A Journey seeking perfection

By Bob Kory
Director
Kory Dubay Manufacturing
Australia Pty Ltd

Kory Dubay’s journey into membrane form pressing began in earnest in 1990 – when all 18 tons of our first Fritz (high pressure) membrane form press was rolled into our factory in Sunshine, Victoria.

Then, four days later when the Fritz installation engineer Oswald Guber had flown home to Germany, the “state of the art” heating system blew out.

I realised then, very quickly, that with an investment of $280,000 at the time and all the expertise halfway round the world, I had to learn fast, not only the process but also how the press actually worked to ensure our livelihood wasn’t seriously disrupted. We certainly have come a long way since those days.

“It is far better to visit some of the major woodworking shows personally”

Keeping up to date with technological changes that can impact your business can be done simply by relying on sales representatives to pass on information. But, if possible, it is far better to visit some of the major woodworking shows personally and meet other people who share your interests, make new friends and see first hand, the latest improved processes, equipment and software available for the woodworking industry. Improvements can have a dramatic impact on the way we do things in the future, so the incentive is to be well informed.

Kory Dubay is quality endorsed to ISO 9001:2000 and as part of the routine of continuous improvement we review our processes and systems regularly. You need to focus on a specific area. Then seek out new technologies or methods that help to improve the quality and efficiency of that area and cut costs that underpin your competitiveness and cost and budget for the changes. If there is some difficulty in identifying the optimum solution (especially when vendors are making all sorts of claims), it is very helpful to visit an operation that has already applied the chosen new technology. This may not entirely eliminate the risk but will definitely help support gut feeling.

This year marked the establishment and adoption of the first draft Australian Standards for Thermo laminating, which Kory Dubay is proud to have been a major contributor too, and will hopefully result in the improvement and consistency of product offered to consumers from ATLA members.

2004 also marked a busy schedule for Australian Thermo Laminating Association members with presentations from local and overseas suppliers to bring all members up to speed with current knowledge. One discussion of particular interest to us was a guest speaker, Dr Alessandro Ros, who was the quality control manager of the 3B cabinet door company in Italy and is now a consultant, half a world away. The 3B company is recognised as a high quality supplier into the European market of gloss, satin and texture vinyl finishes. It has earned this reputation in the northern hemisphere by working hard and independently on continuous improvement over the last 15 years. Kory Dubay has been working just as hard on quality improvements down under for the last 14 years and, even though the size of the two operations is dramatically different, with Kory Dubay being dwarfed by the 3B operation, it is interesting to note that the results of that work to improve quality has reached similar conclusions.

Dr Ros said that their thermo laminating process was based on high pressure and low temperature” with a “variance of 1 degree Celsius half way around the world” happens to be the exact same principle used by Kory Dubay and is the key to our world first ‘ONE TOUCH’ patented Almex press, which weighed in at 25 tons (the weight of the machine is related to its ability to withstand high pressure during the pressing cycle) and was conceived after watching the shortcomings of the Fritz press for five years.

The main heater setting at 3B was set at 90 degrees Celsius while Kory Dubay’s main heater setting is set at 89 degrees Celsius. It was extraordinary to have an operating variance of 1 degree Celsius half a world away. Another interesting area was the comparison regarding variations in the single sided melamine board grades in use at the 3B door company. They actually had 5 grades of SS MDF to process: standard foil, satin grades with and without face machining and gloss with and without face machining. At Kory Dubay we have been involved to date with the R&D of SS MDF from Laminex Industries since 1992 and have had 3 grades of board manufactured to suit our requirements covering paint grade, standard 0.40 foil and gloss 0.70 foil. With the gloss grade, Kory Dubay developed an exclusive D/P grade with the Gympie mill and with the expert help of Wayde Goatham. Our customers have been receiving “DOUBLE PAPER” backing for a number of years with all our gloss products, enjoying the benefit of straighter cabinet doors and panels.
Finally Dr Ros quoted some interesting results from an internal statistical analysis during his time at the 3B company. It was related to the possible failure rates of different press types and brands they had used over this time. The statistics revealed that the worst result they recorded at the time was a membraneless press with a 50% pass and 50% failure result. This was followed by a membrane press with a plastic pin system with a 75% pass and 25% failure. The best result they achieved was with a bag press, liquid filled which had a pass rate of 97.5% and a failure rate of 2.5%. So we did a survey at Kory Dubay and from a sample size of 73,000 vinyl wrapped parts produced with our “One Touch” Almex membrane press. We found we had a failure of 76 parts, i.e. close to a 99.9% pass rate and 0.1% failure without sorting out the damage caused by product abuse or poor installation out in the field, i.e. just adhesion failure in general and the results means Kory Dubay customers enjoy less call back, adding to customer satisfaction which saves time and represents real value. It was a great opportunity to benchmark against a company of this calibre.

This year’s International Woodworking Fair (IWF 2004) was again an eye opener. Held in August, in Atlanta, Georgia in the United States, it proved again that, in contrast to my first visit in 1996, a notable change had also taken place particularly in the finishing off of US made woodworking equipment. It was harder to distinguish, over this time, between the US manufacturers and their European and Asian competitors, because they finally caught on, not only to make a practical machine but also make it look state of the art with some design flair. At the time the Almex press was built I was personally unhappy with the proposed look of the press and made a sketch, that was supported by another Almex buyer in Kentucky, and finally adopted by Shaw Almex.

Woodworking shows of this size, like Ligna in Germany and IWF, can be daunting. A prepared mind can bring out the best by focusing prior to visiting a show, because IWF was jam packed with 1372 exhibitors, filling 3 huge halls in the Georgia World Congress Centre with 834,000 square feet of floor space. If you are focused it helps to distinguish the tree from the forest. The show was dubbed the “best ever” even with a 2% fall in attendance because a major tax incentive was still in place for capital investment as well as a buoyant economy, so exhibitors were not disappointed. Some further statistics courtesy of Wood & Wood products were that 42,040 participants were in attendance and, of this, 24,090 were verified buyers with more than half from companies with less than 40 employees and of these 25% were from the cabinet making industry!

As a result of the IWF visit we have also been testing the new PET (Polyester) foils such as Ecoform, which was being exhibited by Toppan at the IWF show. We are testing it in conjunction with E Zero MDF substrate from the Laminex Gympie mill. We have had good processing results so far and it may be a new alternative? – the PET has a processing window between 75 to 130 degrees Celsius, to the very mature PVC (Vinyl) foil which has a processing...
window of 65 to 130 degrees Celsius. However, PP foils (polypropylene) have already been and gone as an alternative due to a list of problems. The first was the very tight window of 130 degrees Celsius with only 4 degrees Celsius tolerance. It also had problems like durability.

The new polyester foil also has different properties of combustion when compared to the very popular PVC foils. These characteristics need to be laboratory tested to ensure that there are advantages. For example, we carried out a simple naked flame test and have seen that PVC stops burning when the flame is removed. However, with the PET foil, it continues to burn after the flame is removed. It may need the addition of a fire retardant so further work definitely needs to be done.

The search for finishing equipment at this year’s IWF, saw Kory Dubay’s focus return to the wood fibre level. Over the years we have invested in Shoda CNC routers for the best quality “off the tool finish” and, of course, you need well set sharp tools and a substrate that has the right density. To complement the machining we had intermediate sanding carried out to finish sand the machined parts. However, I have been very disappointed with the results to date even after trying an alternative scouring pad assembly to the sanding mop. So I was on the lookout for some new technology to fine sand to further reduce telegraphing from the substrate.

MDF substrate has changed a lot over the years and currently meets E1 environmental standards but this has had side effects for thermo laminating, one of which is increasing telegraphing. Characteristics like increasing porosity of the substrate have meant that higher fluid absorption levels are experienced with either adhesive or paint with consequent fibre swell. That’s why fibre was chosen as the focus.

To further challenge the quality of the machined MDF surface, the foil market has been recently faced with the entry of some lower quality foils, which should be thoroughly tested. With additional competition and the effects of higher raw material pricing, this has resulted in a trend to use thinner foils both for standard and gloss finishes which telegraph surface irregularities more readily. So by removing unwanted fibre more effectively at the substrate surface level, less fluid is absorbed when coating, and telegraphing of swollen fibres can be substantially reduced.

US Customised Finishes was an exhibitor at IWF 2004 and the company displayed its full range of products including vinyl wrap and two pack painted cabinet doors. It also showed its special five piece doors series, which the president of the company, Phillip S. Clark developed and perfected over the years. The 5-piece vinyl clad cabinet doors look more realistic because of the grain direction of the rails and the attention to detail Phil has given this range with the glazing effect. Kory Dubay plans to release a series similar to the 5-piece design early next year as an alternative for some applications.

I originally met Phil at an open house at Shaw Almex where our patented “ONE TOUCH” press was on display prior to shipping to Australia in 1998. Phil mentioned he had just installed a flow through sanding machine called a Unisanding machine fitted with Flex-Trim sanding heads made in Denmark. They had also exhibited at IWF. During my factory visit, Phil said how happy he was with the results his UniSander was producing for fine sanding for both vinyl wrap and paint grade parts prior to sealing and also intermediate sanding after two pack painting. It enabled him to reduce the staff previously occupied with labour intensive and repetitive hand sanding from 6 to 2.

A full set of Flex-Trim replacement sanding strips have been known to last one year, with the unique one third (1/3) being replaced every four months, with no wear-in period required using this method. I couldn’t believe my luck, what an opportunity to actually see parts coming off the automated conveyor of the UniSanding machine at US Customised Finishes – a sanding machine that could actually sand properly even in the bottom of a raised panel cut. This is achieved through its unique linear and cross sanding motion, which perfectly complements the profiles that are found in a majority of cabinet door designs today and which are rectangular designs.
I believe it is the optimum sanding system available, as opposed to the circular motion of other machines, which causes a wave effect on a cabinet door while passing through and is not nearly as efficient. Also the attached Flex-Trim heads were unique and very effective with a quick change over design. It was an amazing experience.

I had great news to bring back home: an automated sanding process exists that has been designed ‘by wood people for wood people’. At first glance the budget of approximately AUD 250,000.00 for the Unisander seemed daunting, but that’s what we said about our first Shoda CNC router, which cost AUD126,000 in 1984 and is still in use today. At the time it revolutionised our process, reducing labour and increased the quality and efficiency of our process. Other notable benefits were that complex parts were easy to produce with consistent results. The Flex Trim people pointed out that a tradesperson could sand a component 100%, and the Unisanding machine could only sand the component 95% in comparison. However, the Unisanding machine could keep that up all day, every day, from morning to night without a break!

I was astonished to find out there was no local agent. After further enquiries I was invited to Denmark to meet with the principle of Flex-Trim, Poul Jesperson and Karsten Larsen, who have a passion for sanding. I was delighted when Kory Dubay could bring this technology home for the wood working industry in Australia and New Zealand.

“Designed by wood people for wood people”