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SCREEN CLEANING

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Of all the procedures used in screen printing the most problematic has to be screen cleaning and reclamation. It could be argued that it should be avoided by making no attempt to reclaim the mesh and disposing of the stencil once it has been used, keeping just the frame. This certainly the case in several industrial applications where stencil performance must not be compromised by contaminated stencils or the slightest drop off in operation. If you were to use the "single use" technique it is likely that cured emulsion could be more robust as there would be no need to remove it in the reclamation process. For graphics printing and less critical industrial printing, if there are known to be regular repeats of print runs, it may well be worth keeping the stencil until it goes out of specification due to use or the information on it has to change.

This may sound like heresy to many exponents of the process. However times are changing fast. There is tremendous pressure on screen printing to face up to the digital challenge and look at more innovative ways of managing the process.

There are a series of factors that determine the cost effectiveness of "single use" stencils. Cost of mesh and re-stretching is paramount. This includes the need for the printer to stock new mesh, either to stretch themselves or in the form of mesh stretched on frames. Experience has shown that stretching your own mesh can be problematic and requires a lot of space, so buying in pre-stretched frames has become the favoured method particularly with large format printers.

The second most important cost (it may be the first) is the cost in terms of machine downtime and rejects caused by stencil quality deteriorating over time. Reclamation and misuse damage threads and reduce mesh tension. As the threads roughen they become increasingly difficult to reclaim and ghost images that are impossible to remove screw up print quality.

I have witnessed machine downtime running into virtually a day a week caused by use of meshes that were past their useful life. Printers search in vain for a mesh that has the right tension and no wear on the threads. When they find one the improvement in productivity can be as much as 50%. Combining all these hidden costs can quickly add up to a justification for replacing the whole stencil. It really is madness to have the foundation of the process, the stencil, creating the greatest variable and source of unnecessary cost.

Screen reclamation equipment and chemicals is another significant cost. If the reclamation is done by hand the capital cost is minimal but labour cost and potential hazards are higher. Automatic reclamation and the chemicals used for it are much



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improved but the capital cost of automatic equipment for small users can be prohibitive. Whichever method you use segregation and disposal of the special waste created is increasingly expensive. Disposing of ink waste and solvents in the public sewers is prohibited and could result in a substantial fine.

It can be argued that the shorter screen printed runs cannot justify using new mesh each time but it is also a consideration that these short runs should be printed digitally.

We arrive at the possible scenario that screen reclamation is unnecessary and should be discontinued. The screen printing process in the point of sale and graphics industry should be used for what it is most suited, long runs and special effects. Here the possible additional cost of using new mesh on every job can be amortised over the run or recovered in the premium price for printing special effects.

Food for thought! Allocating time or resources to carry out a full costing exercise could prove very beneficial.

Mesh reclamation will continue in many applications but increasingly stringent environmental legislation is putting the process under pressure. If things get much worse you won't be able to put tealeaves down the drain or if you do Earl Grey and Darjeeling will come in separate categories of Special Waste with Lapsang Souchong having a Hazard Warning label indicating the Health Risks. (Ed. Are you sure it is just tea you have been drinking? Or maybe magic mushrooms?)

Over recent years there have been undoubted improvements in the methods and chemistries used for ink and emulsion removal. One manufacturer of the latest automatic equipment claims to clean a mesh perfectly or your money back. A brave statement that those who have purchased the equipment will be able to confirm or deny. One thing is certain the equipment will have to be correctly maintained and using approved chemistries otherwise the guarantee will be void.

Suppliers take a much more targeted approach to deciding on the correct chemistries. Rather than the one suits all approach the newer high flashpoint biodegradable chemistries are mixed in a blend to suit your application. This is particularly the case where automatic systems are used as the wrong mix can completely glue up your reclamation unit. There are even smell eliminators that remove the microbiological deposits that create the hydrogen sulphide odours so common in recycled water.

So why should we use these newer "Environmental Friendlier" products. What is wrong with slapping on buckets of solvent along with very aggressive strippers and haze removers, they do the job? The new materials are more expensive. States the "old school" screen printer.

It is impossible to have a perfect solution where the chemicals we use are 100% recyclable and completely harmless to the environment and our health. What we can do



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is use materials that are sympathetic to the environment and harmless to our health if handled correctly and where economically viable link these to automated equipment.

Companies in the forefront of these improved chemistries are CPS Chemical products and Services and Remco Chemie. CPS have set a manufacturing company in the UK at their sister company MacDermid Autotype. This along with increased efforts of Remco Chemie through Colenso Screen Services, Marabu UK and others will improve the penetration of best practice into stencil reclamation.

What these improved chemistries prove is that you can reduce costs on several fronts. The amounts of chemicals used are reduced. The chemistries are not as aggressive to the mesh. Traditional materials with high levels of caustic not only eroded the threads but could also cause complete failure resulting in a burst mesh. In automatic systems the build up of glutinous materials is kept to manageable levels, filter blockage is far less likely. Because the solvents used have high flash points the need for powerful extraction is reduced. They have a low Vapour Pressure. A solvent's vapour pressure is its rate of evaporation at room temperature on a mercury gauge. So, the lower the vapour pressure a product has, the slower it evaporates. As a result, fewer VOC's are released into the air, translating to less air pollution.

Health and Safety issues are another of the driving forces for the adoption of improved chemistries, as stated before every material can a potential hazard but it is the duty of the employer to reduce these hazards to a minimum. Much lower VOC's mean the breathing in of the materials are reduced and low flammability virtually removes fire risk. Skin contact is still an issue as is the inhalation of aerosols. Simple safety precautions mean that for the Stencil Reclamation Technician work is far less hazardous gone are the days of space suits for the stencil technician.

The DSPA has an excellent CD on Solvent Reduction in the Screen Printing Industry called the "Printworks Calculator" this takes you through the stages of the process and the shows how the low VOC materials help you reduce the solvent usage.

For once in life you can win on all fronts, cost, productivity, health and safety and the environment. Doesn't that make you feel better?