

# An introduction to

# Flex-Trim &

# UniSanding of Denmark

**Australian &  
New Zealand  
Agent  
Appointed**



by Bob Kory

**A**t first glance I was fascinated to know why Denmark, the home of the Vikings and Hans Christian Anderson has become a focal point of fine sanding technology in Europe and the United States, where they have a reputation as market leader in specialist surface sanding. Very quickly I realised that by being part of Scandinavia there is a natural source of timber in this region and the skills to work with it. Add the demand for solid timber furniture and the world-renowned design skills from Scandinavia (Sydney Opera House is one) that are highlighted by unique and timeless designs and then you can just begin to understand.

**“If you want a glass finish you must start with glass”**

A good example is also the solid timber “Chinese” chair brought out by Danish furniture designer, Hans J. Wegner in 1943 (pictured below). It was called “the worlds most beautiful chair” by Interior Magazine, in USA in 1950. This “Round” chair catapulted Wegner into international fame overnight and sparked a profitable export market for Denmark.

The Flex-Trim factory is located in Glyngore, in North Western Denmark – an hours flight from Copenhagen, followed by a 45-minute drive from

the airport. Poul Jespersen who founded the company 10 years ago continues to play an active role in training and R&D, perfecting the Flex-Trim sanding system which began from his own experiences of finishing furniture.

During my training I was shown the detail of fine sanding. Poul made a point of his philosophy “if you want a glass finish you must start with glass”. I had learnt that to effectively fine sand wood fibres down to the working surface of the wooden part

requires four axis sanding – a North, South, East, West approach. This effectively removes fibres no matter what random direction they may have been left in including the fibre nap which is the direction the fibre is “combed” after machining or belt calibration sanding.

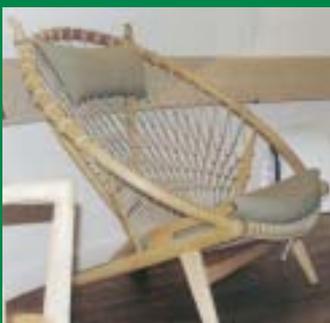
The UniSanding’s unique lineal sanding and cross sanding action has the four axis covered. Combine this with the unique Flex-Trim sanding heads and you can automatically fine sand raw and UV coated flat panels also, profiled panels, solid components, mouldings and assemblies. The automated flow through machine built by UniSanding usually run at 5 metres per minute designed for larger volumes. For smaller volumes Flex-Trim has a range of hand held tools and floor standing sanders to suit the smaller shop.

Poul and Karsten pointed out that the most common error in finishing is poor preparation of the work piece and that nine times out of ten it has already been painted. This results in

fibre swell and grain raise. To correct this condition most of the paint and fibre have to be removed, which is a waste of both time and materials. Both Poul and Karsten stated that if the sanding and denibbing is carried out correctly in the first place less paint and time is used overall. They showed me a European Oak traditional 5 piece door (rails, styles and shield) which was firstly sanded by passing it through the UniSanding machine. They then showed me the same door with only one coat of paint and it was very smooth and already looked and felt finished.

The next most common mistake they said was the misunderstanding that by increasing speeds of the sanding heads will speed up the process. This theory is wrong! and they explained why. In the early 1900’s in Sweden it was established that exceeding 22 metres a second with sandpaper does not make any improvement in sanding ability. In fact it only generates heat, and damages the sandpaper prematurely so it only increases costs. Also as an example, 120 grit sandpaper cannot remove any more material by increasing speed than the 120 grit grain size will allow to be removed in one pass.

The Flex-Trim heads run successfully at low speeds between 50-600 RPM. The heads have been retro fitted successfully to existing equipment, but only if the motors can be slowed down. An example is the retro fitting of our existing rotary sanding machine and has had a dramatic improvement from its previous performance.



The UniSanding’s unique lineal sanding and cross sanding action has the four axis covered.

**“Exceeding 22 metres a second with sandpaper does not make any improvement in sanding ability”**



The MiniFlex Sander (hand tool) fixed to an adjustable stand.



FlexSander 530 with drum motor (bench top model).



FlexSander 100 with floating table (floor standing sander).



Flex-Trim flow through moulding sander (for production runs).



UniSanding flow through flatline finish sander (for job lots or production runs).

“Flex Trim heads will not replace sanding devices that are being used for calibration or correcting poorly machined parts”

“There is a range of hand held tools and floor standing sanders to suit small and large businesses”



Kory Dubay's existing rotary sander after retro fitting Flex-Trim heads is far more effective.

It is also possible to convert three phase motors that run finishing heads at undesirable higher speeds of e.g. 1440 rpm @ 50 cycles, to be reduced to around half the RPM by reducing the frequency to 20-25 cycles using state of the art frequency converters. This allows the Flex-Trim head to be run at a satisfactory speed. A qualified electrician can determine if it is possible or not, because some existing motors on equipment may overheat. In this case it is advisable to retro fit a new motor and inverter with appropriate shaft geometry to accommodate the Flex-Trim head. When fitted to the workstation the appropriate guarding and dust collection design should also be incorporated to meet safety requirements.

Once slow RPM is achievable the selected Flex-Trim head can be fitted to suit the application. Flex-Trim heads will not replace sanding devices that are being used for calibration or correcting poorly machined parts. They are designed for fine finish sanding and Flex-Trim can't solve every sanding problem presented. However, where sanding belts are used Flex-Trim heads are ideal to remove fibre, score marks and blend sharp points left by a sanding belt which can cause surface tension at corners and poor paint coverage.

Poul and Karsten also explained to me that where a high standard of machining has already been achieved like on a moulded part, i.e. where shaping and calibration have already been satisfactorily

completed, (to achieve this the machining set up may be for example, one moulding head is run against the feed and another two or three heads would be run with the feed) – then it may be possible to eliminate the need for the belt sanding/calibration station all together. The Flex-Trim lineal sanding system can immediately follow the moulding station, fine finishing the part ready for the painting process.

Flex-Trim heads are not preshaped but conform to the shape of the work. The sanding strip and brush configuration is predetermined for the application, taking into account variations of shaped radiuses, depth of work and materials etc. and they are also quick to change over to other strips if materials or shapes have changed significantly. Alternative heads have been found to wear down and need constant resetting. Results in the field have shown that where other heads were used the replacement of abrasive medium was every 3 days, and when the same application was done with a Flex-Trim Retro head, the replacement of sanding strips was every 2 months.

The range of Flex-Trim abrasive strips is vast. From variations in grit size and shapes either rounded or jagged, to very hard ceramic particles to metal with various brush combinations and lengths, slits and other complimentary materials to

sand shaped wood, painted wood, fibreglass, remove paint on boats and deburr metal parts either pressed or laser cut like parts for the aircraft industry. They can also remove score marks from sanded flat sheets, remove plastic squeeze out from plastic parts generated by injection dies or remove glue from edged parts, just to name a few examples.

A Flex-Trim solution for sanding of UV coated flat panels in an installation has produced staggering results; with a sanding belt the consumption of paint was 30-50 gm /m<sup>2</sup> after processing, the same type of panel sanded with the appropriate Flex - Trim brush heads saw the paint consumption drop to 4-8gms/m<sup>2</sup>.

Our application seemed out of reach when I first started the journey based on our knowledge and experience at the time, but then found a solution to fine finishing for Kory Dubay by discovering Flex-Trim and UniSanding. I believe other areas in manufacturing down under can also find positive solutions and improvements to their sanding problems if its perfection in fine finishing that is sought by using Flex-Trim and Unisanding technology supported by a wealth of practical experience and advice.

For more information  
[www.flex-trim.com](http://www.flex-trim.com) and  
[www.unisanding.com](http://www.unisanding.com)

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