



LET'S TALK ABOUT DIGITAL PORCELAIN DECORATION

BY SERGIO BARRO

Brief overview

Since the year 2000 (appearance of the first inkjet) substantial improvements have happened, resulting in these last couple of years “digital fever”.

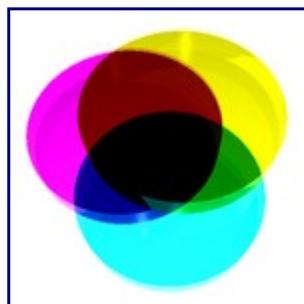
It's becoming “a must” for every respectable manufacturer and consequently tile importer to have its digital product/s.

So while I finish my “The Porcelain Jungle” addition (www.theporcelainjungle.com) all focused on digital decoration, I would love to send you this “brief memo” that I hope will turn useful to your sales team.

Digital porcelain Technology

I'm sure you own or use a printer and you're familiar with the most popular color system CMYK (acronym for Cyan, Magenta, Yellow and Black called K – Key to distinguish it from Blue) which when overlapping, generate many more colors.

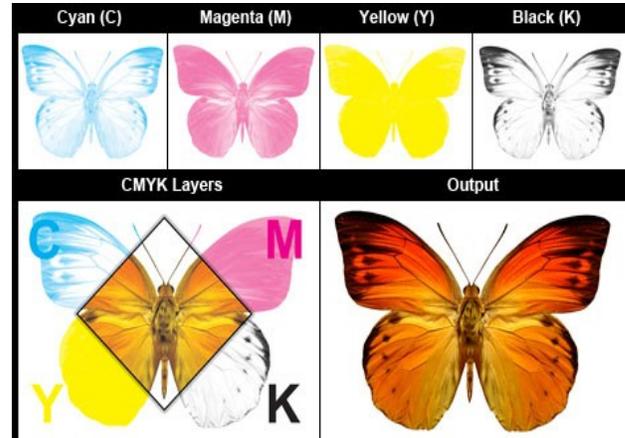
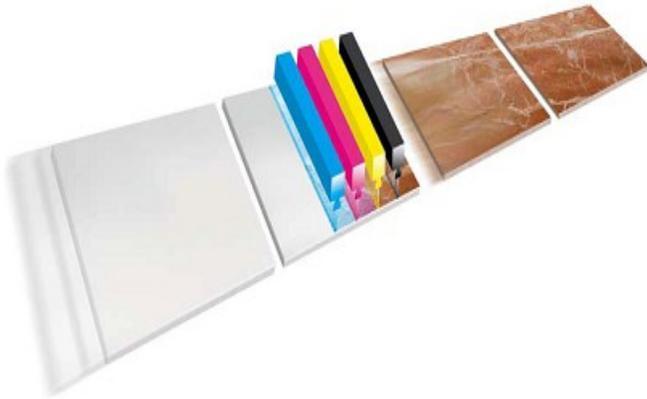
So in digital porcelain technology there's no contact with the tile.



There are different digital decorating machines out there, that can have 3, 4 or 6 inks, working in different ways but all sharing the same basic idea, i.e.:



when they reproduce an image (butterfly, Rojo Alicante marble in this example) the overlaying of colors do the trick.



Digital decoration VS silk screen and roller system

Without engaging into too technical information like (DOD drop on demand, SOD spray on demand or “Gray Scale” drops of variable size, which I will explain in my Porcelain Jungle web site soon) let's pin point the most important improvements/characteristics of above technologies.

A little bit like the television or the camera industry, digital porcelain has basically improved three-dimensionality, sharpness and depth of colors but also:

- 1) Decoration up to the edges of the tiles (even when distressed)
- 2) Decoration in the shallow and high end of the tiles (avoiding lack of color and cheap look)
- 3) Huge graphic variation (40/60 different faces) VS limited variability of max 1440 mm (4 ¾ ft)
- 4) High definition normally abt. 300 dpi (dots per inch) VS the 80 dpi of screen and roller system
Digital technology can reach up to 1000 dpi but it's generally not needed for tile/stone reproduction, usually needed for pictures reproduction.

and then again from the manufacturer's standpoint:

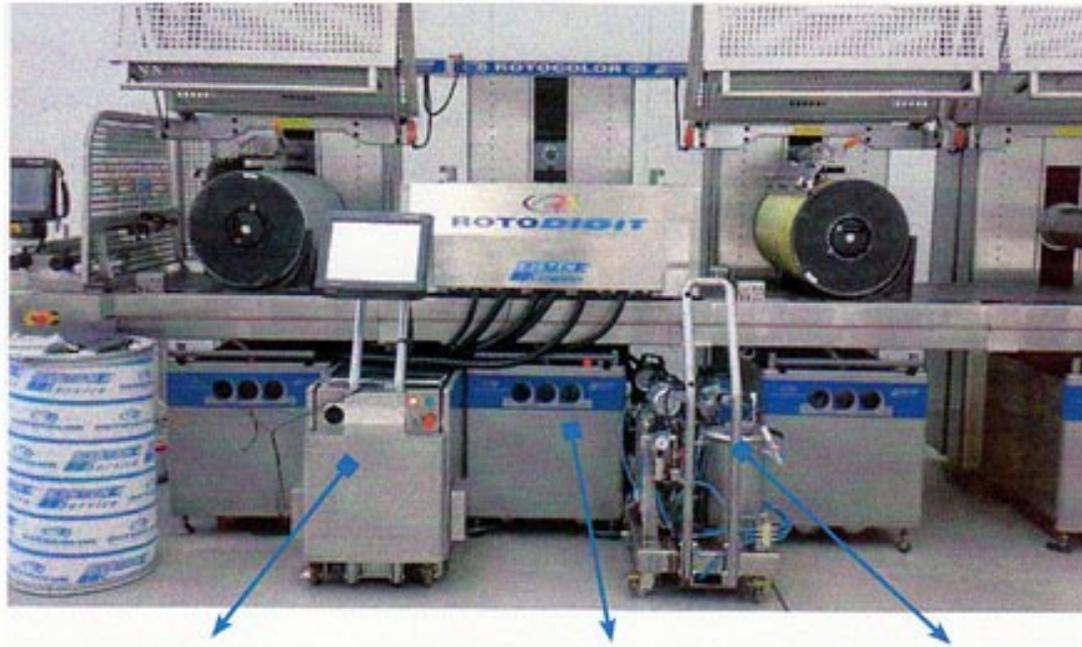
- flexible work-flow production runs
- more consistent production
- less storage space for rollers, screens, etc.
- simulation of production outcome
- etc.

Is digital decoration the solution for everyone?

...so can this technology allow ANYBODY to make great tiles?

Of course not!

- 1) the human factor in maintaining these machines at their peak avoiding “banding” (clogging of the nozzles due to change in temperature or size of the drops)
- 2) the human factor in selecting just the right design
- 3) the human factor that combines traditional technology with digital one for optimal outcome
- 4) the human factor in running the production at just the right color intensity to allow optimal production speed (it can reach 10.000 sq.ft. Each hour) without compromising look , nozzles heads and ultimately the price of the tile.
- 5) Etc.



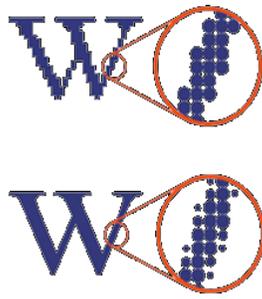
Control unit

Printing unit

Feeding unit

Picking the right machine can also make a difference

As previously said there are machines that work with 4 colors other with 5 or 6, if of course you use Magenta to make a “Noce” (Brown) is not going to be as brown (or less expensive) as if you had an additional container with proper Brown and an extra one with White... If you had a machine that works on a “binary mode” (same size drops) your final product definition will be less precise than one uses that uses “gray scale mode” (different size drops)



Example 360x360 Dpi (binary mode, i.e. drops always of the same size above picture)

Example 360x360 Dpi (Gray Scale mode, i.e. Drops of different volume below picture)

The result is the pixelized (separated dots) are avoided and more uniform color is obtained.

Here some examples (beside the rotodigit above):

Cretaprint (orange), Kerajet (blue), Jettable (Yellow), TecnoExamina (Gray and Blue), DWD065 (light gray and black), Durst 75HD (Dark and light gray), Jet Digital printer 08 (green)



Last “food for your thoughts”

The problem of reproducing accurate and original tones is a constant issue for those who have the task of doing it in a repeatable way.

For ceramic tile manufacturers (unlike printing on paper) the task it's even harder since this decoration is fired at abt. 1200 c which means constant different chemical reaction.

The most important aspect of using digital inkjet decoration is not in the mechanics of it on the glazing line itself. It's the rationalization that must occur to set up the printing process so that it faithfully reproduces the original digital picture despite all of the complex machine setup, ink, pigment, glaze and firing issues.

Therefore it is no surprise that in a manufacturing facility a comprehensive mix of specific expertises are needed: software, hardware, graphics, ceramic production and ceramic engineering specialties.

