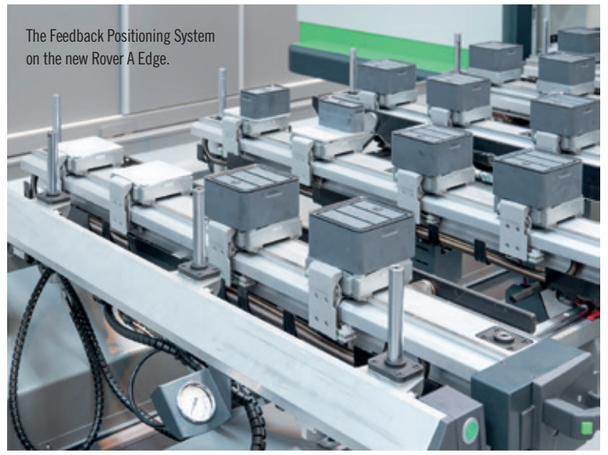
Malcolm also confirms it's very easy to use an Airforce-equipped edgebander: "The Machine comes pre-programmed with a selection of parameters for different edge tape manufacturers because each has a different set of parameters to release the adhesive. The changeover is a simple matter of selecting the program for your preferred edge supplier. Our engineers will help write the program for the tape you want to use when they do the acceptance test on site."

Having Airforce on your Biesse edgebander is a clean, simple, cost-effective way of achieving the ultimate zero glueline – but it doesn't prevent you from switching freely from hot air technology to PUR or EVA when you need it. Biesse even offers a hybrid gluepot that will take both EVA and PUR and a skilled operator can make the switch in about 10 minutes. You could use 2kg cartridges for larger production runs, or

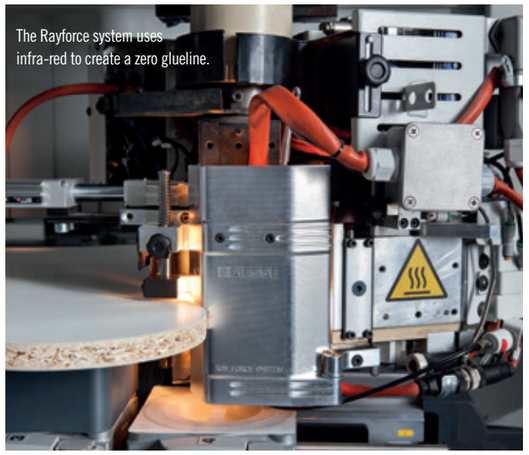


Rover A Edge





The Feedback Positioning System on the new Rover A Edge.



The Rayforce system uses infra-red to create a zero glueline.

PUR-edged sample.

add granules in small quantities for the occasional short run, or to top up if you didn't want to break into another 2kg pack to complete a job. Switching from PUR to EVA if you have the TM20 hybrid unit is simple: purge the glue from the pot, put a little EVA in, start the machine, let it mix, purge that, top up with EVA and away you go. The whole premelter slides out of the way if you're not using it and need access to the hybrid glue pot. Very neat.

If you needed to produce curved components for such as desk tops, Biesse's solution starts with the Rover A Edge – and to achieve that all important zero glueline, it can be equipped with the Rayforce system. Rayforce achieves with infra-red the same as Airforce achieves with hot air, melting the co-extruded adhesive on the back of tapes up to 60mm wide and fusing the edges with the décor material on the surface of the board.

"With a straight line edgebander you choose between Airforce, PUR and EVA," says Paul Willsher, Biesse's CNC and Drilling Brand Sales manager. "With the Rover you can use EVA, PUR or Rayforce but you do have to switch the unit to a Rayforce unit to produce a zero glueline finish and to do that and it's a 20 to 30-minute changeover. It is plug and play and we train operators to do that. It's an ideal machine for the office market where a lot of desking is curved. Typically, you'd do the straight edges on a straight line edgebander and the curved edges on a Rover but it will do both.

"There is a module in the software called bEdge and once it's been entered into the system, the operator clicks on the panel that needs edging and it will automatically apply the whole process, cutting out the line with the router, cleaning the edge, applying the edge, end scraping or glue scraping if needed."

Rayforce will apply edging tapes from 1-2.2mm in thickness to panels from 16mm up to a maximum thickness of 60mm. "There are some limitations on the internal radius," admits Paul. "Between perpendicular sides, the minimum radius the glue rollers can get into is 40mm. Externally, with two perpendicular sides, it's a 10mm radius. Speed-wise, it's limited to 10m/min on both curved and straight edges, with different tapes requiring different speeds. At these speeds, you're assured of the best quality joints with the board. Obviously, there's no glue pot involved so it makes for a much cleaner working environment."

The Rover A Edge, Rover B and Rover C can all be specified with Rayforce– and for those of you who may not have seen the very latest version of the Rover A Edge, it has some remarkable optional features that will make the machining and edging of curved components every bit as seamless as the Rayforce makes the edges.

Biesse has had an EPS bed with self-moving pods for many years. On the Rover A Edge, the new bed is the FPS, or Feedback Positioning System. It can position the pods automatically wherever you want them – nothing new there – but, if someone moves the pods after positioning and you don't know about it, on the older system you would have to home the bed so it knew where all the pods were. On the FPS system, it puts the rails and pods back where they were automatically. If you've run a program and you decide it would be better if you moved the pods a bit – for example, if you were making a jig and needed to inch them a fraction – it will update the positions in the program and store the new ones for the next time. You can set the pods manually or move their positions from the screen. There are no foot pedals to apply suction, just a light beam – it's true pendulum loading without a pedal to push or a cup to move, and for any manufacturer who wants a seamless, easy-to-use system for the automatic cutting and edging of batch-size-one curved components, this machine seems to have everything.

For more information on Airforce and Rayforce, or to see the new Rover A Edge in action, call Biesse on 01327 300366 or touch **here** if you are using the free Furniture Journal app for a link to Biesse's website.

Paul Willsher