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Specialist Applications in Pad Printing

Pad Printing has come a long way from the hand engraved copper plates and gelatine pads of Stoke on Trent in the 1960's. But then you would expect that. Just to give you some idea of the process. A copper plate was hand engraved with the required design, it was then mounted on the printing machine that had a large gelatine printing pad often more than 400mm in diameter that picked up the image from the plate and transferred it to the ceramic ware. The printed sample was then sent back to the engraver who adjusted the depth of the engraving to give the desired colour intensity. This process would be repeated until he was happy with the print. The copper plate was then chromium plated to make it far more resistant to the abrasive colours. As the plate became worn it was chromium plated again. Originally the hand engraved plates were used to produce waterslide transfers on release paper, direct pad printing speeded up the application process and removed the need to produce and store paper transfers. The pads, being gelatine, were not the best transfer medium. If the humidity increased they became sticky and talcum powder was sprinkled on them to aid transfer. As they dried out they became harder so again their transfer characteristics changed. Print shops contained many machines, some of them multi-colour and the Decoration Manager was a man of high status in the pottery. Those that still exist have changed over to silicone rubber pads and steel or photopolymer plates. The sadness of it all is that nearly all the potteries in Stoke on Trent that were leading the world up until the 1980's are now closed.

Pad printing is far from extinct it has evolved into a very sophisticated process. Used in applications as varied as the production of printed electronics and balls printed with cartoon characters. The capability of the process to print very fine detail and complex designs on flat curved and contoured surfaces opens the way to thousands of different applications. If you wear a watch, drive a car, use a mobile phone, play golf, have injections, use a computer, with these and many other activities you will see or be affected by pad printing. Like screen printing it is everywhere and most people have no idea of its existence.

When you are in the operating theatre and the surgeon asks for a catheter from the staff nurse to put into your unmentionables it is likely that she selects the right catheter because of the clear colour coding that has been pad printed on a TPX 301 pad printing system from Teca-Print supplied by Kaye-Dee Marking Solutions Limited.

The machine is utilised for this most demanding of applications, by printing 7 colours 360 degrees around a medical/catheter component. Machine speeds and pad positions are infinitely adjustable. A pre-programmed length of catheter material is fed through the machine and is manipulated so the correct colour code and part number is printed all the way round the circumference of the tube.

PRINTED CATHETER



The inks have to be specially formulated to be safe and adhere perfectly to the catheter material.

TECA PRINT TPX 301



Just remember many of the items used in the operating theatre are identified with pad printing.

Moving on to a completely different application where Tampoprint GmbH has created a machine that is effectively a pad printer without the pad. Now that sounds mad but it does make sense and it also uses leading edge printing technology to print corks! Yes corks those policemen of pleasure that hold the lovely liquid in the wine bottle.

TAMPOPRINT CORK PRINTER



PRINTED CORK



So what is clever you may ask, well the corks are fed through the system at a rate of up to 3500 per hour and roll across a plastic gravure plate or cliché. The image is etched internally on the plastic plate by the machines' own laser unit. The flexible plastic plate material is fed off a roll that will produce 165 different images. The ink is fed automatically and does not have to be cleaned down between images. This means it only costs about £10 in consumables to print 1,000,000 corks. If necessary artwork can be manipulated remotely via the Internet. An aspect that particularly pleased Tampoprint UK Limited who supplies the machine in several countries is the development of a suitable ink that would stick to the cork and not taint the wine. Cheers fellas.

At this time of the year more hardy souls practice extreme sports and that is fine but it is also a very efficient way of expiring permanently. Only an idiot would do snow board

tricks or out run avalanches without effective head protection. A British company Ruroc Limited of Gloucester manufactures the ultimate head protection for extreme sports enthusiasts that uses pad printing as the method of branding and decoration. These helmets are cool, silvered visors, cleared of mist by a controlled air flow as you career like a crazed storm-trooper down the slopes into the arms of a wistful maiden holding a bottle of fine wine from which she has just removed the printed cork. (Your off on one again Peter. Ed.) Sorry Gov. back to the printing.

Ruroc helmets are made from high grade polymers that are light but incredibly tough. Printing on them is possible using again specialized inks and equipment from Tosh Italia sold in this country by Tampo Graphic Services Limited. As with the two previous suppliers TGS Limited have vast experience in the pad printing process and specialist applications. For all items produced for this leisure market image is everything therefore top quality printing is essential. The system has not only to achieve this but give Ruroc ample scope for meeting the soaring demand for this helmet.



RUROC HELMET



A finished helmet shell is an expensive component so the last thing Ruroc can tolerate is rejects caused by poor printing. The servo driven pad printing machine reduces the possible variables to virtually nil. The relatively large moulding is securely held on its specialized jig and the ink is transferred from a photopolymer plate very precisely. The closed cup system maintains the condition of the ink for extended periods.

A Comec XE Tech 16-20 is a bells and whistles machine that enables complex shapes to be printed with a series of multi-colour designs. It has six printing stations with the ability to select any one of three different pads. Four of the print stations will print an image diameter of 145mm and the other two 185mm diameter. The system is computer controlled and allows up to 50 different print phases in each program.

COMEC XE TECH 16-20



This equipment is ideally suited for white goods manufacturers who have a many different fascia designs in their range. Supplied in this country by Inks and More of Stoke on Trent this Comec machine has been installed in more than 50 applications worldwide. It is rumored that it will also make the tea.

If as an economy we manage to restrain ourselves from sending any innovative product out to the Far East to be produced we may be able to retain our manufacturing industry and in the longer term our standard of living. Alternatively we can be like those underpaid masses working 12 hours a day, six or even days a week, sleeping in dormitories on the company premises with only a few days holiday a year. If we do see sense and continue to make products then printing systems such as these will continue to be purchased in the UK. Alternatively we could all become politicians and sit on the gravy train until it runs into the buffers.