



PRINT FOR PROFIT #21

SQUEEGEE AND FLOOD COATER USE

People ask me why I give away process knowledge in articles and on the net for free. The answer is that those who read the treatise don't think it happens in their company. It is likely that the fuel consumption of the sales reps cars has a higher visibility than the cost of stencil wear or the condition of the flood coaters. Let's be honest flood coater profiles is not a very sexy subject. I put that word in so that when a lonely printer surfs the net after the pubs close he will be brought back down to earth with a discussion on flood coaters and squeegees.

These two items have specific uses that are key to the effective operation of the screen printing process, the charging and discharging of ink from to and from mesh openings. Managed correctly they can do their jobs efficiently. If they are used in a slip shod manner they can undermine the profitability of the process. Starting with the squeegee the thinking printer will unroll the squeegee from its packaging and store it flat for at least 24 hours before using to allow it to relax. Ideally between 20°C and 25°C and below 50% Rh away from a solvent laden atmosphere. This ensures that it will not try to twist when mounted in the holder and has maximum mechanical strength and chemical resistance whilst in use. There is nothing new about this as it is written data sheets supplied by the manufacturers and often on the packaging. Just pop down to the ink store and see if the squeegee material is stored under the bench coiled in its original box. In millions of years time geologists will find fossils of coiled squeegees and an ancient polymer species will be recognised, screen printus coilus a tool of a prematurely extinct subspecies of screen printus prostratus. No I haven't been sniffing thinners I have just booked my holiday in Vegas.

The squeegee is mounted into the holder and then believe it or not the printer or his assistant will often dress it on a squeegee dresser to level it off. Please don't tell the quality control department of the squeegee manufacturer otherwise there may be a mass suicide. If you knew how much effort went into preparing the perfect printing edge cut with a computer controlled knife there is no way you would allow it to be attacked by a knackered linisher let alone an engineered diamond wheel. The main reason for this unnecessary dressing is that squeegee holders get dirty and worn such that they no longer present a straight edge to offer the squeegee up to. Unless great care is taken in this initial dressing the squeegee is knackered from the start. A simple stencil saving trick is to round off the end of the squeegee. A square end of the polyurethane will cut into the stencil destroying the emulsion and eventually cutting through the mesh.

This is a simple and quick action that can be carried out on a press tool or linisher. Printers who don't bother to round off the squeegee will tape the underside of the screen to stop ink leaking through the damaged emulsion. It is one of the tricks of the trade!! Another example of being conditioned by bad practice.

The other aspect of squeegee management that I have mentioned several times before in these articles is when printers take a squeegee of the press during production and immediately dress it. Dressing the polyurethane squeegee whilst it is impregnated with solvents and chemicals from the ink produces a weak unstable edge that can



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breakdown immediately. Squeegees should be rested for up to 24 hours before dressing. Oh, by the way it normally says so on the box.

A noise that is regularly heard in many print shops is the clatter of a flood coater hitting the ground. As with the squeegee the quality of the edge is critical to the charging of the mesh with ink. A small nick in the edge will put a line through the image. Even worse is when it tears the mesh and that can be really messy. A way of removing the nick is to abrade the edge with wet and dry abrasive sheet. This is a short-term solution, as abrading the edge will alter the profile of the edge and consequently the flow of ink into the mesh where the profile is changed. Regular treatment such as this results in an uneven edge that produces a varied flow across its length. Flood coaters are not expensive and regular replacement or proper care can maintain the performance of a machine. You could consider re-machining the edge but that might not be cheap. Cover the edge with the protective plastic sheath from new when not in use. At least if it is dropped it may not be irreparable.

Think of the flood coater as an inhibited squeegee. It is shaped and set in such a way as to charge the mesh openings with a controlled amount of ink prior to the squeegee causing the ink to flow out of the mesh and on to the substrate.

The more rounded the edge of the flood coater the more ink it will load into the mesh. Sharp coaters will put less in than rounded. Printers will generally have both sharp and rounded profiles. Unfortunately over time sharp flood coaters lose their edge and perform as if they were rounded.

If you want to control the charging of the mesh the edge of the flood coater should be in contact with the mesh during its part of the cycle. If you simply distribute a layer of ink across the stencil filling of the mesh openings is likely to be uneven. When questioned as to why the flood coater was not in contact with the mesh the operator stated that because it was damaged it split the mesh if it was put into contact. Hey ho!

Generally flood coaters are made of aluminium. This is not necessarily the best material. When working with abrasive inks I have sometimes edged the coater with stainless steel and even had it hardened. Interestingly enough in the electronics industry in certain instances they use titanium.

Some machines, hand benches being one of them, do not use flood coaters. In these cases the squeegee is used as the flood coater. Expert practitioners of printing with a hand bench understand how that flood stroke can alter the condition of the printed ink film.

I can never understand how users of hand benches are often considered inferior when compared to automatic press operatives. Some of the most knowledgeable printers I have ever met were skilled hand bench printers. This is because they have to understand the principles of the process to get the best from it. The negative effect of excess squeegee pressure is quite apparent to the printer. Such people jealously guard



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their squeegees lest an unthinking colleague destroys the edge with a clumsily applied metal spatula when removing ink prior to cleaning. Similar guardianship is applied to stencils whose tension and integrity is crucial to a quality image. Cleaning the stencil carefully preserves the precious membrane for continuing printing. Ink has to be adjusted to suit the varying ambient conditions. Exponents will have mixes of thinners and retarder or gel retarder additions to suit most inks and conditions and they will weigh in those additions. A clean working area is essential and a printers hands have to be spotless. Most prints are racked for drying and dust in the atmosphere and on the racks will continuously contaminate the wet ink film.

Any potential automatic or semi automatic press operator should spend some time first running a hand bench. It would go amiss to put experienced auto operators on hand benches for a refresher. It is so easy to divorce yourself from the process with extended periods working on a touch screen or control panel. Insultingly labelled "Squeegee Bashers", exponents of the hand bench are often the really skilled printers in our industry. I am considering ghost writing a "Dots Do's and Don'ts" on behalf of one such hero of the hand bench (I said "bench") named Dorothy from Tamworth.

You will be reading this in the New Year. I am sure many resolutions will have been made, give up the fags, lose weight, cut down on the booze etc. Just try this one: **Make More Profit.**

You don't need an accountant, an extra salesman, more turnover or even the services of a consultant (did I just say that?). Simply look at production, talk to the printers, stencil technicians, ink mixers etc. They will have ideas of how to improve performance and reduce rejects. You will see unnecessary handling, systems that are not followed, systems that are wrong. Look at the detail. Every penny saved is a penny on your profit. The average net profit in the screen printing industry is 5%. 1% gain is a 25% increase in profit. Oh and by the way never assume! Remember George Dubya assumed the war was over because a battle was "won."