Maintaining a Cutting Edge

In the second part of a special print finishing series, Brendan Perrin examines the latest trends and equipment emerging from the wide-format side of this core sector

While many industry pundits focus strongly on the impact that wide-format print has had on the industry, fewer recognise the unalienable fact that it is cutting and routing technology that has allowed many print-service-providers (PSPs) to expand their businesses.

Whether it is an A-frame board cutter, the latest flatbed Zund CNC cutter, or behemoths like the dual head 8010 router from AXYZ, the evolving performance of this technology bracket has allowed PSPs to broaden their product offering, enhance production efficiency, and increase output levels.

This sector has been undergoing something of a ‘quiet revolution’ for the past five years, outshine perhaps by its more glamorous production line cousins from the wide-format print sector. That said, it is the recent growth acceleration in the flatbed printing sector that is seeing a similar uplift in the sales of routing and cutting equipment, as PSPs move to invest in the more industrialised in-house processing and finishing of printed boards.

One of the sector’s longest serving authorities and innovators is ATA Engineering. Starting its life servicing the aerospace industry, its managing director Terry Stafford saw the opportunity to supply wide-format printers with specialised and well-built machinery at an affordable price level. He also outlines that the spur for this intense diversification into building CNC routers came ten years ago, as ATA was receiving high volumes of calls from PSPs complaining of machines that were not fit for purpose.

“CNC routers have moved to a place today where you cannot really be competitive unless you have one,” says Stafford, who adds: “The beauty of these systems is that once you have set up a job you can walk away and get on with something else. This technology really has filtered down the manufacturing levels and even smaller companies that don’t tackle large production jobs can see the benefits of having a CNC router.”

With a two-year machine and spindle warranty, ATA Engineering supplies...
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and provides full technical support for the US-manufactured C.R. Onsrud brand, which has more than 50 years experience in the sector. Its heavy-duty range is split progressively into the Mate, Tech, and Pro Series—providing one of the most comprehensive portfolios in the industry.

Stafford continues: “The key thing when looking at purchasing a system today is its build quality and ability to minimise any vibration, as this will vastly improve the edge finishing of the machine. The other important area is the vacuum, so you get no work movement at all. And the third item is the quality of the cutters you are using.

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Without those three items in a package you are always going to be open to having problems. Look at buying a machine you will grow into twelve months down the line, not one you will grow out of.”

Deep roots

Another key player with roots deep in this sector is Essex-based Blackman and White, which has developed its Versa-Tech range of multi-function CNC machines. Its Mastercut range now carry a zoned vacuum bed with the ability to interchange between laser, knife, and routing systems.

Founded in 1964 by engineers Les White and Jack Blackman, the still family-owned company is now run by Les’ son Alex. The firm cut its teeth on building marking systems for sail manufacture, before moving on to create laser systems that could cut textiles for the dye-sublimation printing sector. Pioneering such technology in the 80s when PCs were still a revolutionary technology, the company has drawn on its history to produce systems now designed specifically to address the needs of today’s wide-format print industries.

“We considered the market very carefully and decided what should be available on the Versa-Tech to make it cost-effective for customers, but also without it impacting on efficiency. We also knew there was demand for a high-powered 2kw router that featured the build quality and reliability of our other systems. Today we are now the only British company manufacturing machines on home soil,” explains Alex White, managing director of Blackman and White.

Another British company that, while not manufacturing machines, does produce the tooling for routers and cutters, is Tamworth-based Industrial Tooling Corporation (ITC). Technical sales manager at the 21-year-old company, Sally Hunt, makes a worthy point in regards to when you have made that leap and invested in new kit: “There is no point in buying a brilliant new machine and then running it a while down the line with degraded tools. The tooling sector for routers and cutters is one where we are able to still really push the boundaries in terms of performance and quality. The biggest demand on routers and cutters today is processing printed boards, and for this you need highly accurate machinery and top quality tools to match the quality of today’s large-format print.”

The chaff of progress

That quality and accuracy of today’s tooling options, married to a brand new generation of cutters and routers, is also paying dividends for our industry in other profitable areas, as Black and White’s White explains. “We certainly see in the UK and North America that a growing market is in textile printing or soft signage, and that more and more printers are looking to invest in dye-sublimation equipment. This is why we built-in the flexibility with Versa-Tech of carrying a laser, as it cuts and seals materials used for soft signage and textile print in one pass.”

He continues: “PVC has seen its day in some ways and more buyers are moving away from its specification as it is environmentally-unsound. If you can seamlessly shift between using your CNC machine to cut soft signage, wood, composite boards, and metal, then we think it will put any FSPs at a significant advantage.”

White claims that a key area of the cutting and routing market that will see significant development moving forward is software—with image recognition and processing systems set for some major leaps in ease-of-use, flexibility, and application scope.

“We feel the industry has become a bit stuck in the technology of the Vision system and that no generational leaps have been made” he states, adding: “We are about to release our New Vision system, which is backed by an entirely different philosophy. It will be a very exciting development that will offer impressive time savings without compromising the finished product.”

If design is the perfect expression of function, then looking at the Versa-Tech series, beautifully crafted as they are, it certainly seems they are going to be strong contender for some time to come.

Alex concludes: “Our philosophy is that we try to keep well grounded in what we are achieving. We want to listen to customers and understand what is missing from their existing equipment.”

ITC’s Hunt agrees with this approach, and also highlights that, similarly to Black and White, the...
She concludes, and touches on a development that reflects Black and White's innovation direction: "On kit that costs you £300,000 you can already achieve almost total perfection. Yet these systems are out of the reach of most companies. When you come down the price grades there will always start to be sacrifices, speed for accuracy and so on. The most identifiable trend when speaking to both new and old customers, however, is the demand that is pooling around multi-functional systems that can cut, fold, crease, and rout—this seems to be the future."

**End-to-end evolution**

All the progress in CNC systems would be of little benefit if the systems that sit either side of these technological marvels in the production chain were not able to keep up. More specifically this means A-frame cutters, vertical panel saws, and laminators. These kit sectors have likewise been keeping pace with the developments of cutter and routers. After all, if you are not able cut your boards to size accurately which stocks the Trimfast range of multi-substrate A-Frame cutters, which features clever enhancements like interchangeable tool cartridges. The range move from units that can handle 1.65 x 2.6m substrates up to 2.5 x 2.6m, with the systems featuring a built-in counterbalance that allows hands to remain free for loading material—reportedly cutting down operator fatigue. The company also has a wide range of laminating systems in its Easymount, Matrix, and Polarsign ranges, which have all been developed to handle the requirements of a continually evolving CNC cutting and routing technology.

The company's marketing manager, David Smith, highlights some key trends affecting the market: "We have had board cutting systems for some time, but we have now stepped up to provide general purpose cutting systems. These systems now have to come as part of a full package that includes wide-format printers, CNC cutter/routers, and laminators. Each one of these areas has continued to improve substantially in terms of quality, productivity, and price point, so our new A-frame trimming and cutting systems have been designed to keep pace."

Smith concludes: "PSPs need to look at their production system as a complete package, and review not just what they are doing now or in six months, but where they will predict their business will be in two or three years time before deciding on where to invest. This sector's technology has picked up its development pace and so it is worth future proofing yourself."

**Factfile: The first machines to be numerically controlled (NC) were built in the 1940s and used modified servo motors that were controlled by follow points fed into the system via a punched tape. The advent of advanced electronics saw these early systems evolve into modern computer numerically controlled (CNC) tools and quickly before they head to your CNC machine—and then get them protected quickly to a high standard afterwards—all this wider sector innovation would be for nothing.**

One company that has been pushing ahead innovation in this sector is Vivid, company has drawn on deep engineering experience to create products for PSPs: "This is one segment of our business, but we also have a lot of experience in working with the aerospace industry, where precision is not just desired, but critical. Developments from this area get rapidly translated into our other products.

"You hear some people say that development of routing and cutting systems will not be able to progress much further, but if I look back at where we were ten years ago, people were saying the same thing. Technological innovation will continue to improve this sector's products, and the result is that our industry is becoming far more sophisticated."

Hunt further identifies that experimentation with angles, configurations, flutes, polishing techniques, and the continued drive for material improvement will reflect the ongoing evolution of the drive systems of cutters and routers.

**Cut to the chase**

The growing value of the CNC cutting and routing market is clearly demonstrated by some recent business news that has seen Tekcel's UK wing transform into Complete CNC Solutions, headed by Julian Sage and his wife Emma. Based in Australia, Tekcel's CNC routers will now be exclusively distributed by the new company. Sage has run Tekcel's UK
arm for the last nine years, and the new relationship came as the manufacturer decided to focus its powers on research and development, while freeing up the husband and wife team and Complete CNC Solutions to focus on expansion into new markets and further enhancing its customer service systems.

“There is recently a growing demand for slightly larger machines. So, 2 x 3m routers are very popular and our flagship because of material sizes, but 2 x 4m machines are seeing an uplift in terms of enquiries. I believe this is because material suppliers are upping their capabilities to supply sheets in this range, predominantly aluminium composites,” explains Sage, mirroring a trend identified by both White and Hunt that substrate technology evolution is stimulating demand.

Sage continues: “The growing popularity of automatic tool change facilities on CNC routers is without a doubt another strong trend at the moment. This is for health and safety reasons in addition to the production efficiency gains it brings.

“The other important area of development for us is the supply and production of high-quality carbide tooling for cut and polish in one pass. We have done this with a leading tooling manufacturer and it is in response to the fact that people do not have the time in hand to cut and polish in two stages.”

Chocolate to cutters
Say the word Swiss and what leaps instantly to mind is mouth-watering chocolate, corks you could set your watch by—sorry couldn’t resist—and army knives. What your average layman will not realise is that they are also pretty good at building CNC cutting and routing systems. Zünd started to expand into the UK in 1993 when it established its sales and service centre, and now its G3 and S3 cutter ranges are well respected and have substantial market share. The company’s UK sales director, Peter Giddings, agrees with the trends highlighted by Blackman and White especially: “We are finding that the need for multi-purpose equipment is the driving force in the sector. Whereas people used to say, ‘I need to route’, and that would be a large tick in the box and the end of it, now these companies have diversified out into a myriad of different areas and this is affecting the development course of the equipment.”

With its CNC range able to carry a wide variety of cutting, creasing, and routing tools, Zünd is reacting to the same trend that has been seen, for example, Blackman and White develop its Versa-Tech range.

Giddings concludes, analysing where he thinks the sector will continue to head: “Linear cutting speeds have not changed dramatically, but what has changed is peripheral advancements like acceleration and tool up and down times. This has had the effect of increasing the productivity of the cutters, but the overriding factor that will continue to limit speed is how fast you can cut the material. We as manufacturers can always produce faster machines, but it is what you are cutting and the quality of the final product in relation to that which is a big factor.”

Giddings also highlights how the company focuses on providing a ‘total solution’. This entails intense research and development into user-interfaces and software systems, such as the Zünd Cut Centre, to run the machines to help capitalise on mechanical advances.

So, it seems the quiet cutting and routing revolution is set to continue, spurred by advances in the wider industry and driven by increasing demand for more flexible and productive systems. My advice, if you have yet to make serious moves to invest in some new equipment, is that now is very much the time.