

Breakthrough of customization – software and hardware exist

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Keywords

Automatic process of customisation is available

Hardware & software exists to realize digital factory

Article Classification

Testimonial

Introduction statements

Make MTM more profitable through mass customization,

Cut stripes and plaids fully automatically,

Digital print your patterns in the marker and control in the cutting process the color bleeding of the digital printer,

Custom made sportswear is booming; process can be automated,

Decrease significantly the current cutting production time and the use of material,

All is possible with use of GeminiCAD.

GeminiCAD Systems

Gemini CAD Systems provides leading edge integrated CAD CAM solutions (software and hardware) dedicated to the textile, technical textile and leather industry. The core of the entire system is a powerful multi-core based system with an automatic nesting algorithm. It ensures fast and efficient optimization, reducing both the processing time and wastage. It allows to install innovative cutting processes. Seven years of theoretical research and computer programming have been invested in this nesting engine; it is now a leader in its field application. Gemini became the new trendsetter and performance reference in this technology.

GeminiCAD is a CAD software specialist with head office in IASI , a university city in Romania with a well know department in IT. Gemini started software development in 2002; sales started in 2004.

Today, Gemini has 11.000 users around the world. The company is well developed in Eastern-Europe, Russia, India and China; and started 4 years ago in Italy, Germany and UK.

Sales are realized through a network of local distributors. We started in 2012 with sales of software in Belgium and Holland.

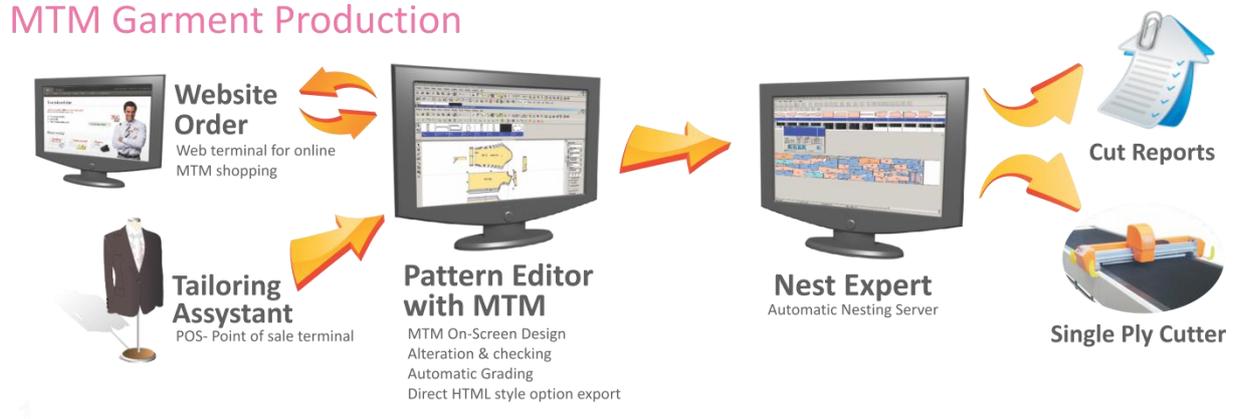
The successful story is based on huge investment in the product. Development of all the software components and algorithms was done inside the company without embedding any technology supplied by a third party. This strategy means also that prices are really competitive because third-party costs increase the price of the software package.

Product pallet covers the whole production process and allows

- Breakthrough of customization
- Development of digital factory concept
- Automation of MTM, of cutting and of integration of digital printing

MTM process - input

MTM Garment Production



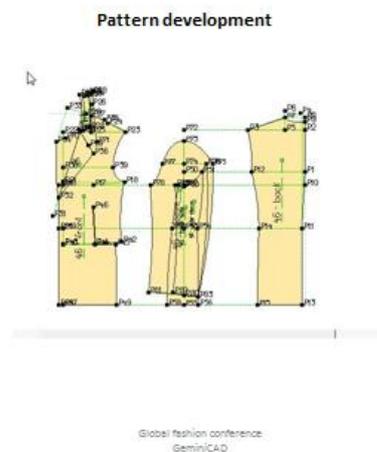
Customer order will contain the selection of the model and its specifications. Measurements can come from scanning or from manual measurement. These measurements are transformed (interpretation is often needed) to get pattern measurements. All data will be put in a .ord file (TXT file) to be sent through the system.

Conventional Make To Measure is using an alteration method in pattern making

The conventional MTM methods are based on the method of 'alteration' or 'deforming' the size of the standard measurement table that is most close to the one of the client. Changes in the patterns are made at selected points or via alteration of lines. In fact one is stretching the pattern or enlarging it at certain points to fit better to the body.

Gemini MTM technology offers also the possibility of re-building the pattern for each client

Start point is making a geometrical skeleton in which body dimensions are turned in formulas using the classic pattern construction methods like Muller&Sohn, Pandelet, Eurostyle, Smith... Pattern styles made are then fixed at the skeleton using relations between selected points. Skeleton and pattern are linked and will change simultaneously. At input of new values, the skeleton is re-built for each new client and the linked pattern is altered accordingly. As such fitting will be perfect.



All patterns are prepared in a grid with an automatic grading feature and put in model database. MTM server gets info from .ord file and selects from the model base the right variant inclusive the instructions with selection of the client. The MTM server will create a unique pattern automatically.

The pattern variant is sent to the Gemini nesting server who prepares the cutfile to be sent either (1) directly to the cutter or (2) to the digital printer to print the requested design. Once printed the fabric will be sent to the cutter installed with VisionCUT.

GeminiCAD – VisionCUT automated cutting process

A scan bridge with high resolution cameras, is scanning while loading the fabric with a permanent automatic matching of the marker with the real fabric. There are three different systems, developed to handle various products and workflow types

1. 'On the fly'; cutting contour
2. 'Printed marks'; cutting contour and inside lines
3. 'Repetitive motifs'; cutting of (elastic) fabrics with stripes, flowers and plaids or placed prints

Cutting precision is high, the deviation is less than 0,7 mm. Speed of the system is dependent of the cutting speed with almost no interruption of the cutter.

GeminiCAD – VisionCUT system

The system contains both hardware and software components that are machine independent. They can be installed on any single-ply cutter; the system is fully reversible and does not affect the standard operation of the cutter.

GeminiCAD – VisionCUT video's

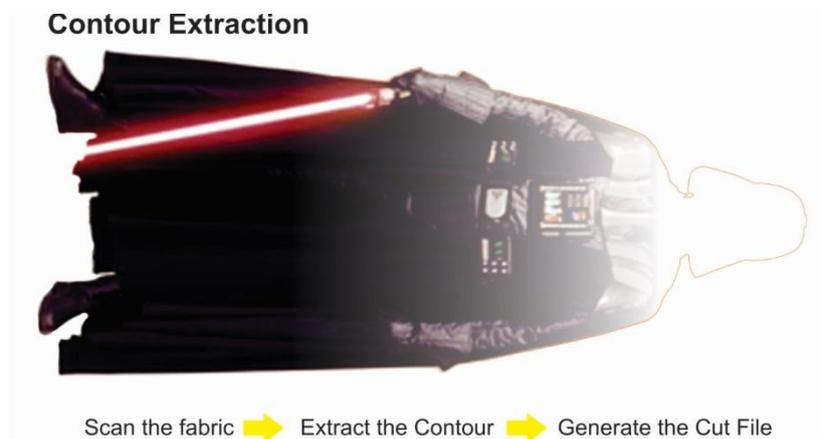
For a more detailed demo see one of the following video's on YouTube

Stripes and plaids: <https://www.youtube.com/watch?v=MDaazOxkCLY>

Printed fabrics: <https://www.youtube.com/watch?v=IykihzpXMhQ>

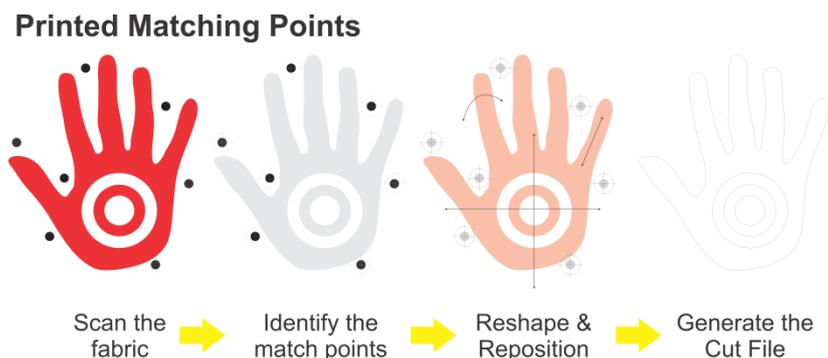
Stripes and plaids upholstery: <https://www.youtube.com/watch?v=AZVWLLM44fs>

GeminiCAD VisionCUT <On the fly>



VisionCUT will cut the parts on the external outline of the printed shapes. The workflow is very simple and does not require to receive the design files. The cutting line can be fixed on a pre-set distance of the detected contour. The system contains a template system to ensure that certain forms will be cut perfectly.

GeminiCAD VisionCUT <printed marks>

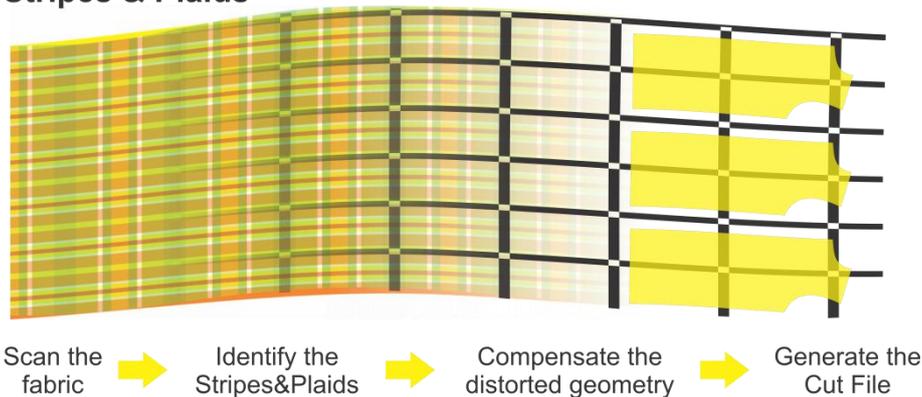


The images are designed using an Image Design software; the user adds the external parts contour and other lines to be cut. The marker is created: the parts are automatically placed; between parts, several marks (small dots of 3-5mm) will be automatically placed.

The matching process is performed using the printed marks. The cutline can either match the printed shape or will be the original shape depending on the user requirements

GeminiCAD VisionCUT <Repetitive motifs>

Stripes & Plaids



Automatic cutting of (elastic) fabrics with stripes and plaids.

The fabric is woven (or printed) with repetitive motifs. The motifs can be stripes/plaids, floral, automotive motifs,... The marker file is nested using specific user rules and the parts are cut accordingly to fabric translation/rotation or distortion.

Gemini is unique in the possibility to first scan and identify the pattern and then making the marker to manage the cutting process. The pattern parts are 'adapted' to match the registered fabric pattern or the relocation method of the patterns on the real fabric is used.

Examples: apparel, furniture, automotive, technical textiles,...

Workflow:

The pattern parts are designed using Gemini PatternDesign software; the matching rules are defined by the user. Either piece to fabric: the part has to be placed in a specific position on the fabric motif.

Or piece to piece: the parts are related one to another (e.g. T-shirt front panel has to match with the arm parts). At marker creation, the parts are automatically placed following the matching rules.

For matching and cutting: the matching process is performed using the repetitive motifs. The parts translations/rotation or distortion is adjusted to the fabric distortion and the ready to-cut-file is send to the cutting

VisionCUT applications already in use

Fabrics with floral or repetitive motifs are now handled perfectly by the optical algorithm of VisionCUT. Fully automated cutting systems are possible with high output volume and perfect matching. Even the small repetitive details like a small logo faded on the background will be identified.

If the roll fabric is custom-printed, VisionCUT will cut the parts after printing. VisionCUT will perfectly compensate the distortion of the elastic fabrics used for this type of products



Cutting a large flag on contour has never been easier. Using the total surface scan, VisionCUT will extract the contour of shapes and generates a cut file on the fly. For precision cutting VisionCUT can increase the number of matching points without slowing down the cutting process.



There are significant advantages when cutting stripes and plaids. The speed of process is 10-30% higher. There is now the capability to compensate bow skew distortion by reshaping the cut parts to match perfectly the lines of the fabric; useful when cutting large parts for furniture, or automotive upholstery or classical man suits



Conclusions

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