Pattern Designer X19

- INDUSTRY 4.0
- MASS CUSTOMIZATION
- AUTOMATION
- SPORTSWEAR
- NESTING ALGORITHMS
- MADE TO MEASURE
- DIGITAL TEXTILE PRINTING
- UPHOLSTERY
- FASHION
- AUTOMOTIVE
- PRECISION
- SUSTAINABILITY
- RESEARCH AND DEVELOPMENT

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Open Your Perspective for INDUSTRY 4.0

With Gemini Pattern Designer X19, apparel CAD environment opens itself for a wide range of interactions with various other technologies and platforms, to exchange information and automate more and more phases of design and manufacturing processes, ready for the evolution to INDUSTRY 4.0.
When first launched in 2004, Gemini Pattern Editor defined new bold approaches on many parts of the CAD workflow, such as real-time measurement table, corner angle control, derived gradings, parametric made-to-measure skeleton, etc. The program also incorporated most of the features existing at that moment on the market in competitor products, claiming to be the most comprehensive CAD product for its field of application.

Most of the initial features evolved during the past decade, responding to the evolution of customer’s needs and challenges raised by ever-changing industry.

Some of the initial infrastructure of the software proved to be difficult to adapt to new features, forcing compromises in the way the new functions were implemented. For example, Gemini was one of the first products to include multiple grading systems (grade, drop, spec, etc.), but when applying this to functions such as Walking Pieces it was impossible to make the correct simulation, just because the geometrical infrastructure did not allow it. Other competitor software products were (and still are) in the same position.

The advantage of X19 version is that we deleted everything and started really from zero. Our team pushed CTRL-NEW and started a brand-new project, without any technical debt to an old approach or an obsolete infrastructure. It takes a lot of effort, a lot of time and a significant investment to do this, but it pays off all these by the quality and performance of the new product.

Instead of discovering things during years and incorporating little by little into a product, now we had the chance to know and plan everything in advance. That is why, for example, we can claim now that we are the only CAD product on the market capable to use Walking Pieces, Marry and Packing on all grading systems. Or, we are the only product capable to have free-linked patterns, combining the benefits of two apparently incompatible working modes.
Native multi screen

The well appreciated Right Properties Area from Gemini Pattern Editor X9 becomes the new Activity Zone, while remaining the core of all user interaction, and it is divided now into 6 zones:

- Function Steps
- Measurements
- Base Size
- Bespoke
- Grading Table
- Guide Rules
- Context Options

All zones are permanently visible, they can be docked on the right side or can be switched to floating windows and placed according to user’s preference. The most important thing is that all content is available regardless of the working mode or selection. For example, switching the base size, hiding or showing a particular size or group, accessing the grading table of a point can be done in any working mode, not only Grading.

Gemini Pattern Designer X19 is built for ergonomy and productivity. The working area has been optimized for multi-displays and can be fully customized by the operator by placing all program windows and functions in the most comfortable position.
Step-by-Step Functions

While program’s features and functions evolved to solve more and more complicated tasks, their complexity grew, up to certain level where the user can start to have troubles in following the logical path or interactions required by a function. To solve this problem, Gemini had a radical approach: all the functions were split into discrete steps, describing the natural way to exchange information in order to obtain the desired results.

At each step, the user receives clear messages and requests to express their options, to input values or to indicate elements on screen. This interaction is enhanced by using dynamic interface elements which focus user’s attention on the next action.

Most of the functions provide a roll-back possibility, allowing the user to go back to a previous step for changing values or selection and resuming the function with new parameters.
An important part of the Activity Zone is the Size Manager zone. Using the features in this area, the user can easily hide or show all the gradings, change the base size, change the grading group of a piece and visualize the entire grading system of the model in all working modes. Having this feature at hand all the time makes all the checking operations much easier and helps the user to maintain perfect control over the grading issues.
Selection Procedure in Gemini Pattern Designer X19 was changed, in order to provide an easier access to dependent elements such as attached pieces or each individual point of a notch, without the need to extract it or to place the program into a special working mode, and also to offer disambiguation tools in case two or several elements are overlapped. This and other goals lead to a simple solution: always select the parent and after that you can select the child, extended to any level of dependence. This system is also backed by a default automatic disambiguation system and ultimately by manual disambiguation in extreme cases.

In fewer words: the user can select anything, anytime, without confusions, in a simple and direct way.
Advanced Magnetization & Indicated Elements

Back in 2004 at its first version, Gemini Pattern Editor brought a fresh wind of simple Windows user experience to CAD applications, where strange old-looking interfaces were still the common reality on the market. The market reaction was instant, users loved the new easy interface, the small gadgets that made work easier and more efficient. Yet, there was little innovation in what we did, it was just Windows standard interface, standard Bezier curves, standard file save&open, etc.

Meanwhile in the past few years all general-purpose graphic design and CAD applications made huge steps forward in providing a better user experience, advanced interaction gadgets, better ways to indicate or select elements, context responsiveness and guidance. This creates again a gap between the level of applications in apparel CAD and this advanced group.

So, what Gemini did again for the X19 version was to align its features to the latest level of general purpose CAD applications, thus setting a new challenge for its competitors in apparel CAD.

Among these features, Gemini expanded the possibility to point magnetically to a wide range of elements (geometrical or technical, persistent or volatile) and to place these elements into an excited state (Indicated) in order to be able to refer to these elements in functions or formulas. Having all these elements available all the time might become annoying and counterproductive for the user, so the trick was to make this feature context-responsive and also easily customizable according to the user's needs.
One of the key points where re-building the entire software was really important was the Size Set, which is one of the most complicated and critical part of garments developing. We started from basic needs such as the need to manage multiple grading types, combined with grading groups, followed by the need to manage sizes (add, insert, delete, alter) and the need to differentiate names (alias) from the numerical properties of a grade. Gemini’s new Size Set system is based on numerical indexes and aliases which allow all above mentioned operations to be handled in simple, logical and easy to understand way. We realized that instead of trying to explain to a garments designer what is a “cartesian product” or “disjoint sets”, it is much better to provide a visual way to understand these concepts and work with them.

At this point, we can claim that Gemini’s way of handling all the problems related to the size set management is the top on the market and will define the industry’s standard for the coming years.
As the number of users of Gemini software products grew, it became more difficult to adapt to different customs and local preferences. When talking about writing information on patterns, this really becomes an issue, each country, each organization having its own particular way of doing things, with little flexibility for change.

Facing this challenge, Gemini decided to put a lot of attention in the way the information is handled on the pattern, on screen and on paper. Instead of simply placing piece name, size and some other info along the grain line, the new version of Gemini Pattern Designer offers a customizable Piece Info Cartridge. The User can choose what to include in this Cartridge, what is the size, position and name of each field, either to appear on screen, on plotter or on both, how to handle long text content, etc.

The style of the Info Cartridge can be pre-defined as a standard within the organization and can be further customized for each model and even for each piece.
Marry, Walking Pieces, Packing

These three functions are key-tools during checking and adjusting the patterns, to ensure matching between parts and to observe the evolution of the shape among graded sizes.

However, there were several major limitations in the previous version of the program, limitations which are common also in competing software products, including in their latest versions.

Gemini Pattern Designer X19 solved these limitations and allows a complete functionality including:

- the possibility to perform any other alteration function on the parts, including changing the base size and performing grading adjustments while keeping them in Marry, Walking or Pack position;

- the possibility to move parts freely on working surface while maintaining their relative positions;

- correct behavior of the functions when using advanced grading sets which include grade, drop, spec, extra;

- direct access at any moment and in any working mode to walk the piece forward and backward, or to exit from the state.
Seam Allowance and Corners

There is a permanent contest among several CAD software producers to incorporate more and more types of seam allowance corners. Gemini Pattern Editor was among the leaders, with a total of 28 types, each becoming more and more elaborated, to respond to most users’ requests.

However, in the new X19 version, we considered that the struggle should not be focused on adding more and more corner types, but rather to make it really useful and easy to use. Studying user behavior, Gemini realized that most of the users do not actually use the newest corners, for the simple reason that they are too complicated and difficult to manage, with a lot of settings and values.

So, the big achievement on this version is facilitating the use of the corner by adding a detailed visual description of the corner and a simple way to customize the values in order to obtain the desired results.

Our latest version of the application also includes the most wanted feature: automatic synchronization of the shape of two related corners from different pieces. In most of the competing programs, this goal is achieved manually by free hand editing of the seam allowance. Gemini CAD refused to adopt this manual time-consuming method, but rather to build the geometrical algorithms to obtain this outcome automatically.
Nesting parts on fabrics with stripes or plaids seemed a simple task to do ten years ago. Gemini embraced a solution similar to the most advanced existing on the market, while trying to add some automatic methods of defining piece relations, which made the process easier. And it was all quite OK while cutting was made either manual or in a primitive automatic way.

However, getting inspired from our competitors was not a good choice. While Gemini gradually became leader in innovative technologies such as VisionCUT, for scanning the fabric, dealing with distortions and in-line high productivity single ply cutting, it became obvious that Matching system must evolve to a totally new level.

That is why Gemini incorporated its highest skills and expertise in the new Matching Manager module, which is now capable to handle all the problems related to matching, fabric distortion compensation, multiple nesting grids, piece multi-point correlation, multi-fabric handling. All these features are actually part of a bigger orientation: Mass Customization System, by which Gemini engages to respond to all the new production challenges for the coming years.

The new features of Gemini Pattern Designer X19 will boost the functionalities of VisionCUT system, widening the range of applications and products which can benefit from a 100% automatized manufacturing process. For example, cutting a perfectly symmetrical collar, even if the fabric is elongated and distorted, will no longer require a manual recut, it will be done in a single step using VisionCUT and a single ply cutter.
Current Technology and Industry Challenges

The actual shape of patterns, used for cutting, is just one part of the designer’s work. The output from the CAD department must also contain additional information such as manufacturing guide for sewing, fusing, ironing, accessories, fabrics, labelling, embroidery, printing or other decoration. This information is passed to other departments using technical sheets containing sketches, drawings, pictures, text instructions, etc., often edited in third party applications.

Basically, there is a parallel flow to create this additional set of information, usually not based on the geometrical shapes and content designed in the CAD application. Synchronizing the CAD content with this sketch information is a challenge, and the amount of work and skills are increased artificially.

Our Breakthrough

Gemini’s solution is quite simple: add all needed graphical capabilities directly into the Pattern Designer application, therefore transforming the classical CAD environment into a fully featured sketch application. The concept is to be able to add the necessary information directly on the real patterns and to link the information organically into the geometrical structure of the model.

How It Works?

Gemini enables the use of graphical content such as: vector SVG and PDF files associated with accessories such as buttons, embroidery, printing and fused decoration, industrial standard point symbols, industrial standard sewing and processing lines, text capsules with arrows pointing towards pattern elements, text along paths and contours, customizable piece info-cartridge. This large pool of information-carrying elements can be used by the designer to make-up each pattern piece in order to pass the necessary instructions to further manufacturing phases.

The challenge for this new feature was to not interfere with the plain standard CAD design process, and to not over-load the simple CAD shapes with content not useful during design, grading, etc. Gemini developed a simple yet powerful display option by which the user can shift from “CAD View” to “Sketch View”, hiding or showing all these additional elements by a simple switch.
How Is the Information Published?

One of the features most appreciated by Gemini Pattern Designer users is the Product Data Sheet editor. Now Gemini brings this functionality to a totally new level: all make-up information and graphics shall be output in the new Product Data Book, as well as in the Product Technical Sheet. We apply WYSIWYG concept: “what you see is what you get”, which means all the information will be exported into PDF files containing everything as it is visible on the screen.

It is important to mention that all the information shall be exported in vector format, therefore all fine details can be zoomed-in and clearly studied.

What Are the Benefits?

First of all, there is no need for a parallel design process run with other software tools, using drawings and sketches not linked to the actual CAD patterns. Second, all added information is placed and linked to the patterns, therefore is permanently synchronized in terms of position and content with the current version of the model. Third, all the information is stored inside the CAD files and its evolution can be managed in the same way as the patterns, including restore points, branches and rights of access for different contributors.
Linked Patterns

Current Technology and Industry Challenges

Traditionally, all the CAD applications available on market, for developing patterns in apparel & flexible goods industry, are divided into two fundamentally different groups, based on the way the patterns are constructed. Of course, before this moment nobody cared to name these groups, so let’s just use two made-up names:

The Extracted Shapes group refers to CAD applications which use a process of drawing the patterns by lines and contours, fixed on the page, and extract surfaces defined by the intersection of these lines. The important advantage of this method is that changes in the shape or position of the original lines are reflected automatically in the shape of all extracted surfaces (patterns), maintaining a link between shapes and helping the designer to speed-up the design process. The huge downside is that the entire design environment is no longer a free, intuitive space, in which to play with patterns, move, rotate, overlap, and generally have this “cardboard pattern” feeling, highly appreciated by users of the second group of applications.

The Cardboard Shapes group usually refers to modern CAD applications which use a process of drawing individual patterns by geometrical methods, and once such pattern is a closed contour it becomes a “piece”, providing a total freedom to play with it on the design surface, just like a piece of cardboard. The feedback from the market clearly shows that users are enjoying this way of working much more, because it is very similar to the natural way of handling patterns. However, the downside of this method is that it is very difficult to create and maintain links between parts. As part of this group of applications, Gemini Pattern Editor tried in its past versions to overcome most of this setback, by adding linked grading, linked measurements and other features. However, the bases of the application did not allow to attack the main goal: to automatically change the shape of a piece when its sister piece is altered.

None of our competitors of both groups showed results in joining these two approaches, nor to eliminate the downsides of each.

Our Breakthrough

Gemini Pattern Designer X19 version is based on a totally new and innovative geometrical platform, which enables for the first time a very simple yet incredibly difficult task: to merge the “surface extraction” method with the “cardboard shape” method, and therefore to unify the main benefits from both of them: automation in altering the shape of linked patterns and total freedom to manipulate parts on the design surface.
How It Works?

Gemini Pattern Designer X19 maintains its traditional approach: patterns must be clear individual parts, just like cardboard parts. The user can feel the pattern, move it, rotate it, flip it, play with it in any way. But on top of this, Gemini also added the feature of extracting surfaces from the intersection of several lines or contours. The trick is that extracted surfaces become cardboard parts, and behave similarly to any other piece, no matter how the user rotates or repositions them on screen.

These combined features open the way for three design approaches within one single CAD application:

• To build an array of construction lines and to extract surfaces from it in a pure “surface extraction” way
• To build individual pieces and to work in a pure “cardboard shapes” way
• OR to build individual pieces, construction lines and to combine the two methods at a totally new level of automation

What Are the Benefits?

Users of each environment (extraction or cardboard) are usually very keen to their advantages: some want automation, the others want freedom, and they are not prepared to give-up their way of working. This was one of the most important obstacle for users of older CAD applications to upgrade to a modern solution. Now, this obstacle is completely eliminated.
Gemini CAD Systems

Advanced Folds Editor

Current Technology and Industry Challenges

CAD applications in apparel/fashion/flexible goods design struggle to find the right compromise between simplicity in operation on one hand and the need to incorporate advanced functionality to solve complicated tasks in the industry.

In this continuous challenge, editing the folds on apparel products is one of the tough things to solve in an elegant yet performant way. Gemini CAD Systems was one of the pioneers in treating folds as reversible entities, allowing the user to handle the pattern in folded-position and automatically unfolding the pattern to obtain the cutting shape. Despite this important advantage compared to competitors’ products, in all previous versions it was quite difficult to handle multiple or overlapped folds and the interaction was not intuitive.

Our Breakthrough

Gemini Pattern Designer X19 incorporates a new functionality called Folds Editor, capable to handle folds creation, alteration and simulation in a very intuitive way, using a 3D visualization tool. The solution was to copy the natural process of folding, to separate this process into discrete alternating steps (one to the left, one to the right, etc.) and to add a simple information such as folding direction (fold upwards or downwards) and the width of each step.
How It Works?

Once the folding process was divided into these simple discrete steps, creating or representing a complex fold remained to be just a matter of filling lines into a table. Multiple folds are just more rows in the table. Copying a fold or multiplying one fold to obtain other 50 similar folds to create a folded skirt is a matter of copying and adding rows into the table.

On top of this simple and easy to use logical structure, Gemini added a 3D viewer, so all the steps in the fold are easily observed during editing. An automatic supervisor marks in real time any step which is invalid (because of its width or direction) and guides the user how to fix it.

What Are the Benefits?

Creating and managing folds, even the most complicated multiple folds with intricate folding directions, is now an easy and intuitive task.

Folds from one model can be easily copied and applied in another model or another pattern. In addition, Gemini Pattern Designer also offers now libraries of pre-edited folds ready to be applied in most common situations.
Traceability is a key element in any process in large organizations, especially in creative activities in which several individuals contribute to developing a product.

In fashion and apparel, as well as in upholstery and furniture, a new design is subject to many changes while in developing stage, and these changes are generated by many contributors.

Tracing back these changes, who did it and why, and having the possibility to roll back the product design to a point and have a different approach is an important feature which today is solved by general purpose tools and methods, usually by storing versions of files at different moments. This method is not efficient and does not meet the minimal ergonomics requests to be properly used in these industries.

Gemini CAD Systems introduces Model History and Restore Points system in the Gemini Pattern Designer X19 package. The declared purpose of this feature is to enable traceability and possibility to roll back the model to any significant point in its developing history, as well as to manage different branches of the same design, including differentiated access rights for different users on these branches, all within one single model file.

The system is based on powerful encryption and compressing algorithms and also on the user identification tools provided by myCAD.cloud platform.
**How It Works?**

During the development of a new product, the Model Owner or other user with appropriate rights can create Restore Points on critical phases and can also create Branches of evolution. Each such branch will have its own final version, one of those final versions being marked as current Active Version. Users can be granted differentiated access to these branches, and their contribution (changes to model) can be traced back to every single action they made from one Restore Point to another.

At any moment, the Model Owner can find out, by checking the model history, who did what and when.

All this information is stored inside one single model file, maintaining an easy way to store and manage models.

**What Are the Benefits?**

As the manufacturing process becomes more and more automatized, the responsibility for the quality and properties of the final product relies more and more on how it was designed. Therefore, tracing back the changes on the design and associating it with individuals generates responsibility among them and reduces the risk of errors with unknown origin.

The capability to manage several branches of design evolution of a product within one single file enables a faster developing process and exchange of information.
MTM Product Customization

Mass customization is on an ascending trend in all domains, but it is highly rated especially in fashion and apparel industry. The classical customizable element in this domain for an article, is the product dimension and fitting. This type of customization is met in the industry under the name of made to order, and until now it was commonly meet in fashion houses and haute couture boutiques. In nowadays this concept is more and more adopted also by the ready-to-wear sector, which are shifting to production on demand.

The transition from mass production to personalized production is progressive due to the inherent needs that arise in this process: adapting the production processes to respond to this new type of production, equipping with new computer systems dedicated to these production methods and training the personal.

Due to this progressive process, the producers are divided in three categories. Gemini CAD Systems has a perfect well adapting solution for each category:
- one category which prefer to start with small customization of the product dimension, and we call this type of customization Basic Alteration
- another category which prefer to offer complete product adjustment services to the customer’s dimensions, and we call this solution Expert Parametric
- a third category which wants to offer both levels, depending on customer needs.

Basic Alteration MTM Plug-in
The Basic Alteration method consists in finding a standard size close to the customer’s measurements and applying small alterations to that particular size, in order to better fit the customer. Being relatively easy to use, the Alteration method is the most common choice of users, and it is the method provided by most of competing CAD applications. However, it has many limitations and the results are not satisfying when the measurements of the customer present significant deviations from the standard size set.

Expert Parametric MTM Plug-in
The Expert Parametric method has a totally different and modern approach. The construction of the patterns is based on a geometrical infrastructure, called skeleton. The skeleton is built by using the classic pattern construction techniques and steps, as described in any pattern construction manual, thus being very simple and logical for any trained pattern designer. The skeleton contains formulas and geometrical relations that are based on measurements. By introducing different measurement values in the formula, the shape of the skeleton will change, but it will always maintain the correlation and shape constraints.
Expert Parametric method has a series of advantages and applications:

- better product fitting and perfect pattern matching, including on extreme sizes.
- applicability as automatic grading for mass production orders, by directly using the dimensions from standard size tables.

Both methods are used by fashion houses, haute couture boutiques and mass customization businesses that produce on-demand, made-to-measure clothes.

On top of this, the Expert Parametric MTM Plug-in can be used as automatic grading for mass production orders, allowing a fast adaptation of products to local markets or distribution chains.
Style Selector & E-commerce interaction

Current Technology and Industry Challenges

The need to be unique in a globalized society drives the growing demand of customized goods. Industry is facing today a huge challenge to find efficient ways for mass customization. To enable customers to choose different options for a product and to create their own configuration (whether is a made to measure shirt or a digitally printed cycling suit), designers must develop variants of models (styles or designs) in their CAD applications. The number of such variants depends on the number of options available and it grows fast because it is obtained by multiplying all options.

Our Breakthrough

Gemini CAD Systems proposes a completely new approach on this problem. Instead of storing hundreds of variants, the CAD projects will actually contain the list of options (Questions to ask), answers (possible alternatives to choose) and actions (things to do on the model if an answer is chosen). The CAD system will no longer create hundreds of pre-configured variants but instead it will create on spot the variant needed based on the answers provided by the customer. APOGY Bespoke cloud processor will automatically generate new variants based on consumer preferences and create optimized production orders.

How It Works?

Style Selector mimics the interaction between customer and an e-commerce webpage or the dialogue with the tailor in a boutique shop while customizing a product. So, all Gemini CAD Systems had to do was to create a platform on which the designer of the product can edit the full scenario containing all questions and all possible answers, and to define what actions to take (usually to add or remove patterns from the cut set) depending on the answers. For each question or answer, the designer can add graphic content and explanations, advices for customer or different rules and conditions when a question is valid to ask, or an answer should be in the available list.

What Are the Benefits?

The huge pile of pre-defined variants is no longer needed. When the designer wants to add a new option, he will just add a new question in the list, with its own possible answers among which the customer will choose. Publishing or updating a customizable product on an e-commerce website is no-hassle activity and requires zero programming effort once an API based connection is set with APOGY Bespoke. When using standard platforms like Magento or Shopify, it is even easier. There are already Gemini plugins available. The cost and time for publishing and updating operations are reduced dramatically. After the consumer expresses its preferences, APOGY Bespoke cloud processor handles all the transformations needed for generating a new variant and continues the process by generating optimized production orders based on delivery time and fabrics optimization. The complete automatization of the process allows to obtain real time cost calculation and to manage also the flow of information for associated processes, such as packaging or shipping. ERP integrations can easily be performed through modern APIs.
Model Access Rights Management
APOGY MARM

Current Technology and Industry Challenges

Modern manufacturing and business models in our globalized economy require many players in the workflow to be able to have access to information. This applies in fashion and apparel manufacturing more than any field. A factory in Turkey needs access to the pattern file of this summer’s new dress model created by a designer in France and ordered by a business owner in Sweden. However, the permissions to access the information must be limited to only two weeks and must not allow the factory to copy the model or parts of it for other purposes. Somehow, the factory must see the patterns, print it or cut it, but never be able to copy-paste into another project, and after two weeks it should not be able to open the model anymore, even if they still have the file.

General purpose cloud storage and file sharing platforms cannot provide these features, which are critical for protecting and managing the Intellectual Property in such a sensitive field such as fashion or furniture design.

Our Breakthrough

Gemini CAD Systems introduces MARM - Model Access Rights Management, a cloud-based service capable of solving in an efficient way the specific problems of fashion, furniture and other design-oriented industries. The declared purpose of this system is to allow owners of Intellectual Property to manage who can have what type of access and for how long to a CAD resource file, and to prevent stealing or misuse of creative content embedded into CAD files. The entire system is based on state-of-the-art encryption methods and provides multiple options and features, all hosted by APOGY cloud platform.

How It Works?

MARM uses the infrastructure of APOGY cloud, on which all individual users are registered and associated with known and recognized organizations using Gemini CAD software products. The owners of Intellectual Property, incorporated into CAD files, are the organizations. Within an organization there are several members and roles, such as Master User, Model Owner or Simple User, all contributing to models and design developing. Model Owners can grant certain access rights for a defined period of time to users and/or other organizations. The rights can be remotely or locally managed and can be supervised/altered by the company’s Master User. Files can be shared using APOGY platform or any other method, including other file sharing & storage platforms or traditional methods such emails. Gemini encryption system allows to lock access to a file for an unauthorized user after a period, even if that file is stored locally, offline.
AutomART - the innovative solution for digital printed goods

Current Technology and Industry Challenges

Textile Digital Printing is made in at least three major ways: Raw Fabric Printing (producing quantities of fabric with repetitive motifs), Shaped Textile Printing (producing parts of garment printed and cut) and Direct-to-Garment Printing (adding various digital decoration to a ready-made-garment).

Shaped Textile Printing is widely used for producing parts needed in customized sportswear, advertising, home decoration and it is a sector where the level of automatization is incredibly low. The waste of materials and labor is huge. The most common classical workflow implies the use of two separate environments: CAD (an apparel specialized CAD) and Graphics (Illustrator or Corel, etc.), which merge usually by manually placing white cloth parts on a printed transfer paper.

Our Breakthrough

The entire Digital Printing solution provided by Gemini CAD Systems is based on a proprietary technology capable to import, scale, imposition and print high-quality printable files such as EPS or PDF. This capability exists both in Gemini Pattern Designer as well as in Gemini Nest Expert modules.

How It Works?

Using the ability to handle EPS and PDF printable graphical content, the designer can use Gemini Pattern Designer X19 to merge the graphical content with the shapes designed and graded in the CAD application, can nest these decorated shapes and send the result directly to a wide format printer and a cutter.
That means the entire workflow is actually changed, as all pre-press operations are performed inside the apparel CAD environment provided by Gemini, benefitting of all the typical automation tools specific to garments production, such as grading, checking, cut planning, nesting, etc. The result of this process is a roll of nested printed shapes that must be cut. The technology in charge of this phase is VisionCUT. This system has the capability to scan the printed fabric, to identify the position and distortion of printed shapes and drive a single ply cutter to cut the parts perfectly, by compensating any distortion within a given set of rules and restrictions. The entire process is fully automatic, in a seamless in-line integration with the cutter.

Please check here the detailed workflow.

What Are the Benefits?

For the first time, producers of digitally printed sportswear and other sewn goods can implement a fully automated workflow which reduces by up to 60% labor costs. Use of consumables such as transfer paper and printer time are reduced by up to 35%, while ink consumption is reduced by up to 10%. Quality in matching the sewn parts on any size is guaranteed and does not require any compromise. The entire process is also compatible with direct-to-fabric printing technology.
Gemini CAD Systems is a leading global supplier of technology for industries working with soft flexible materials such as textiles, composites or leather. Our activity includes research, development and deployment of software, hardware and workflow solutions for fashion & apparel, furniture and automotive, with focus on computer aided design (CAD) and computer aided manufacturing (CAM) applied in the cutting room.

Gemini’s business is based on cross-linked fields of expertise and a collection of proprietary, in-house developed software and hardware products, built in over 15 years of activity and continuous investments in R&D, serving the manufacturing process from design to cutting by more than 17,000 installations across 38 countries, providing reliable services and technical support throughout all stages.

Gemini is leading the global process of digitalization and automation of fashion industry, with a pragmatic approach based on its FITS strategy: Functionality, Integration, Technology, Sustainability. Its latest FashionTech cloud platform enables the transition to mass products customization, covering all stages from product development to e-commerce and manufacture, with remarkable scalability and connectivity capabilities.