

## Full Digital, barrier-free decoration

## 全数码化无障碍装饰

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In recent years digital decoration has established an important position in the ceramic industry, a sector that delivers innovative, cutting-edge products suitable for all architectural applications. The glazing lines present in production facilities are now almost all equipped with digital printers for depositing the colours that will serve to decorate the tile, as if the ceramic body were a blank sheet ready to be transformed into a decorated surface without placing any limit on creativity. Creadigit digital printing from System is an invaluable and highly innovative decoration tool capable of adding unprecedented aesthetic, emotional and functional value to the ceramic surface. It was developed through intense research efforts that have made drop-on-demand digital inkjet printing unique anywhere in the world.

If we look at the process of digitisation in the ceramic sector, we see that it is opening up potential for new functions, including the possibility of performing glazing and final protective treatment with a single-pass inkjet system. Back in 2014 System was the first company to launch this concept with Diversa, a 25 metre long integrated ceramic line in which all the steps in tile decoration were designed to be performed digitally. Diversa became the design vision for the ceramics of the future.

Over the following years, **full digital has become reality and the product segment in which it has seen the greatest expansion is that of large-size ceramic tiles.** The reason lies in the advantages offered by the digital process, first and foremost the fact that in the production of large-size tiles only first-choice products are accepted. The full digital process allows for perfect application of material, ensuring precise, waste-free consumption and allowing for the production of small batches with great graphic variety. System has achieved total digitisation of the ceramic production line thanks to the high performance of Creadigit as well as the development of a series of technological innovations. These include:

1. interchangeability of printheads in the Creadigit bars; these printheads can be either of the small drop type for high definition designs or high discharge models for glazing and depositing large quantities of materials;
2. the development of Creavision, the vision system used for aligning the graphic design of the incoming tile;
3. introduction of a sequencer for synchronising two or more machines on the line.



近年来，数字装饰确立了在陶瓷行业中的重要地位，为所有建筑应用提供创新型前沿的产品。生产设备中的施釉线现在几乎都配备为瓷砖装饰进行喷印颜色的数码打印机，瓷砖坯体就如同一张白纸，可以让人尽情发挥创造力，把它变成一个装饰表面。西斯特姆的Creadigit数码打印是价值不菲且高度创新的装饰工具，能够给予陶瓷表面前所未有的审美价值、情感价值和功能价值。

这种技术经过不懈研究努力开发而来，让按需数字喷墨打印技术在全球独树一帜。

纵观陶瓷行业的数字化进程，我们可以看到它在新功能上的开拓潜力，包括用单通道喷墨系统进行喷釉并做最后的防护处理。

早在2014年，西斯特姆就是第一家推出Diversa概念的公司，Diversa是一条25米长的整合所有瓷砖装饰步骤的以数字形式呈现的陶瓷生产线。Diversa成为未来陶瓷的设计愿景。

随后几年，全数码化成为现实，产品方面见证了大规格瓷砖的巨大增长。这得益于数码化工艺的优势，而最重要的一点是在大规格瓷砖的生产中，只有最佳的产品才会被接受。全数码化生产过程能完美地应用原



Thanks to its highly specialised technical departments, System is continuing to create real innovation and open up new applications, confirming its mission as a “process innovator” with globally unique solutions. The full digital process initially used solvent-based inks and materials, although these proved not to be so efficient because the fully-digital line requires shorter drying times and a greater focus on the environment. In these processes the quantity of material deposited on the tile using inkjet technology is much greater than that of a hybrid line, where digital decoration only involves the application of colours. Due to their chemical nature, the combustion of solvent-based products in the kiln is not entirely efficient, resulting in the release of small odorous molecules into the atmosphere. In keeping with its focus on environmental sustainability of its products and processes as a key factor driving innovation, System has begun to analyse multiple factors, including continuous improvement and monitoring of the production plant and the development of new inks and materials. The glaze and colour producers are in turn proposing new solutions that System is adopting on the Creadigit system, namely the use of high-density, high particle-size solvent-based inks and inks with a high percentage of water. All solutions are designed to improve the process and eliminate the odorous component. For several years System has been in the front line in developing and promoting water-based inks and materials, the area where it sees the greatest development potential for the future. X

材料，确保材料使用精确、无损耗，并让有大量图形变化的小批量生产成为可能。

由于Creadigit具有良好性能，且开发了一系列技术创新，西斯特姆的瓷砖生产线已实现了全数码化进程。这些创新包括：

1. Creadigit打印杆中喷头的可交换性：这些喷头既可以用于高清晰度设计的低墨量模式，也可以用于喷射和大量材料的高墨量模式。
2. Creavision的发展：Creavision是用于校准即将到达的瓷砖图案设计的视觉系统。
3. 引入一个程序装置以同步使用生产线上两台或更多设备。

由于高度专业化的技术部门，西斯特姆持续创造了真正意义的创新并开创了新的应用，用全球独一无二的解决方案肯定了它作为“工艺创新者”的使命。

全数字化生产工艺最初使用溶剂型墨水和材料，虽然后来证明这些都不怎么高效，因为全数字化生产线所需干燥时间更短，且更注重环境保护。在全数字生产过程中，通过喷墨技术施加到瓷砖上的材料数量比混合生产线上的要多得多，在混合生产线上数字化装饰只有上色而已。由于自身的化学属性，溶剂型产品在窑炉中的燃烧不充分，导致气味难闻的微小颗粒被释放到了空气中。

西斯特姆一直重视其产品和工艺的环境可持续性，这是其驱动创新的重要因素，西斯特姆已开始分析各种因素，包括持续改良和监控生产设备并开发新型墨水和材料。

釉料和颜料制造商相继提出了新的解决方案，西斯特姆同样采纳了这些新的解决方案，并将它们用到Creadigit系统中，即采用密度高、粒径大的溶剂型墨水和含水量较高的墨水。所有的解决方案都是为了改善生产工艺、消除带有难闻气味的成分。几年下来，西斯特姆在开发和改进水性墨水和材料方面处于领先地位，这是在未来还有极大发展潜力的领域。X

