EN

GAMMA DG

True waterbased ceramic glazes

45 µm particle sizes & high viscosity

Variable laydown up to 1 kg/sqm

Durst RockJet™ print head technology inside

Durst VariStructure™ technology

REVOLUTIONARY SYSTEM FOR DIGITAL PRINTING OF STRUCTURES ON CERAMIC TILES

durst

TECHNOLOGICAL INNOVATION

The revolutionary Gamma DG Series is designed for digitally printing of structures in high definition on flat tiles with ceramic glazes, maintaining the esthetical characteristics, technical properties and economic benefits of traditional ceramic glazes.

The visual and tactile effects obtained with Gamma DG make the final product look extremely natural and hardly distinguishable from natural materials by offering the following benefits:

> Total design flexibility.

> Develop completely new, innovative, and unique tile collections with unlimited structures in perfect registration with the design, not possible with current traditional methods.

> Strongly visible added value to the final product through new visual and tactile effects.

> Extremely natural and stunning 3-dimensional look maintaining the superior properties of ceramics compare to othver flooring alternatives.

> Increased production automation to assure the needed flexibility and efficiency for a future ‘on-demand-production’ and inventory optimization.

EXTREMELY REALISTIC STONE & MARBLE

Immediately noticeable added value: high resolution and graded structure printed with Durst Gamma DG (RockJET™ and VariStructure™ variable glaze printing technologies).

Printed on a flat ceramic tile in total correspondence with the graphics printed with a fully synchronized Gamma XD decor printer for an extremely realistic, natural look and feel.

NATURAL WOOD WITH CERAMIC PROPERTIES

Gamma DG digital structure printing in perfect match with the décor creates a stunning 3-dimensional depth effect making it visually and tactile difficult to distinguish from natural products, while having all the superior properties and characteristics of ceramic tiles.

SUBSTANTIAL PRODUCT DIVERSIFICATION

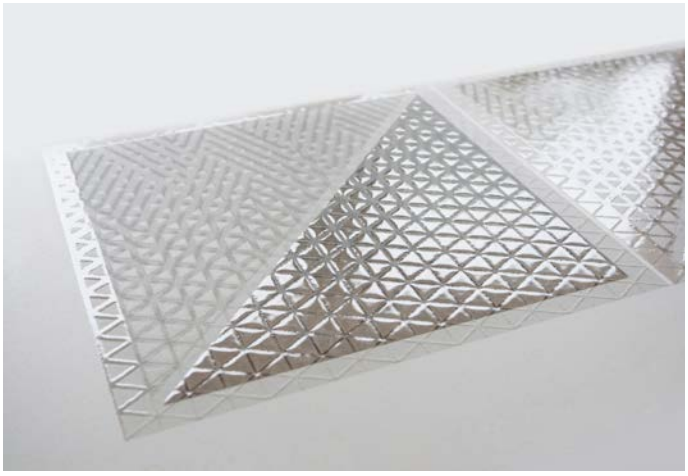
Product differentiation through more colors/effects will not led to success as this is based on existing technologies and can therefore be copied very rapidly. In addition, it will only complicate the whole process from development to production, add additional cost without providing a clearly visible and appreciated value added by the end consumer.

Substantial and successful differentiation will only be possible through a real technological innovation as offered by the revolutionary Gamma DG digital structure printing technology in combination with a synchronized Gamma XD décor printer, providing completely new design possibilities not available with current technologies.

The extreme fidelity in the reproduction of an unlimited number of structures in high definition and in total correspondence with the graphics allows for the first time to produce tiles with a strongly visible value added, which significantly differentiates such tiles from those made with traditional technologies with very limited and therefore repetitive structures and not in register with the design.

The visual and tactile effects obtained with Gamma DG make the final product look extremely natural and hardly distinguishable from natural materials.

Gamma DG offers a very high resolution and quality of details to provide a total design/structure flexibility for floor and wall tiles from natural stone, marble, wood to graphical patterns, or combinations of it.

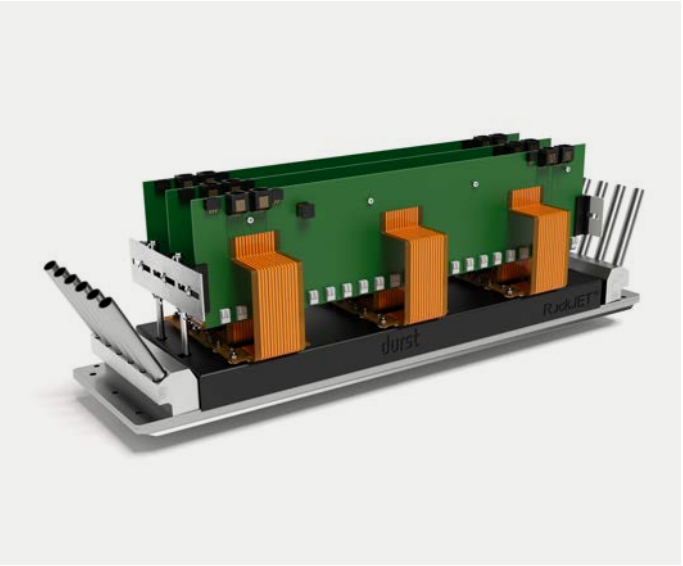


Simultaneous printing of different glazes, matt & glossy, onto the same tile (realized with Gamma DG version with 2 glaze bars)

REVOLUTIONARY PRINT HEAD TECHNOLOGY DESIGNED FOR THE FUTURE

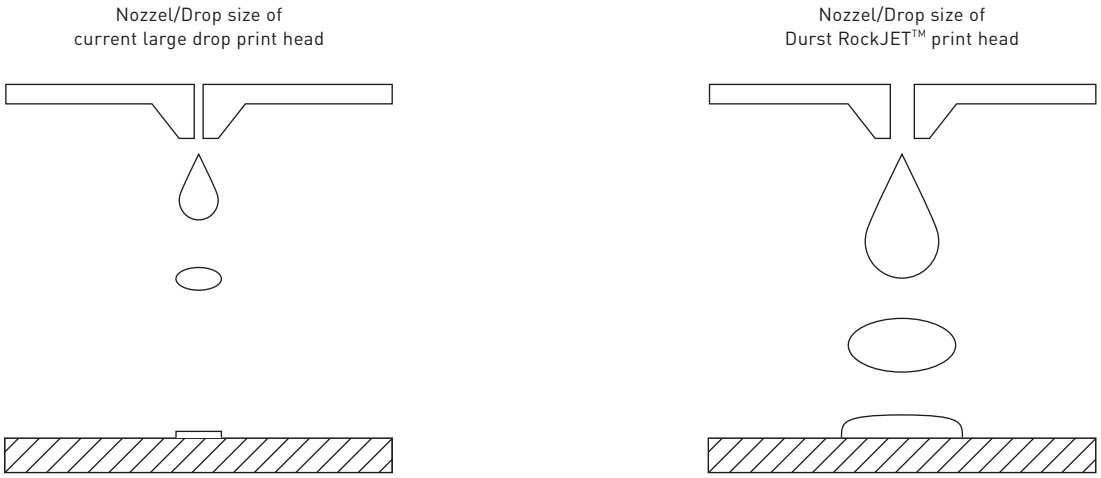
The core technology is the proprietary and patented Durst RockJET™ print head specifically developed and manufactured by Durst for digital printing of ceramic glazes with similar characteristics and properties of traditional glazes.

The revolutionary innovation is that Durst RockJET™ is the first print head able to print on flat surfaces glazes with very large particle sizes (>45 microns) and with high viscosities to create important and highly defined structures with significant amounts of glazes applied in a targeted manner. In combination with the Durst VariStructure™ technology for a controlled, variable laydown very smooth transitions for a very realistic and natural look can be obtained.



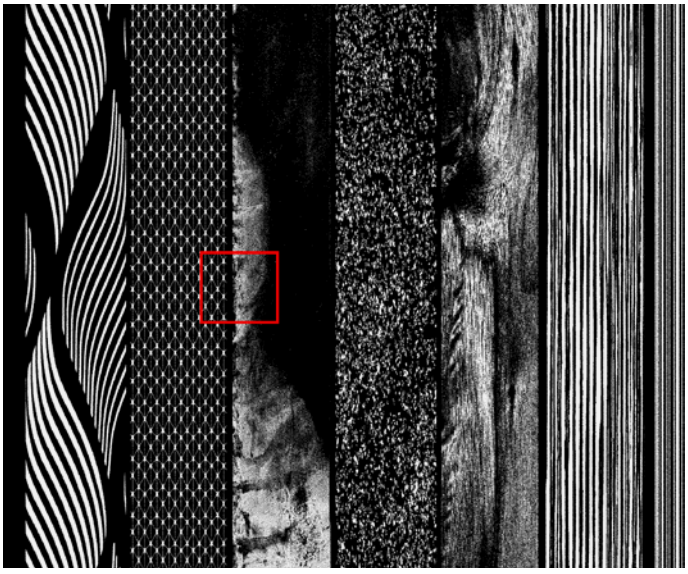
HIGH LAYDOWN AT STANDARD LINE SPEEDS

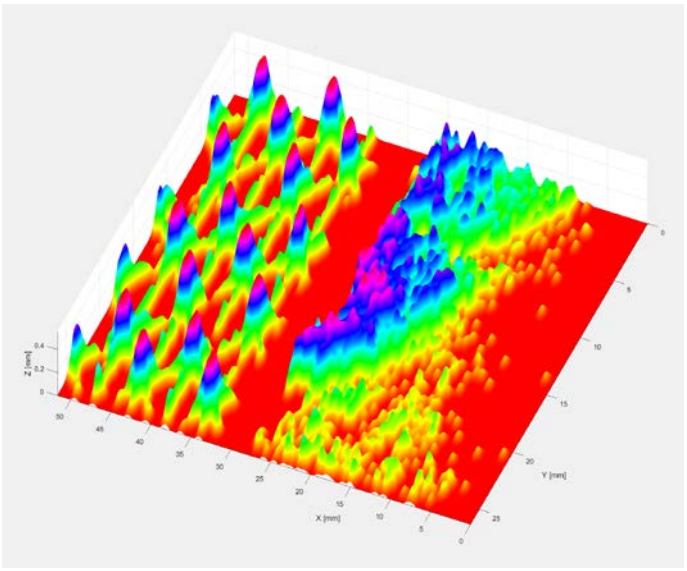
With the Durst RockJET™ print head technology the Gamma DG has a glaze discharge capacity of up to 1 kg/m² per single glaze bar of high viscosity glaze at 20 m/min., which is substantially higher than any other large drop print head.



DIGITAL PRINTING OF STRUCTURES ON FLAT TILES FOR INCREASED PRODUCTION FLEXIBILITY

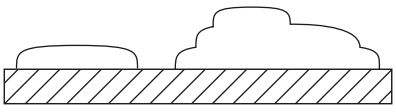
Durst RockJET™ print head technology can handle fluids with much higher viscosities to create strongly visible and very defined structures, thus allowing to work with flat molds and create unlimited number of structures digitally for an ultimate flexible production.





VARISTRUCTURE™ TECHNOLOGY

The Durst VariStructure™ technology allows to control the laydown in a very precise and repeatable way to provide an extremely natural look.



GAMMA DG

Glaze print engine

With Durst RockJET™ print heads
(True waterbased glazes > 45 microns)

Tile guiding & centering

For printing in perfect registration

External main glaze tank

For fast & easy operation

Fast glaze loading/changing

User guided procedures for emptying, cleaning and filling glaze

Glaze control & filtering

To assure reliable performance

Dual gullwing doors

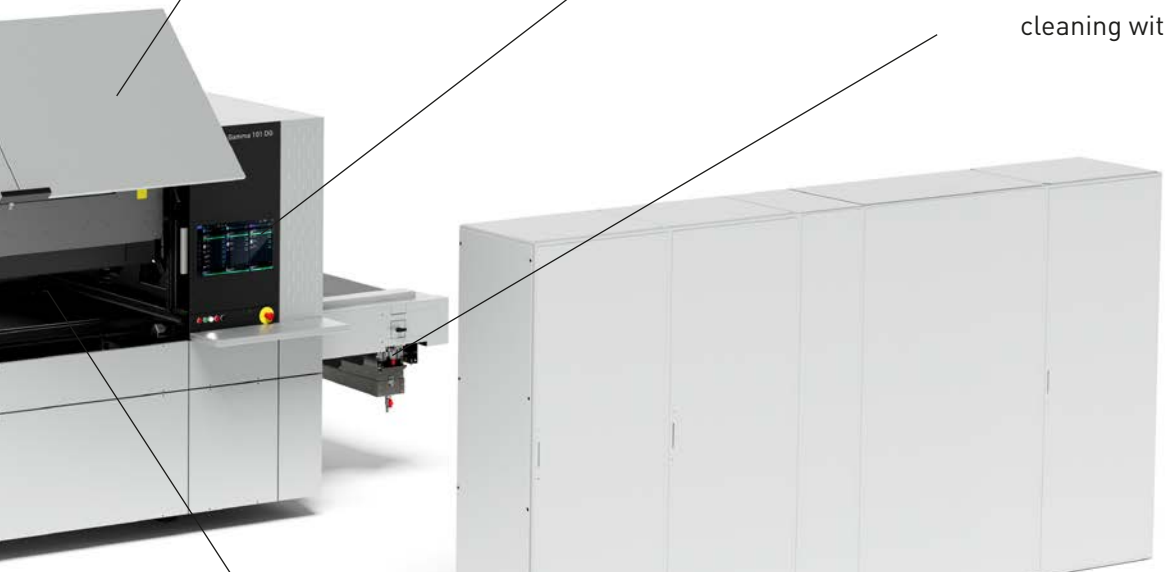
For easy maintenance
and service access

User interface

Durst Software powered with 64 Bit Linux
workstation for fast data handling

Belt cleaning

Continuous, automatic belt
cleaning with water



Control tower

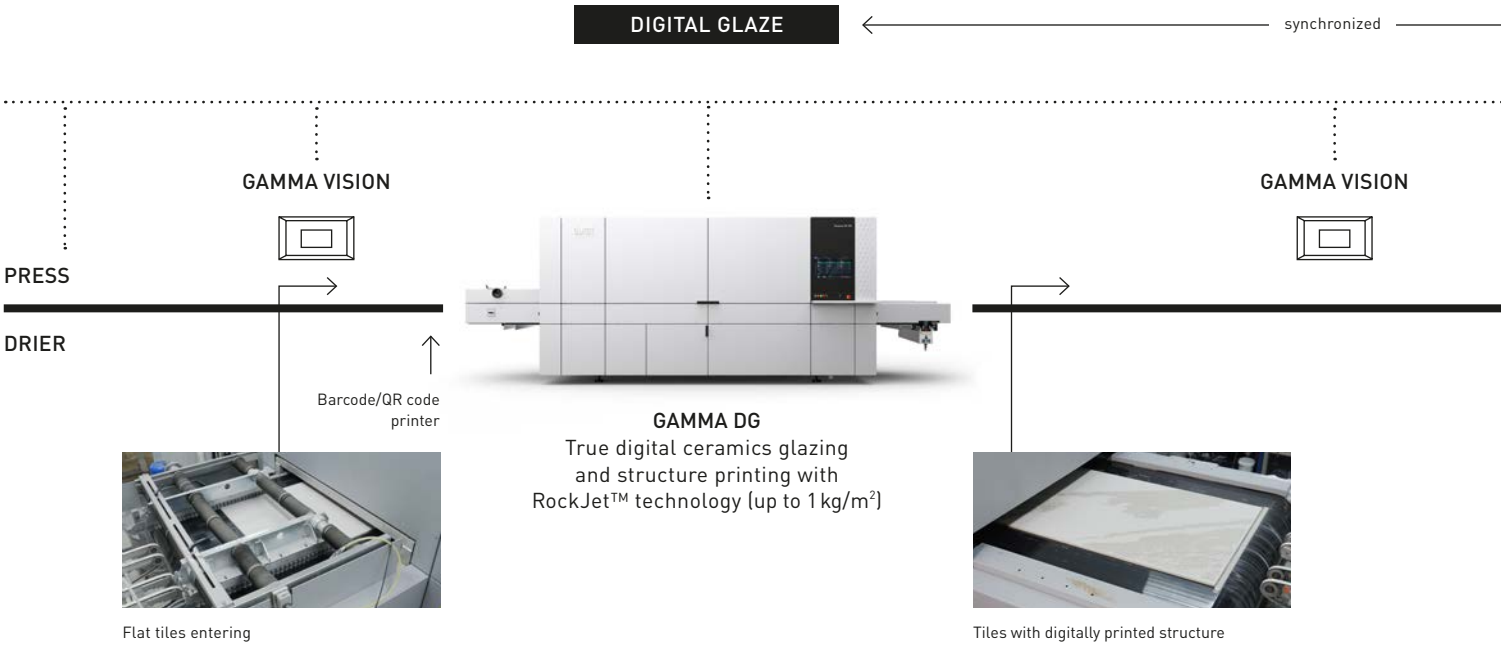
Electronics/power supply

Automatic print head cleaning

Synchronized with Gamma XD

TRUE DIGITAL TILE PRODUCTION

The complete digitalization of the glazing lines has long been a wish of all tile manufacturers in order to make the entire production process more flexible and cost-effective. On the one hand the optimization and reduction of batches to optimize sales and storage with guaranteed repeatability, while on the other hand new possibilities for the development of innovative products in the tile sector with an unlimited number of structures in perfect match with the décor to imitate nature.

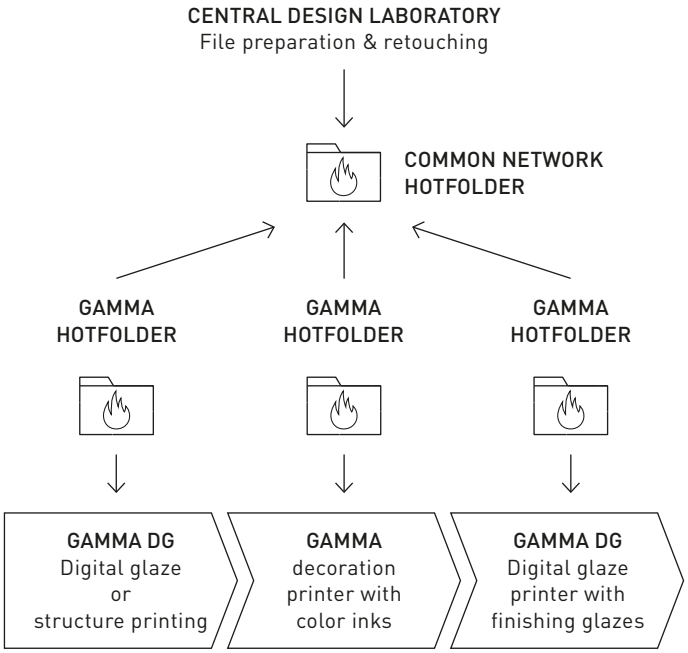


WORKFLOW AUTOMATION

Durst Gamma offers the most flexible and most efficient way of operation featuring different workflow solution to suit different customer needs.

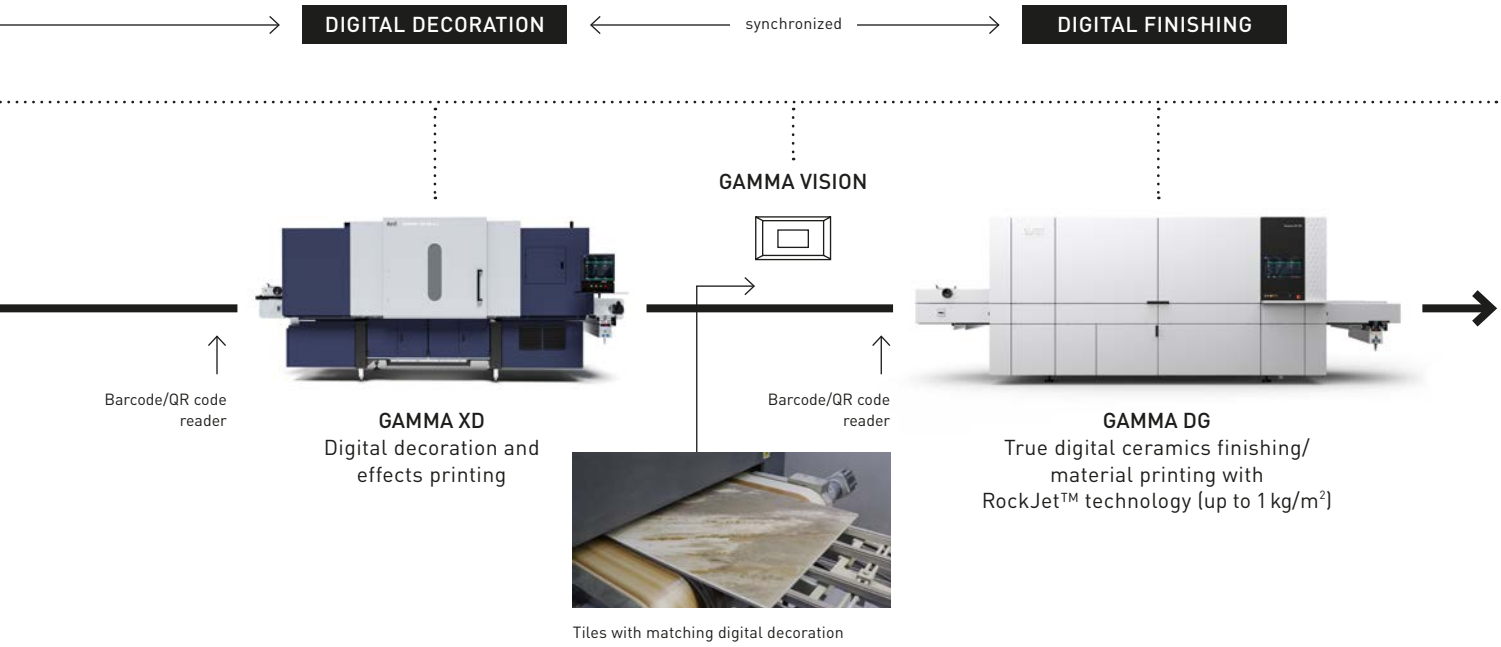
With the optional HotFolder operation all jobs can be centrally prepared and automatically sent to the printing queue of each printer ready to print.

> **Fully automated job creation based on preset job settings**
> **Fast and secure operation**



Digital printing of unlimited structures with Gamma DG fully synchronized with the décor printer (Gamma XD) provides a full digital tile production process without exchanging or adjusting mechanical parts when changing products, regardless of batch size.

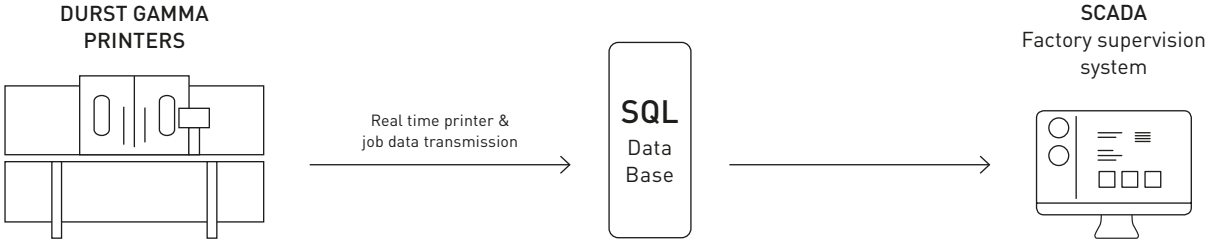
Gamma DG guarantees a perfect synchronization with the Durst Gamma XD decoration printers at digital file & image processing level, important to maximize the advantage of digital glaze/structure printing with variable structure and design match.



Tiles with matching digital decoration

INDUSTRY 4.0

Optional function for a bi-directional connectivity with real time data exchange via standardized SQL data base for an efficient production control and monitoring with all major central factory supervision and business management systems.



TEST MULTIPLE STRUCTURES ON THE SAME TILE

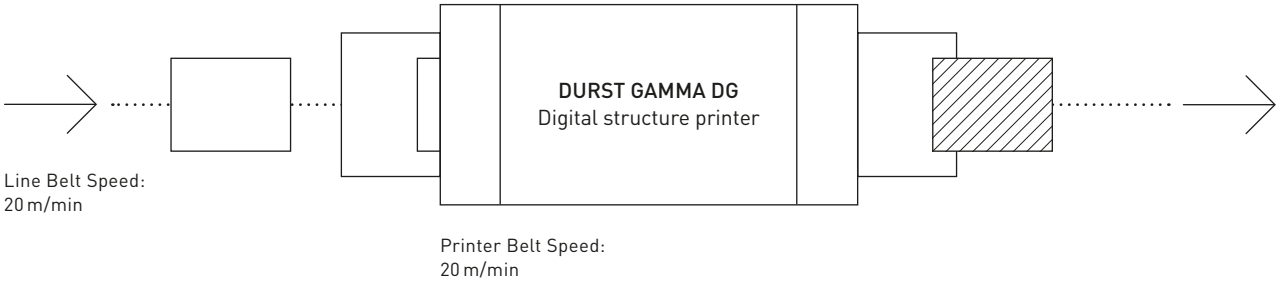
Digital structure printing with Durst Gamma DG also brings important advantages in the development and industrialization phase of new products.

It is now possible to test several different structures on a single tile without both additional costs (production of different mechanical molds) including retooling in case of necessary modifications.

SINGLE OR DUAL LINE OPERATION

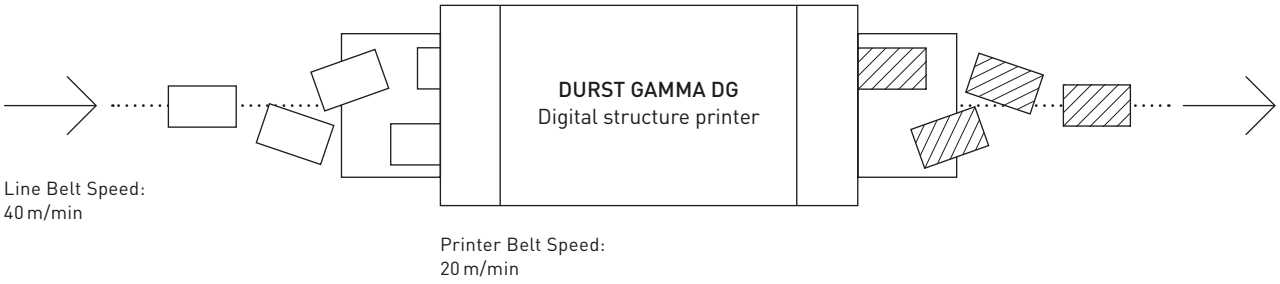
Depending on tile sizes and line speed requirements the Gamma DG can either be operated with a single line (standard configuration) or with an optional dual line operation through two completely independent printing queues.

SINGLE LINE OPERATION FOR LARGER TILES WITH/OR LINE SPEEDS UP TO 20M/MIN.

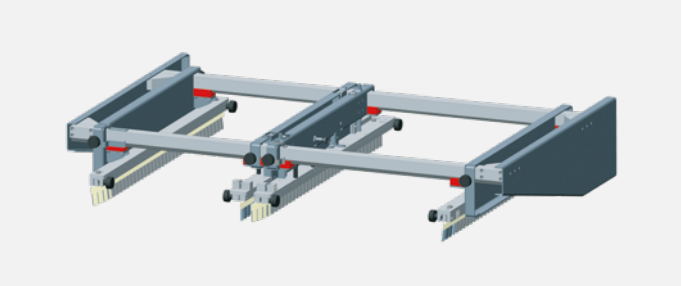


OPTIONAL DUAL LINE OPERATION FOR SMALLER TILES WITH LINE SPEEDS >20 M/MIN.

This allows printing either the same job/images on both lines for smaller tiles with line speeds greater than 20 m/min. or completely different jobs/images on different tile sizes (width and length) on each line, which means 2 printers in one. Each line has his own sensor to detect if a tile is coming and to start the decoration in register to the tile as today in single line printing.



Special tile guiding system with two individually adjustable tile guides and possibility to quickly change from single to double line and vice versa. Each tile guiding can be individually adjusted to its desired position and the inner two tile guides can quickly be moved up for switching to single line operation or to run a test of a larger tile size.



SUSTAINABLE & COST SAVING TECHNOLOGY

> On-Demand-Production = optimized use of resources
> Water-based glazes for low emissions
> Drastically reduced glaze waste
> Reduced water consumption for cleaning
> Economical short runs
> No mold inventory
> Short total time from design creation to finished product
> Minimized downtime/optimized energy utilization

TECHNICAL DATA

Printer dimensions
Gamma 101DG: 6390 mm x 2300 mm (L x W)
Gamma 141DG: 6390 mm x 2431 mm (L x W)

Space requirement enclosure dimensions
Gamma 101DG: Min. 8400 x 5300 mm (L x W)
Gamma 141DG: Min. 8400 x 5430 mm (L x W)

Printer weight
Gamma 101DG: Approx. 5500 kg/12125 lb
Gamma 141DG: Approx. 7000 kg/15435 lb

Power supply
230/400 V AC 3-phase + N (+/-10 %), 50/60 cycles,
Gamma 101DG: 40 KVA (55A)
Gamma 141DG: 45 KVA (65A)

Configuration
Printer can be factory-configured for right- or left-hand operation

Installation
Gamma DG can be installed with or without enclosure

Water connection
Filtered and softened tap water for print head and glaze circuit cleaning Connection ¾ inches (DN20), 80 l/min.

Compressed air connection
Filtered, oil-free compressed air for print head and glaze circuit cleaning Connection/supply: ½ inch (DN15), 900 l/min, air pressure 6.5 bar

Network connection
For file transfer, communication between synchronized printers and devices and Industry 4.0 functions

Software
Proprietary, patented 64 Bit LINUX based Durst Gamma software with comprehensive and fast job preparation and monitoring

Printing technology
Durst proprietary, patented RockJET™ print head technology

Glaze supply & cleaning
External main glaze tank and internal secondary glaze circuit with continuous recirculation and heating for nonstop operation.Fast and user guided glaze circuit emptying, cleaning and refill. Changing glaze type in approx. 1 h

Glaze type
True water-based glazes with very low organic content and 45 µm particle sizes. Open System – Cooperation in place with all major glaze manufacturer

Glaze laydown
Up to 1 kg/m²

Belt speed
Up to 20 m/min depending on resolution

Tile width (un-fired)
Gamma 101DG: From 100 to 1000 mm depending on printer configuration
Gamma 141DG: From 100 to 1400 mm depending on printer configuration

Gamma 101DG	
Printing Width	No. Print Heads
292 mm	8 (2 x 4)
438 mm	12 (3 x 4)
584 mm	16 (4 x 4)
731 mm	20 (5 x 4)
877 mm	24 (6 x 4)
1000 mm	28 (7 x 4)

Gamma 141DG	
Printing Width	No. Print Heads
292 mm	8 (2 x 4)
438 mm	12 (3 x 4)
584 mm	16 (4 x 4)
731 mm	20 (5 x 4)
877 mm	24 (6 x 4)
1000 mm	28 (7 x 4)
1170 mm	32 (8 x 4)
1310 mm	36 (9 x 4)
1400 mm	40 (10 x 4)

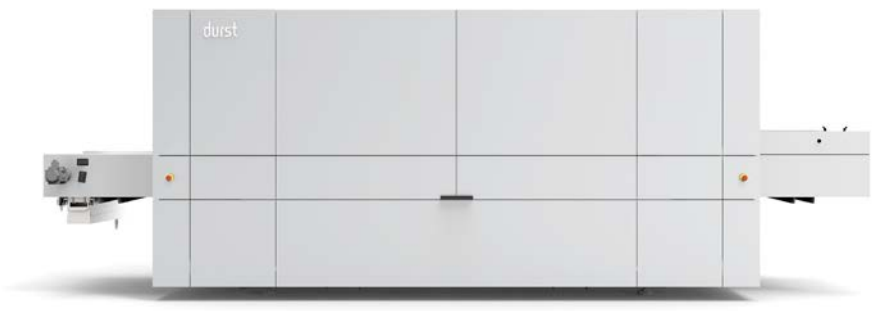
Tile thickness (un-fired)
6 to 35 mm

Tile temperature
Max. 75 to 80 °C

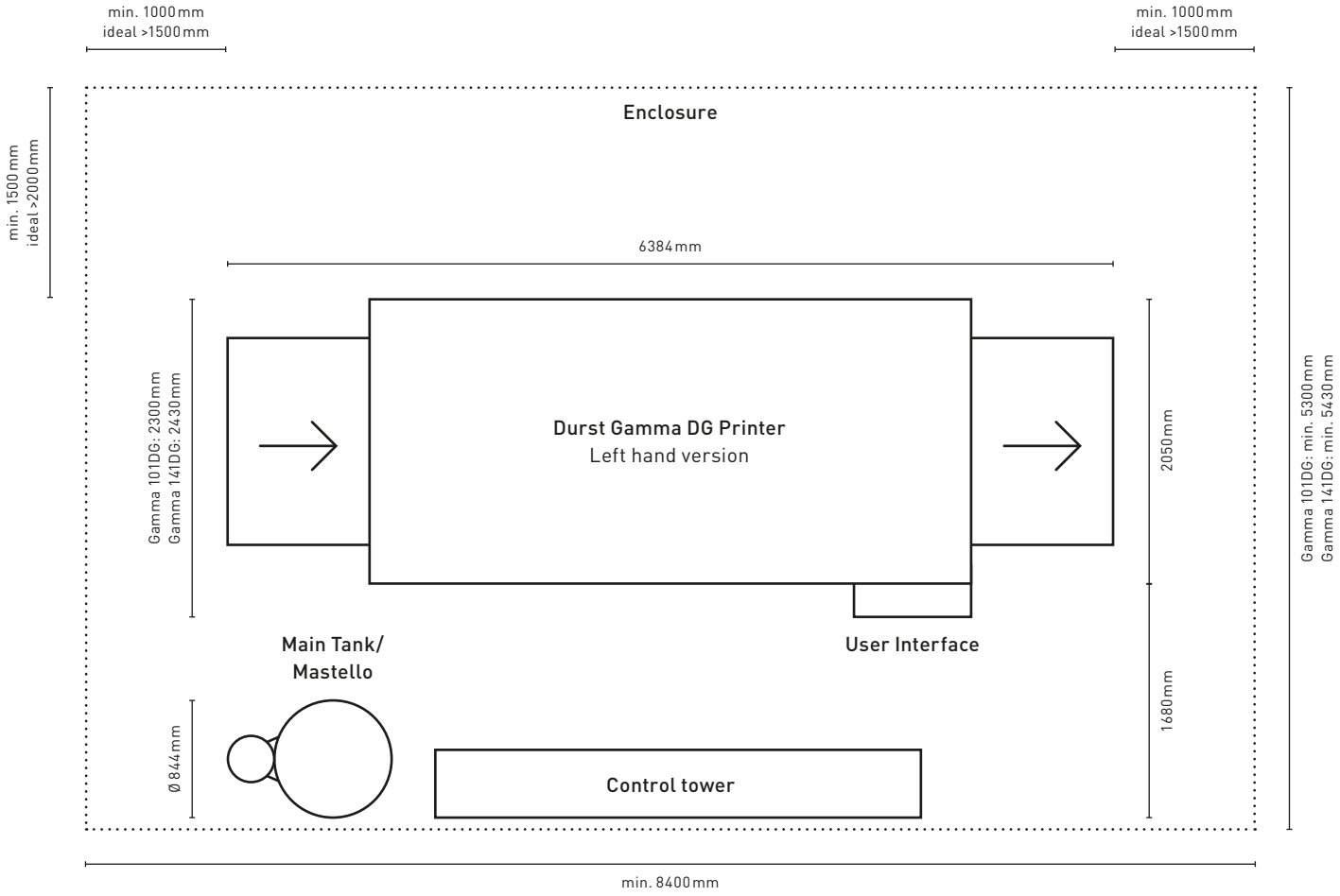
Ambient temperature range
+5 °C to +40 °C (+41 °F to 104 °F)

Relative humidity
25 to 80 % non-condensing

Safety standards
Complies with currently valid guidelines Closed system with integrated aerosols aspiration system required for operator safety



SPACE REQUIREMENTS



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