CAD IN GARMENT INDUSTRY

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Introduction

- Computers have influenced every sphere of our life in one way or other.
- Computers are making human life easier and comfortable.
- Computers are helping to design, analyse and manufacture the product with short span of time in engineering applications.
- A computer is a fast and accurate data manipulating system that is designed to automatically accept and store input data.
- Process them and produce output results under the directions of a stored program.
- Computer is a tool to increase productivity in many aspects of our life.

CAD

- **Computer-aided design** (CAD) is the use of computer systems to assist in the creation, modification, analysis, or optimization of a design.
- CAD software is used to increase the productivity of the designer, improve the quality of design, improve communications through documentation, and to create a database for manufacturing.
- CAD output is often in the form of electronic file for print, machining, or other manufacturing operations.
- Commonly used software used for CAD are AUTO CAD, MSVISIO, Smart Draw etc.

CAM

- **Computer-aided manufacturing** (**CAM**) is the use of computer software to control machine tools and related machinery in the manufacturing of work pieces.

- CAM may also refer to the use of a computer to assist in all operations of a manufacturing plant, including planning, management, transportation and storage

CAD

- The term CAD/CAM implies that an engineer can use the system both for designing a product and for controlling manufacturing processes.
- CAD is broad term used to represent use of computer in designing. CAM is term that denotes the computerized control of manufacturing process.
- Almost all industry sectors are using CAD in their designing departments. CAD can help to draw textile designs for textile industry.

  We should not confuse CAD only with drawings. CAD covers many aspects of designing like design calculations, data analysis and simulations.
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USES OF CAD

CAD software is used in the textile industry:

- Helps designers draw accurately.
- You can see the products in 3D.
- You can rotate the design and view it from all angles.
- To make changes and modifications quickly and easily.
- To experiment with different patterns, textures and colour ways.
- To develop basic or standardised designs.
- To improve the quality of the design.
- To use simulations to test the design.

Phases of cad

- CAD actually encompasses all those activities of product design cycle with converts a workable concept into a ready to manufacture product specifications. The various sections are:
- Geometrical Model
- Design and Analysis
- Design Optimization
- Drafting and Documentation

CAD Software

- CAD software is used to increase the productivity of the
- designer, improve the quality of design, improve
- communications through documentation, and to create a
- database for manufacturing.
- Originally software for Computer-Aided Design systems was
- developed with computer languages such
- as **FORTRAN, ALGOL** but with the advancement
- of object-oriented programming methods this has radically
- changed.
- **Auto CAD:** Explore and visualize 2D/3D concepts with a
- powerful set of intuitive design tools.

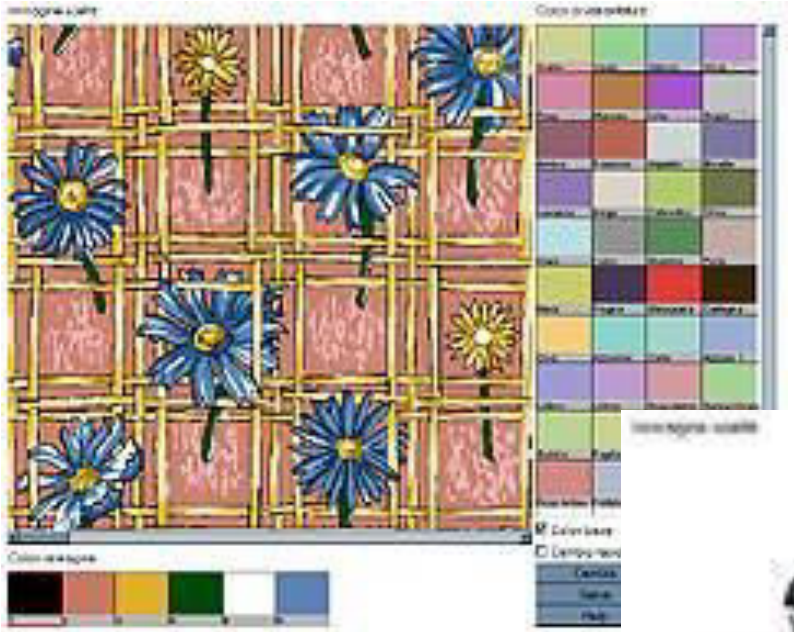
- **Real CAD Pro:** It is all purpose 2D/3D CAD software for
- full 3D modelling, rendering, and 2D drafting in one
- inexpensive solution.
- **Rhino3D:** It is the best tool for opening, editing, fixing and
- converting 3D files of almost any type, as well as being a
- brilliant 3D modeller in its own right.
- **Iron CAD:** It is the productivity leader when it comes to
- moving creative ideas into full 3D reality.
- **PRISM:** It allows the editing of shades of colours on the
- printer and makes a calibration according to the original
- colour & colour on the screen.
- **COLOUR TEX:** It creates realistic simulation of fabric
- created in colour weave. It is possible to create a wide variety
- of yarns of all material and types.

- **MODARIS:** Garment Sector.
- **TUKACAD (TUKATECH):** Garment Sector.
- **LECTRA:** Used in garment sector mostly for pattern making Grading and designing.
- **REACH CAD** (REACH TECHNOLOGY INDIA): Garment Sector.
- **OPTITEX PDS** (pattern design system) - Garment Sector.
- **AUDACES APPAREL** (VELCO GARMENT..
- **GT RESOURCES:** Garment Sector.

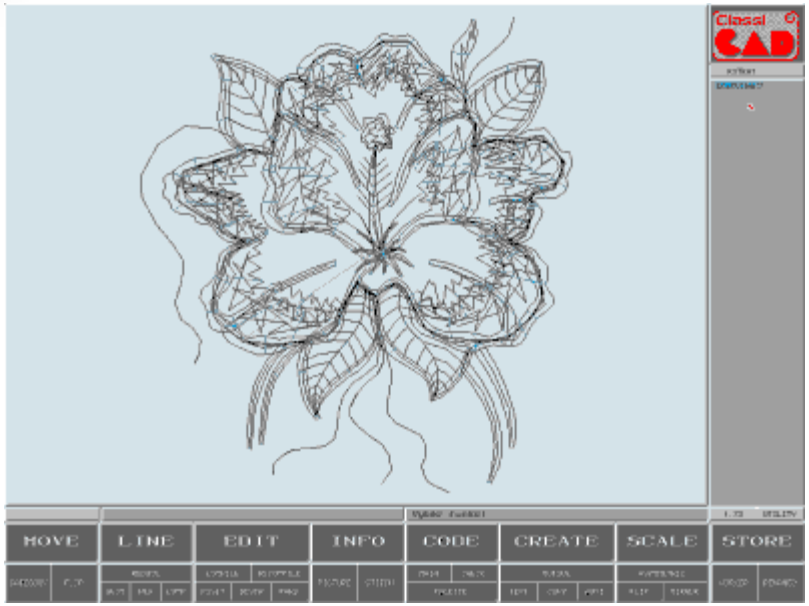
Computerized body measuring system

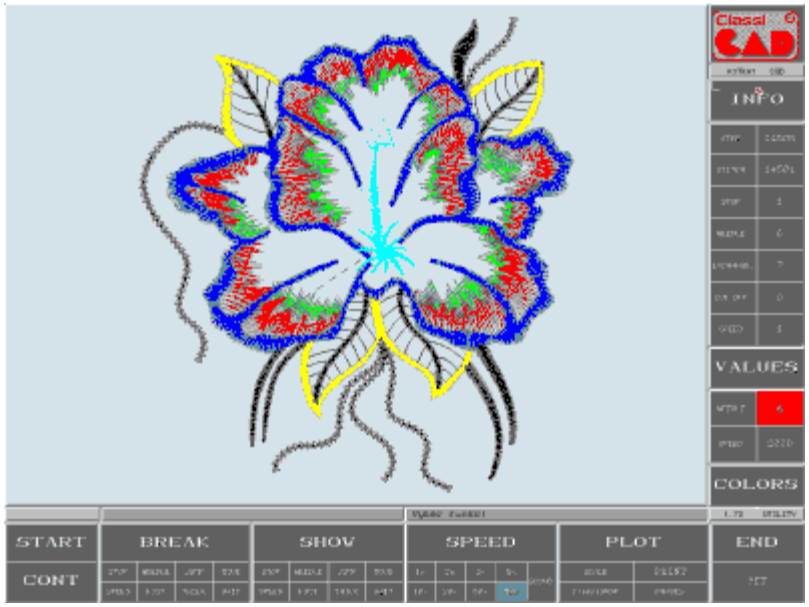
- Various body measuring system have been developed since 1980's.
- These automatic systems operate by using scanning or photographic equipment linked to a computer.
- Some of the body scanning machines are:
- LASS-Loughborough anthropometric shadow scanner.
- Wicks and Wilson's Triform Scanner.
- SYMCAD,etc.

Cad in textile designing



These pictures show a range of fabric patterns and body forms with the colour range of the product. This is completed using a CAD programme

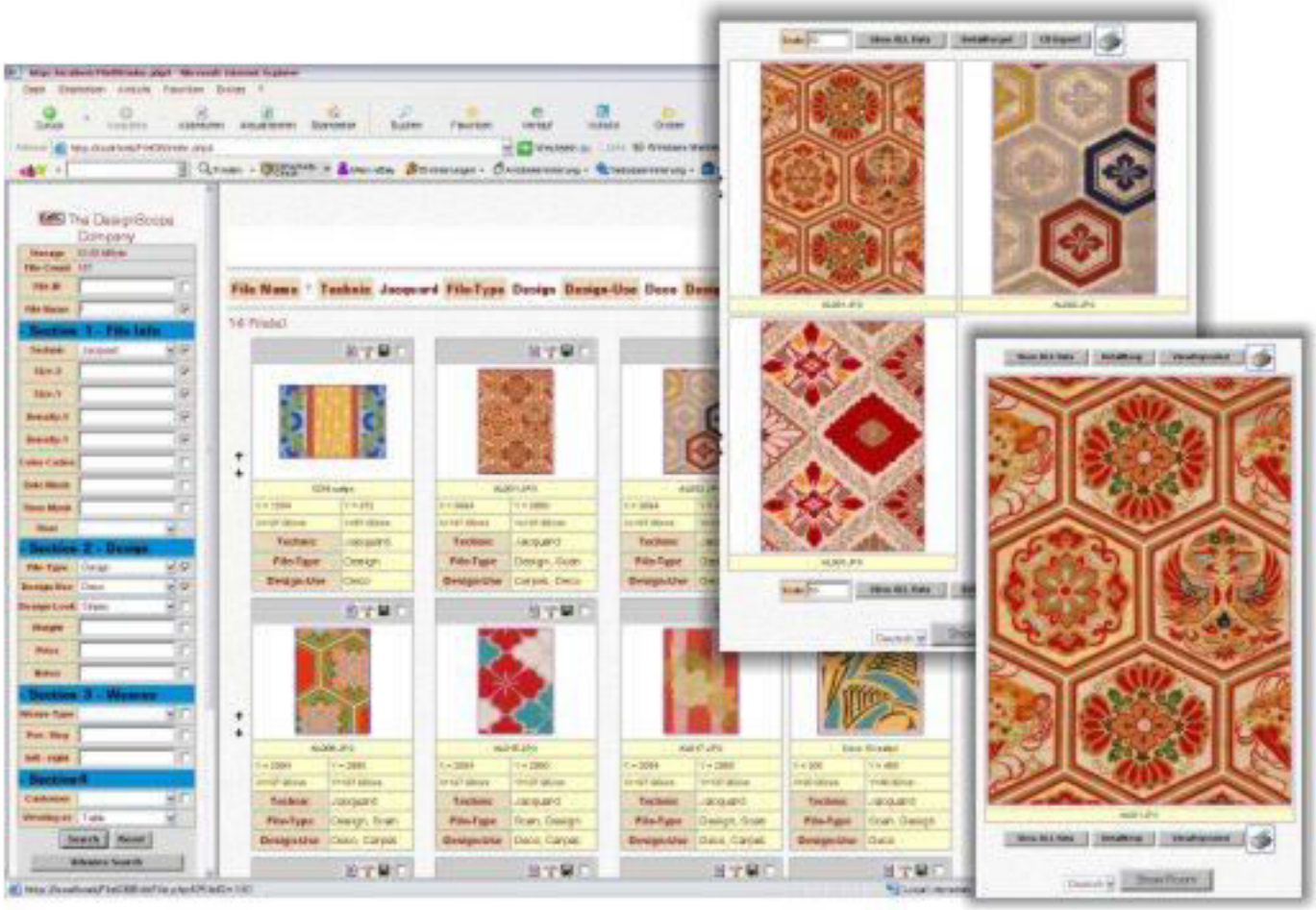




The computer screen images show the process of a CAD drawing that will eventually be used on a multi headed CAM embroidery machine

Cad in embroidery machine

cad in textile designing



Cad in pattern designing

2D to 3D pattern design technique

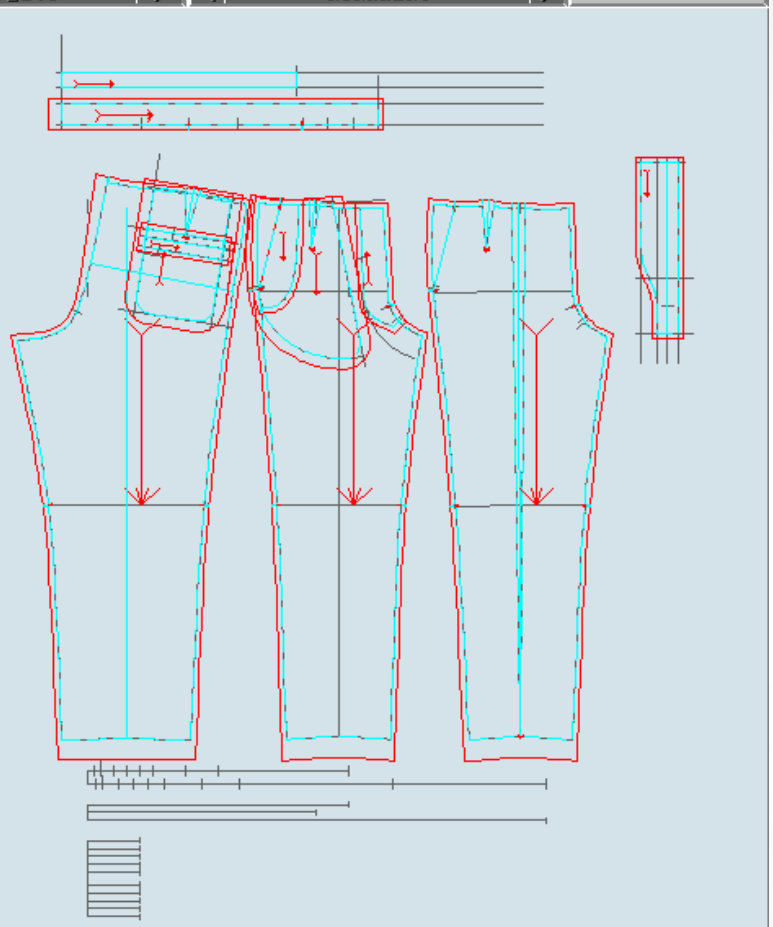
Classi CAD

A	OS	Obvod sedu	OS'	0.000	100.000	
B	OSB	Obvod sedu s vystoupl. břicha	OSB'	0.000	103.040	1/13
C	KD	Kroková délka dolní končetiny	KD'	0.000	81.450	
	BD	Boční délka dolní části těla	BD'	0.000	111.000	
	VPA	Výška pasu	VPA'	0.000	110.000	

Classi CAD

STUPŇOVANÉ | 1. Tělesné rozměry | Kalhoty P_2.5 | NORMÁLNÍ | 0P_KONFE.ZKL

oh	Obvod hrudníku	BAS1	100.000
op	Obvod pasu	BAS2	88.000
vp	Výška postavy	BAS3	176.000
os	Obvod sedu	OS	100.000
osb	Obvod sedu s vystoupl. břicha	OSB	103.040
kd	Kroková délka dolní končetiny	KD	81.450
bd	Boční délka dolní části těla	BD	111.000
vpa	Výška pasu	VPA	110.000
vhr	Výška hýžďové rýhy	VHR	79.994
vk	Výška kolene	VK	48.994
ost	Obvod stehna	OST	57.994
okl	Obvod kolene	OKL	38.706
opk	Obvod pod kolenem	OPK	34.606
onk	Obvod nad kotníky	ONK	24.012
dpo	Délka pánevního oblouku	DPO'	75.000



Vyber funkci / nastav rozdělení obrazovky | 0.12 | UTILITY

STUPŇO | PRAVIDLA | KONTROLA DÍLU

LINIE

MONDOFORM MUŽI < 10055 > Postava normální

100				88				176			
-4	<	>	+4	-5	<	>	+5	-6	<	>	+6

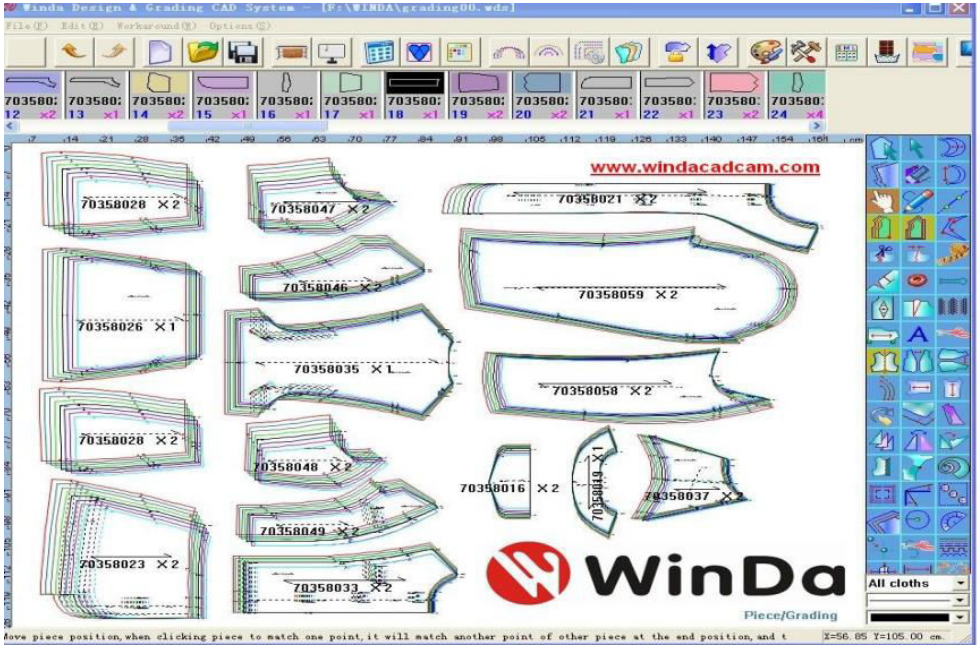
DÍL

KONEC | ZÁPIS | MASTER | VÝSTUP | EXPORT

CAD in Pattern Making

- Pattern can be designed in two ways using Richpeace, Gerber, Lectra software
- Two methods are direct and formula method

Computerized Grading



Patterns initially are made in only one size.

In order to produce clothing that fits various body types and sizes, the pattern pieces must be increased or decreased geometrically to create a complete range of sizes.

Computerised Grading

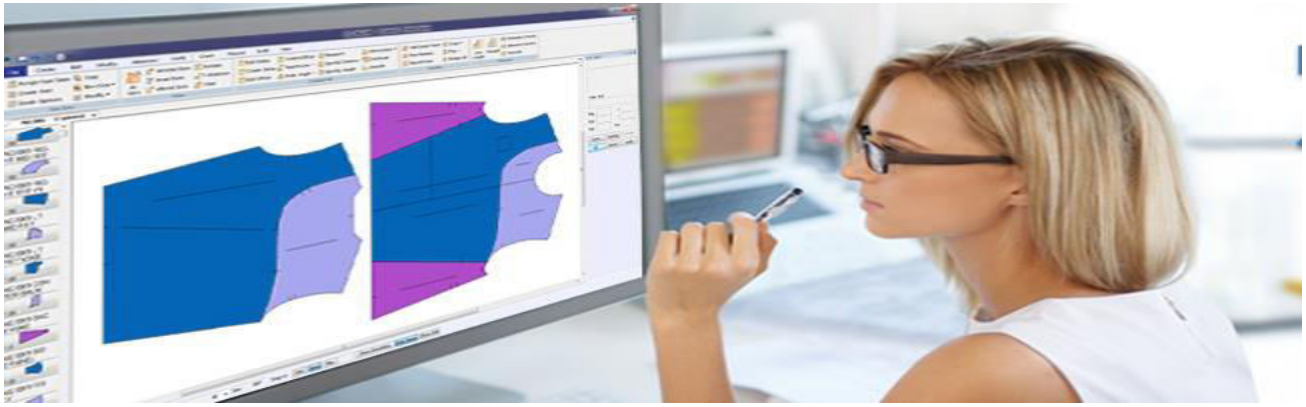
- The process of resizing the initial pattern is called "grading." For example, the sample size 10 patterns must be made larger to accommodate sizes 12, 14 and 16 and smaller for sizes 8 and 6.
- Pattern grading is the scaling of a pattern to a different size by implementing important points of the pattern using an algorithm in the clothing and footwear industry.

Computerised Grading

- What is the purpose of grading clothing patterns?

The purpose of grading is to **proportionally** increase or decrease the size of a pattern, while maintaining shape, fit, balance, and scale of the garment.

Computerized marker making system



- CAD technology can easily digitize their existing hard patterns into automated digitizing system
- The better the layout is, the less fabric is consumed.
- Reduce labor and material costs. (connect to various other systems)

Cad in spreading

- CAD (Gerber) technology helps in cutting machines automated material spreading with perfectly aligned edges
- Accurately aligns and eliminate loss with optimizing the material utilization (Nest parts closer to the beginning, end and edges of the spread, eliminating end loss)
- Easy to operate (Automatic &easy to load & unload roll candles)

CAD in cutting

- cutting machine automatically cuts out the pieces following the lay plan. It cuts the fabric quickly and accurately using vertical knives, high pressure water jets or lasers. Many layers can be cut out at once which means less labour costs and more efficiency
- Quick, accurate set-up and self-adjusting which allow operators to start cutting faster and with greater efficiency
- Less time consuming & increase production

THANK YOU