



Durst TRUE DIGITAL Industrial Ceramic Tile Manufacturing 4.0

DURST LEADING CERAMICS TECHNOLOGIES

GAMMA XD SERIES

- Best rated digital printers for print quality, reliability and lowest maintenance



GAMMA DG -TRUE DIGITAL GLAZE PRINTING

- Durst first in Industrial Single Pass Digital Glaze/Structure Printing



DURST-COLORGATE CMS

- First true ceramics color management system with unreached performance and speed



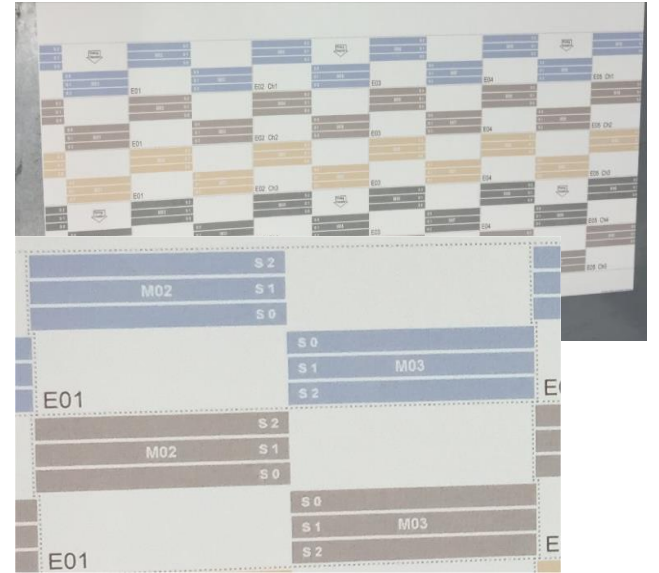
INDUSTRY 4.0 – SCADA INTERCONNECTIVITY

- Central job preparation and printer monitoring
- Durst Analytics for real-time printer data and Industry 4.0 interconnectivity



GAMMA XD SERIES

- Best rated print quality with no banding or missing lines providing a total choice of designs to be printed today and tomorrow with new design trends
- Very low service costs (total cost of ownership) of Ø 6.000 to 8.000 EUR/year thanks to the very long print head life-time with not change in print quality over time
- Fully automatic, no-touch print head cleaning without purging
- Designed for low and easy maintenance and long duty cycles (ink filters and lungs to be replaced only every 8-12 months) to guarantee high uptime





Durst Gamma XD

No lines or banding, high contrast/depth, strong colors and better details



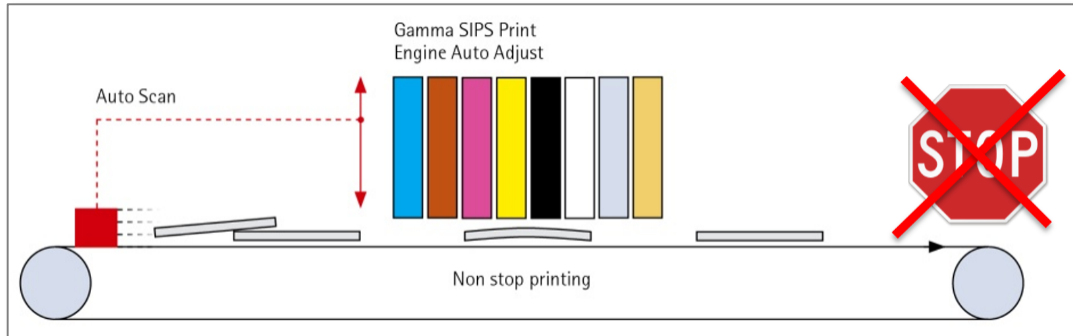
Others:

Visible lines / microbanding, low contrast, less color strength and details, flat and more artificial look



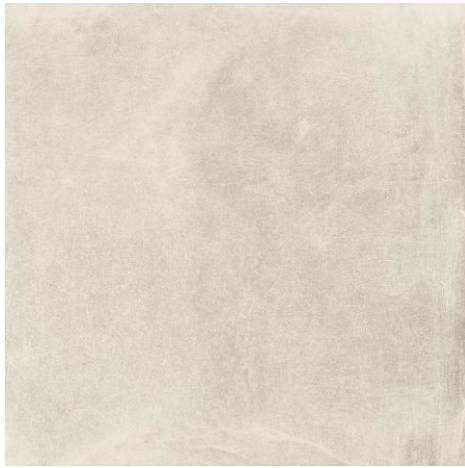
GAMMA XD SERIES

- Easy cleaning of air filters and belt cleaning system (with no liquids), possible even during running production.
- Integrated tile thickness scanner and automatic height adjustment of print engine during production even at high belt speeds to avoid to stop the glazing line
- 3-step print head crash protection – no more head crashes



GAMMA XD SERIES

- Latest trend in the tile design are almost uniform colors with very smooth density changes to follow the need for larger spaces.
- Such designs as illustrated look easy, but are the most difficult ones to print repeatably, as they require a 100% print uniformity and total nozzle stability.

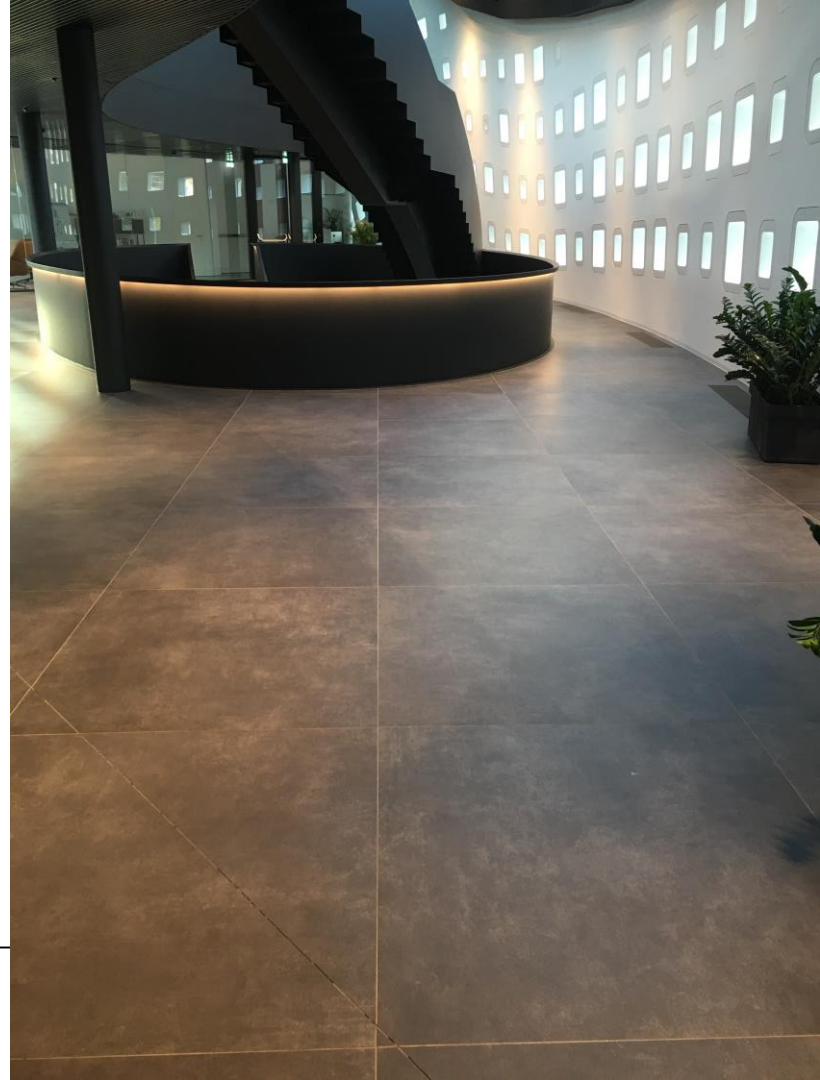


GAMMA XD SERIES

- According to our customers, the Gamma XD are the best printers for such designs, thanks to:
 - **Special Durst proprietary Dimatix print head technology** and color bar design with mechanical and electronic print head adjustments
 - **Innovative ink management system**
 - **Heavy duty printer design** with high-precision belt transport for long-term stability and repeating jobs without ongoing re-adjustments to get the same results

Marcelo Paraluppi Rodrigues, Owner/Director of Embramaco, Brazil

I am very satisfied with the Gamma 108XD 4.0 printers and **if today I would have to buy a new printer, I would purchase Durst again**". It has enabled us to add several new ceramic tile product lines. It also helped us create **impressive and innovative tile designs that has attracted a lot of customer interest**. They particularly like the unique and innovative designs and finishes that combine outstanding print quality and a natural look in terms of detail, color gradations, color strength, uniformity and contrast.



GAMMA XD SERIES

Advantages of Durst proprietary DIMATIX print technology:

Gamma XD print heads are developed and manufactured by Durst using single, high performance piezo elements from Dimatix assembled with Durst parts and adjusted with a high precision microscope to provide the following, exclusive advantages:

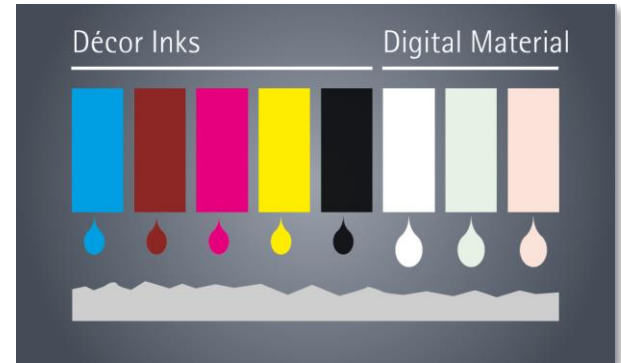
- **Straightness of drop placement** (resulting in more defined image details),
- **High drop volume consistency** across the single print heads (to assure high uniformity/evenness to avoid banding or modulations),
- **Total nozzle stability**, also at higher ink loads
- **Extremely long print head life cycle** (to guarantee low service & maintenance costs – customers producing 10 million sqm per year have not replaced any print heads)
- **Very tight print head to print head tolerances** compare to the standard SG1024M or L/HF print heads used by other printer manufactures



GAMMA XD SERIES

Advantages of Durst proprietary DIMATIX print technology:

- This results in a higher and more precise print head registration at printer manufacturing and print head replacement in the field maintaining the same high print quality and uniformity without the need for an ongoing and time consuming print head re-adjustments and re-calibrations to assure the needed print uniformity across the entire printing width without density modulations / banding.
- Large drop 90-200pl Durst DM print heads providing a superior and reliable performance, allow to jet high ink amounts up to 100% coverage continuously with very high nozzle stability without the need to use 2 color bars to avoid risking nozzle instability / missing nozzles when exceeding a 50% coverage on the printed tiles.
- Based on customer feedbacks the Durst DM print heads are currently the best performing and most reliable large drop print heads.



GAMMA XD SERIES – 97 TO 100% UPTIME

UPTIME OF GAMMA 108XD for printing widths up to 1000mm
 Uptime with non-stop production 24/7 with Ø 22.000m/2 per day!

Log File Date	Gamma 108 XD			
22. July 2019 Monday	Uptime 24:0 h 100%	Printed tiles 20153	approx. sqm 18649.1	
21. July 2019 Sunday	Uptime 24:0 h 100%	Printed tiles 24273	approx. sqm 22461.3	
20. July 2019 Saturday	Uptime 23:54 h 99%	Printed tiles 24791	approx. sqm 22940.9	
19. July 2019 Friday	Uptime 24:0 h 100%	Printed tiles 24363	approx. sqm 22544.9	
18. July 2019 Thursday	Uptime 24:0 h 100%	Printed tiles 24448	approx. sqm 22623.6	
17. July 2019 Wednesday	Uptime 24:0 h 100%	Printed tiles 24322	approx. sqm 22506.6	
16. July 2019 Tuesday	Uptime 23:27 h 97%	Printed tiles 32381	approx. sqm 21955.7	
15. July 2019 Monday	Uptime 23:58 h 99%	Printed tiles 54473	approx. sqm 25783.6	
14. July 2019 Sunday	Uptime 23:53 h 99%	Printed tiles 51954	approx. sqm 24591.8	
13. July 2019 Saturday	Uptime 23:9 h 96%	Printed tiles 22049	approx. sqm 10436.8	
12. July 2019 Friday	Uptime 23:54 h 99%	Printed tiles 52135	approx. sqm 24677.0	
11. July 2019 Thursday	Uptime 23:57 h 99%	Printed tiles 19993	approx. sqm 9463.6	
10. July 2019 Wednesday	Uptime 23:55 h 99%	Printed tiles 32566	approx. sqm 15414.9	
09. July 2019 Tuesday	Uptime 21:40 h 90%	Printed tiles 46052	approx. sqm 21798.1	
08. July 2019 Monday	Uptime 23:50 h 99%	Printed tiles 51819	approx. sqm 24527.2	
07. July 2019 Sunday	Uptime 23:48 h 99%	Printed tiles 54176	approx. sqm 25643.2	
06. July 2019 Saturday	Uptime 23:43 h 98%	Printed tiles 54878	approx. sqm 25975.8	

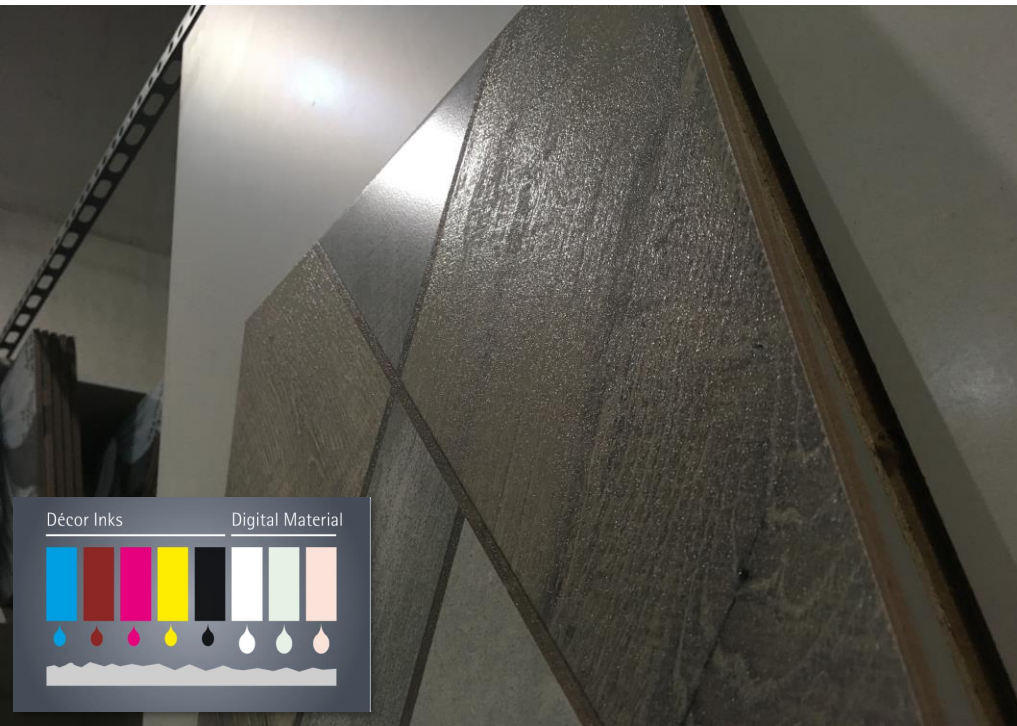
GAMMA 148XD for printing widths up to 1400mm
 Uptime with non-stop production 24/7 with Ø 20.000m/2 per day!

Log File Date	Gamma 148 XD			
22. July 2019 Monday	Uptime 23:58 h 99%	Printed tiles 22591	approx. sqm 22067.4	
21. July 2019 Sunday	Uptime 23:53 h 99%	Printed tiles 21969	approx. sqm 21530.8	
20. July 2019 Saturday	Uptime 23:49 h 99%	Printed tiles 20990	approx. sqm 20466.4	
19. July 2019 Friday	Uptime 23:54 h 99%	Printed tiles 21196	approx. sqm 20665.8	
18. July 2019 Thursday	Uptime 23:56 h 99%	Printed tiles 21448	approx. sqm 20944.7	
17. July 2019 Wednesday	Uptime 23:53 h 99%	Printed tiles 21535	approx. sqm 20995.5	
16. July 2019 Tuesday	Uptime 23:59 h 99%	Printed tiles 21633	approx. sqm 21201.3	
15. July 2019 Monday	Uptime 24:0 h 100%	Printed tiles 21491	approx. sqm 21002.3	
14. July 2019 Sunday	Uptime 23:57 h 99%	Printed tiles 22104	approx. sqm 21358.1	
13. July 2019 Saturday	Uptime 23:54 h 99%	Printed tiles 22080	approx. sqm 21604.4	
12. July 2019 Friday	Uptime 23:59 h 99%	Printed tiles 21716	approx. sqm 21217.4	
11. July 2019 Thursday	Uptime 24:0 h 100%	Printed tiles 22052	approx. sqm 21613.0	
10. July 2019 Wednesday	Uptime 23:51 h 99%	Printed tiles 21995	approx. sqm 21274.6	
09. July 2019 Tuesday	Uptime 23:46 h 99%	Printed tiles 22316	approx. sqm 21495.2	
08. July 2019 Monday	Uptime 23:51 h 99%	Printed tiles 23465	approx. sqm 22672.4	
07. July 2019 Sunday	Uptime 24:0 h 100%	Printed tiles 23524	approx. sqm 23045.2	
06. July 2019 Saturday	Uptime 23:58 h 99%	Printed tiles 22381	approx. sqm 21935.4	

GAMMA XD SERIES

INNOVATIVE DM DIGITAL MATERIAL PRINTING TECHNOLOGY

- Most stable large drop Durst DM (Digital Materials) print head technology for jetting high amounts
- Increases your creativity in developing new, unique tile designs



Décor Inks

Digital Material



GAMMA XD SERIES

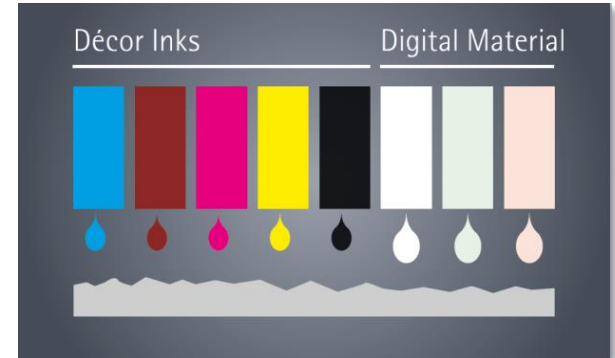
INNOVATIVE DM DIGITAL MATERIAL PRINTING TECHNOLOGY

- Total nozzle stability even with 100% coverage and non-stop printing
- Ideal for digital material inks such as lustre, glossy, matt, white, metallic, glue inks, etc.
- Over 100g/m² to assure very strong material effects



GAMMA XD SERIES SUMMARY

- Best rated single pass décor printers
- Exceptional high print quality without banding, high versatility without design limits and without requiring the use of 2 color bars to compensate for any defects
- Very high production efficiency (printer availability / uptime 97-100%)
- Total nozzle stability - proven by customers who printed up to 10 million m2 without changing a single print head
- Very stable large drop Durst DM (Digital Materials) print heads for effect inks, even with 100% coverage and non-stop printing
- Easy maintenance and very low service and maintenance costs ranging between 6000 to 8000 EUR/Year

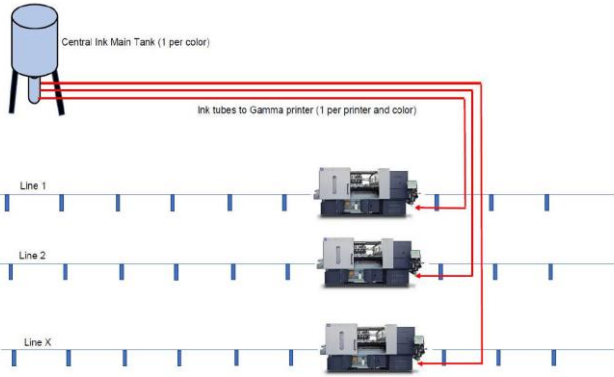


GAMMA XD SERIES - OPTIONALS



Central Ink Supply

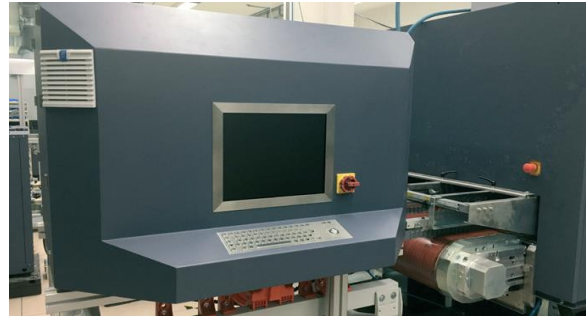
Automated ink refilling of one or more digital Gamma decoration printers from a large central ink tank (500 to 1000 liters). The advantages are a fully automatic operation, no disposal of ink packages and optimized ink storage.



GAMMA VISION SYSTEM

Vision System (Durst Structure Match®) is an optional system for automatically recognizing the embossed structure or images printed on ceramic tiles upstream of Gamma XD to create unique and extraordinary effects.

- Up to 20 different structures/images and to
- Up to 25 different images for each structure



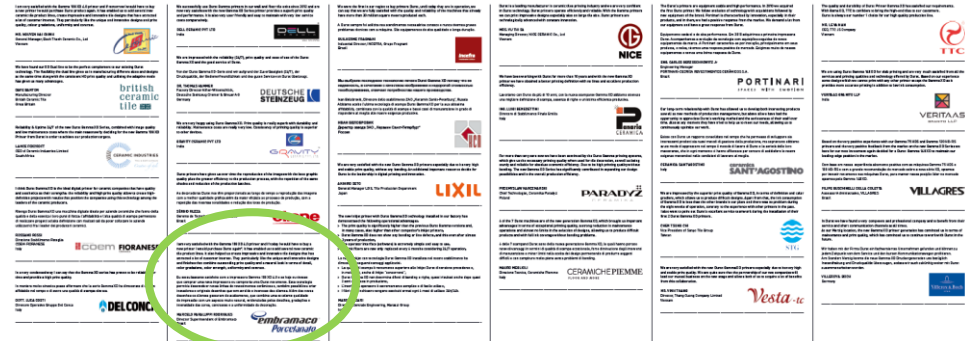
MultiShaker

For automated ink refilling of one or more digital decoration printers from a large central ink





GAMMA XD SERIES CUSTOMER FEEDBACKS



Marcelo Paraluppi Rodrigues, Owner/Director of Embramaco, Brazil

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(Produces over 10 million sqm per year on each Gamma XD printer)

GAMMA XD

CUSTOMER FEEDBACK:

"More than 7,5 million sqm printed in less than 1 year."

">97% uptime — no print heads changed."

"Over 17,5 million sqm printed in less than 2 years!"

"Same perfect print quality as day 1 (no missing nozzles, no lines or banding)!"

"We did not expect such a great performance!"

"No other printer on the market can reproduce such a high and consistent quality!"

BEST RATED DIGITAL PRINTERS FOR PRINT QUALITY,
RELIABILITY AND LOW MAINTENANCE COSTS.





2004

DURST GAMMA 60 - Single Pass Digital Decor Printer

Durst first in starting ceramic tile decoration revolution



2018

DURST GAMMA DG - Single Pass Digital Glaze Printer

Durst first in starting ceramic tile glazing revolution



GAMMA DG – DURST TRUE DIGITAL

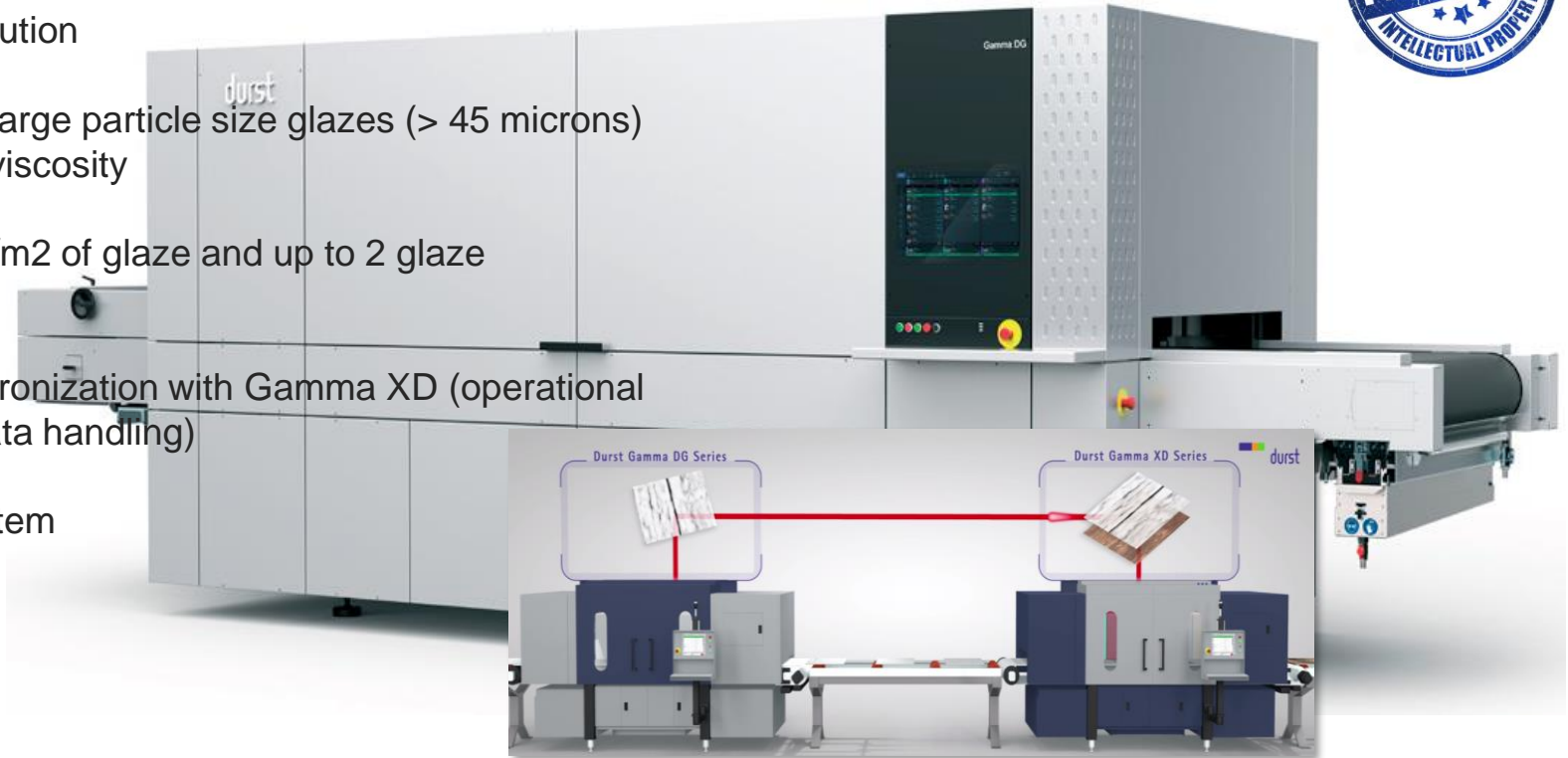


- FIRST single pass digital glaze printing technology for glazing and structuring ceramic tiles for TRUE Digital production
- Patented Durst Rockjet® Print Head Technology, fully developed & manufactured by Durst specifically for ceramic glazes

GAMMA DG – DURST TRUE DIGITAL



- High resolution
- Low-cost large particle size glazes (> 45 microns) with high viscosity
- Up to 1kg/m² of glaze and up to 2 glaze bars
- Full synchronization with Gamma XD (operational and file/data handling)
- Open System



GAMMA DG – DURST TRUE DIGITAL PROCESS

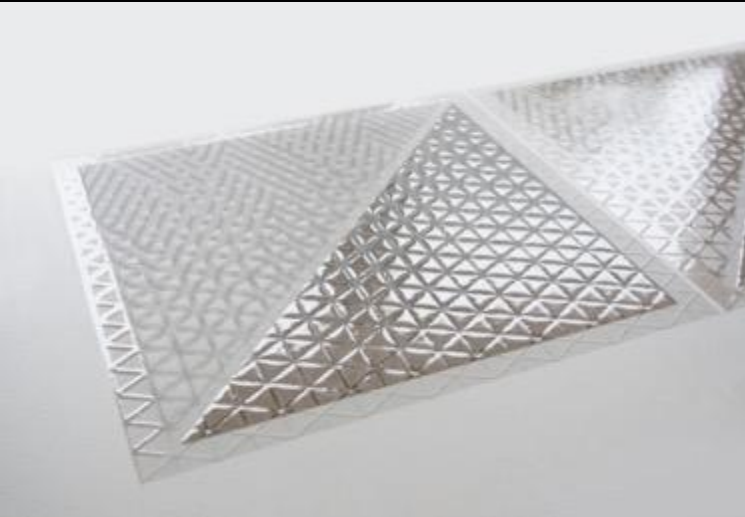
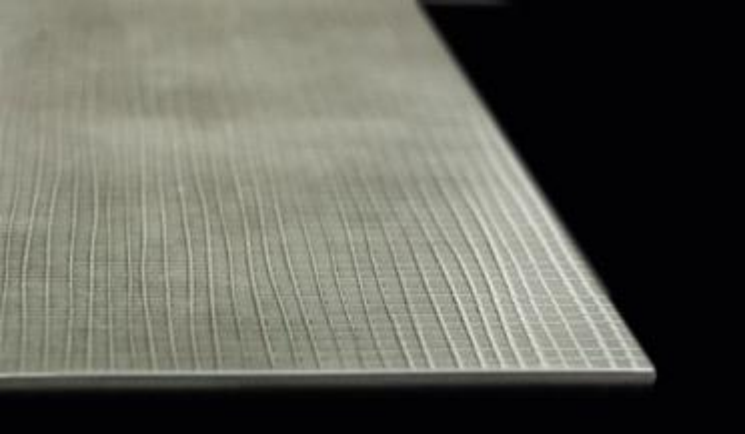
VERY NATURAL LOOK THANKS TO DIGITAL GLAZING & STRUCTURING IN PERFECT REGISTRATION WITH DECOR





DURST FREE-D BENEFITS

- Create new, innovative and stunning tile designs not possible with current traditional technology
- Very natural look thanks to perfect synchronized random printing with matching structure
- Unlimited number of tile structures and perfect match of structure with the design



DURST FREE-D BENEFITS

- Increased production flexibility – create structures on-demand
- Simultaneous printing of different glazes onto the same tile
- Cost efficiency: inexpensive glazes with very similar ceramic properties as traditional glazes



- Applies same glaze amounts as traditional devices, therefore no need for premium body materials
- Quoted as next revolution in ceramics

GAMMA DG – DURST TRUE DIGITAL



DURST DIGITAL GLAZE VIDEO:

[HTTPS://WWW.DURST-GROUP.COM/TRUEDIGITALGLAZE](https://www.durst-group.com/truedigitalglaze)

GAMMA DG – PRODUCTION STRESS TEST

PRINTER AND ROCKJET® PRINT HEAD TECHNOLOGY NON-STOP TESTING UNDER EXTREME
FACTORY PRODUCTION CONDITIONS WITH TILE TEMPERATURES RANGING FROM 75 TO 100°C



RESULT:

- Very stable printing behavior and no nozzles missing
- Very stable and repeatable glaze laydown
- First and last tile exactly the same





DURST GAMMA DG – DIGITAL GLAZE TILES AT CERSAIE 2019

ON DISPLAY AT CERAMICHE PIEMME, COLOROBIA, SMALTICERAM AND ESMALGLASS



NEW DURST-COLORGATE CERAMICS COLOR MANAGEMENT

- First TRUE CERAMICS color management system
- Unique and patented „Fingerprint“ and Rapid Spectro Cube RSC technologies
- Very fast color tone reproduction
- Works with all printers: Durst and NON-Durst
- Durst exclusive partner of ColorGATE-Ricoh for the ceramic market



This tile is the result **without** using the ColorGATE CMS Durst Edition system

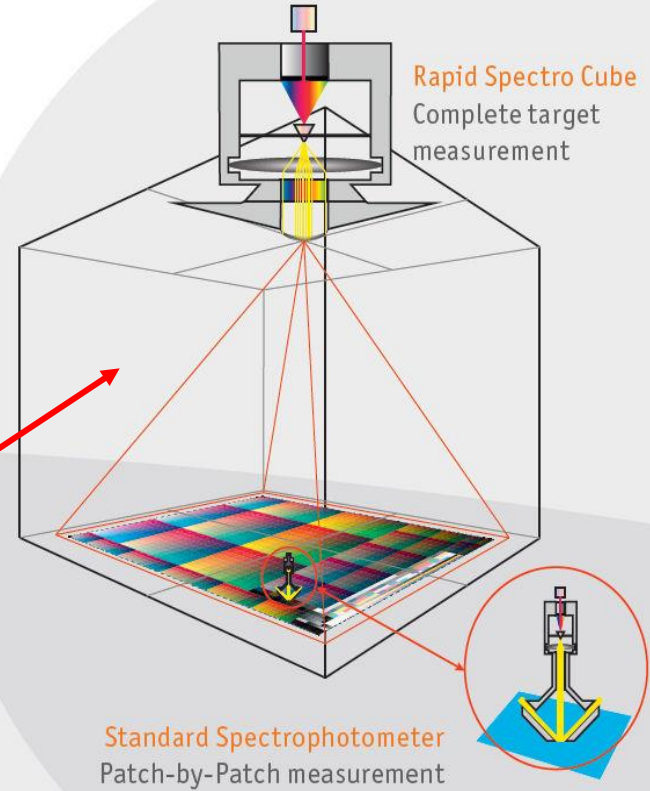
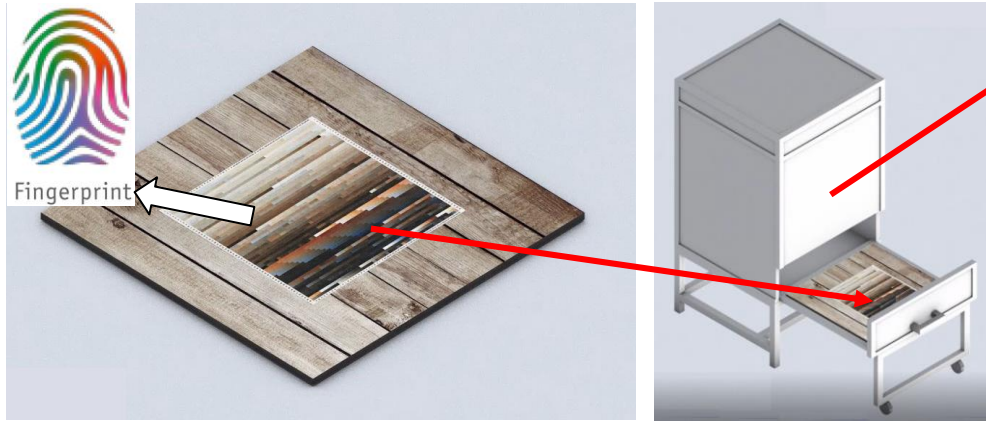
This is the **reference** tile to match

This is the first print result after an ink change using ColorGATE CMS Durst Edition system with the Fingerprint technology and RSC Rapid Spectro Cube one-shot hi-res measuring system

This is the first print result with different glaze coloration using ColorGATE CMS Durst Edition system with the Fingerprint technology and RSC Rapid Spectro Cube one-shot hi-res measuring system

NEW DURST-COLORGATE CMS

- Unique and patented „Fingerprint“ and Rapid Spectro Cube RSC technologies for very fast color matching when repating jobs over time with changing production conditions



NEW DURST-COLORGATE CMS

“Inventory is fundamentally evil. You kind of want to manage it like you’re in the dairy business. If it gets past its freshness date, you have a problem”

Tim Cook - Apple CEO



ON-DEMAND PRODUCTION

Thanks to the very fast color matching products can be repeated more frequent in smaller batches

INVENTORY REDUCTION

Optimized inventory for a more profitable business

NEW DURST-COLORGATE CMS

REVOLUTIONARY KEY FEATURES

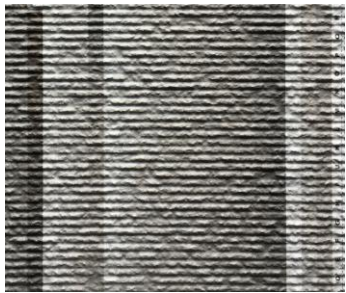


Fingerprint measurements

1. Innovative, patented “Fingerprint” technology for very fast and repeatable color matching



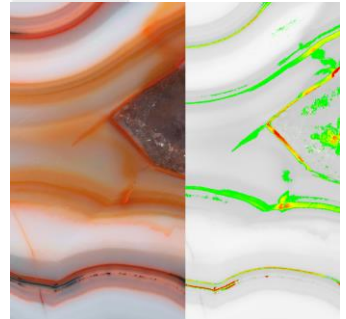
2. Very fast RSC Hi-Res measuring system for Ultrafast color batch measuring up to 10.000 batches in one shot in less than 1 minute



3. Reads color batches printed on tiles with flat & structured surfaces



4. Same and easy workflow for any design and production condition



5. Optional visual Out-of-Gamut control. Adjustable levels of max. ΔE deviation for easy and precise operator instructions



NEW DURST-COLORGATE CMS – CUSTOMER STATEMENTS

ceramica
SANT'AGOSTINO

Marco Benati, Ufficio Tecnico, Ceramica Sant'Agostino, Italy

"Nell'ottica di un efficientamento del processo di industrializzazione, abbiamo deciso di affidarci ad un partner consolidato come Durst, ed in particolare di approcciare il sistema Durst-ColorGATE CMS. Nel tempo, grazie anche al supporto dei tecnici Durst, abbiamo ottenuto importanti risultati in termini di efficienza ed efficacia del processo di industrializzazione riducendo sensibilmente il numero di staffette"

"In the view of streamlining the industrialization process, we decided to rely on a consolidated partner such as Durst, and in particular to test and use the Durst-ColorGATE CMS system. Over time, thanks to the support of Durst engineers, we have achieved important results in terms of efficiency and effectiveness of the industrialization process by significantly reducing the number of test runs."

VILLAGRES[®]

Celso Joaquim de Oliveira - Research & Development, VILLAGRES, Brazil

"Ficamos muito impressionados com os primeiros resultados do novo Sistema de Gerenciamento de Cores Durst-ColorGATE CMS e não esperávamos uma correspondência de cores tão rápida e precisa, mesmo imprimindo o mesmo design com diferentes tintas e esmaltes. Ficou quase perfeito já no primeiro teste, nunca experimentamos isso antes. Esta ferramenta certamente aumentará nossa eficiência de produção."

"We have been very impressed with the first results of our new Durst-ColorGATE CMS color management system and did not expect such a fast and precise color matching even printing the same design with different inks and glaze colors. Almost spot-on with the first test never experienced before. This will certainly increase our production efficiency."

COLORGATE VIDEO:

[HTTPS://WWW.DURST-GROUP.COM/EN/ARTICLE/COLORGATE-CMS-DURST-EDITION_110](https://www.durst-group.com/en/article/colorgate-cms-durst-edition_110)



 **ColorGATE**

The ColorGate logo icon is a stylized representation of a water tap or faucet, composed of several small dots arranged in a grid pattern.

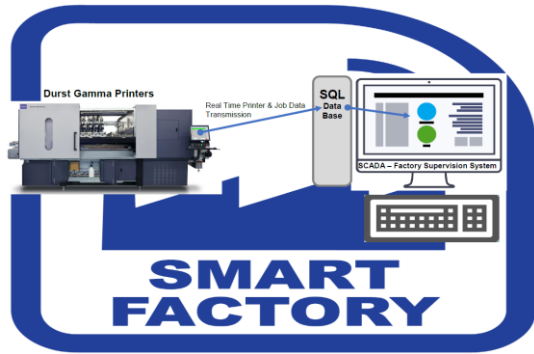
TRUE CERAMIC
COLOR MANAGEMENT
SYSTEM

EXCLUSIVE DURST EDITION

WORKFLOW SOLUTIONS FOR PRODUCTION EFFICIENCY

INDUSTRY 4.0

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



GAMMA PREPSTATION

Central Job Preparation and Monitoring system providing the most flexible and efficient workflow solution to suit different customer needs:

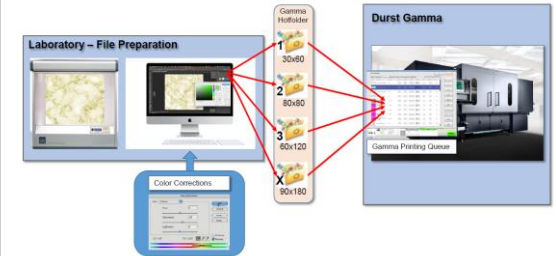
- On-Printer Job Preparation, or
- Centralized Job Preparation and Monitoring via Gamma HotFolder and/or PrepStation



GAMMA HOTFOLDER

Fully automated job creation based on preset job settings in different folders visible on any computer connected in the network.

- Fast and secure operation
- Works with all Durst Gamma versions



DURST TRUE DIGITAL TILE MANUFACTURING 4.0



Gamma Cockpit
Job preparation, monitoring
and central decoration control



ColorGATE CMS Durst Edition
True Ceramics Color Management

True Ceramics CMS



Industry 4.0
Industry 4.0 Inter-Connectivity with Factory
Supervision and Management Systems
Durst Analytics - Real-time monitoring
(SCADA) Bi-directional communication
(with Durst & others)

Industry 4.0

Gamma Vision

Gamma DG
True digital ceramics glazing
and structure printing

Gamma Vision

Gamma XD
Digital decoration and
effects printing

Gamma Vision

Gamma DG
True digital ceramics
finishing/material printing

Durst RockJet®

Durst RockJet®

Digital Glaze / Structure (up to 1kg)

Digital Decoration

Digital Finishing (up to 1kg)

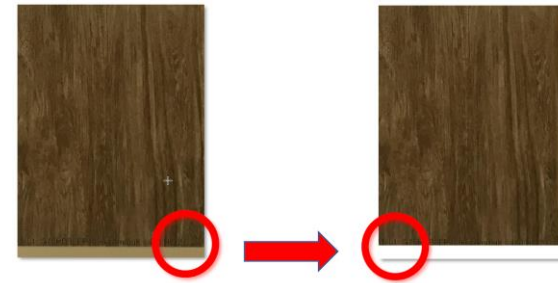
INVENTORY OPTIMIZATION

To maximize profitability and assure cash flow needed for important investments it is important to standardize production and optimize/reduce inventory of finished products.

To reduce inventory it is necessary to:

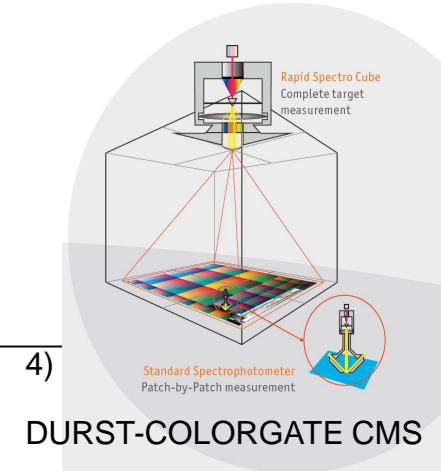
- 1) **Standardize your production** by eliminating/reducing the number of colored glazes and print all designs directly to white glaze, even black designs
- 2) **Manufacture the products in smaller batches** and repeat them more often and on-demand.
- 3) **Use equipment which guarantees high repeatability and print quality without banding or lines → Gamma XD**
- 4) **Implement a color management system** to get very quickly to the reference tone to avoid downtime or different shades of the same product in your inventory → Durst-ColorGATE CMS

1)



3)

GAMMA XD



4)

DURST-COLORGATE CMS

TRUE DIGITAL

BE ONE STEP AHEAD WITH DURST.

GAMMA DG SERIES – Preview

- > First Single Pass True Digital Glaze Printer
- > Durst proprietary Rockjet™ print head technology
- > Waterbased glazes > 45 microns up to 1 kg/m²
- > Printing widths up to 200 cm



GAMMA XD SERIES

- > Best rated ceramic decoration printers for print quality, reliability and lowest maintenance
- > Printing widths up to 200 cm



COLORGATE CMS

- > True Color Management Solution designed for ceramic conditions
- > Patented „FingerPrint“ color control taking into account any variation over time
- > Strong reduction of rest runs with minimized glazing line down times when repeating products over time
- > Chart reading on structured and flat surfaces in less than 2 min.
- > Works with all Durst and Non-Durst printers



SOFTWARE & WORKFLOW

Market leading printer software specially designed for the ceramic workflow



DURST

Driving Innovation Through Strong Partnership

