

USE OF COMPUTER TECHNOLOGY IN TEXTILE INDUSTRIES

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Abstract: The Applications of Computer soft wares and Technologies have brought a remarkable revolution in Textile Industries where all the manufacturing processes were originally carried out with manual efforts by a large proportion of labor and Man power. The computer Applications and soft wares not only lead to a significant advancement in the Textile Industries but also enables automation in series of process thus reducing the requirement of man power and making the process more cost effective.

Keywords—Spreadsheets, CAD, CAM, Data Analysis, MATLAB

I. INTRODUCTION

In today's Hi-tech global scenario, computers have become an indispensable gadget without which life seems to have been stopped. In every walk of life, computers are being used. May it be the simple text writing or data management or data analysis, computers have provided the Human being with a helping aid with which it can do its day to day affairs with high efficiency and effectiveness. All industrial processes are using this computer technology in numerous ways and in similar fashion, Textile is not an exception. All dimensions of its processes starting from designing to production planning and control through various quality control and research activities can effectively be performed. In this paper an account of vast potentialities of computers in textile industrial applications have been discussed

II. APPLICATIONS OF COMPUTER SYSTEMS

The Computers system helps in data acquisition, analysis, display and control of textile processes in the following manners:

1. Use of spread sheets to Analyse, calculate and present Industrial data.
2. Use of CAD/CAM software
3. Use of Data analysis Software.
4. Use of MATLAB (TM) Software.

5. Uses of Computers systems for monitoring the on-going process and its Automation.

A. Use of Spread sheet to Analyze, calculate and present Industrial data

A spread sheet is an Interactive Computer Application which enables us to analyse and stores the data in a tubular form. The program works on data represented as cells of an array, organized in rows and columns.

In context to the Textile Industries, the spread sheets are widely used to store the data pertaining to various machine variables under different working conditions. The spread sheets are widely used to present daily the production reports of Individual machines as well as the in the form of Production summary sheets.

The spread sheet not only enables us to store the data in a systematic manner but also enables us to compare the data; For Instance the daily production reports are compared. Fig 1 presents a typical view of spread sheet whereby we can manipulate the data in whatever the way we want.

The screenshot shows a Microsoft Excel spreadsheet with the following data:

Sample	1	2	3	4	5	6	7
Length	25.4	26.4	24.8	25	25.3	24.9	25.2
Count	8						
Sum	200.8						
Average	25.1						
Min	24.8						
Max	26.4						
Standard Deviation	0.258348						
Kurtosis	-2.05766						

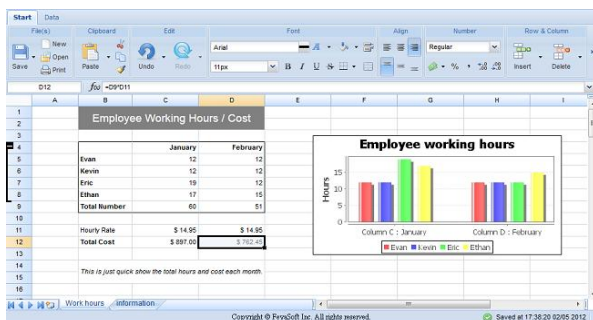


Fig 1: A view of spread sheet displaying its data format

The user of the spread sheet can make changes in any stored value in order to observe the effect on the calculated values in order to make amendments to a given process or to optimize the process.

B. Use of CAD/CAM Software

The term CAD stands for 'Computer-aided design', while CAM is an abbreviation for 'Computer-aided manufacturing'. In simple words, the Applications of computer systems for designing purposes is referred to as CAD, while CAM refers to use of computer systems for the purpose of manufacturing products . The use of CAD/CAM soft wares has brought a significant revolution in the Textile Industries. With the use of these soft wares the process involving Textile designing or Apparel designing which consumes a lot of time; has become very simple and accurate. Fig 2 presents the glimpses of designing processes being performed in textile industries.

The CAD/CAM soft wares provide very thoughtful and Innovative design to the textile designers and manufacturers which may be beyond the reach without their use. It helps the Textile designers starting from the initial design and prototyping stage to the manufacturing stages. It enables the design to be viewed in 3-D patterns to make them more accurate and thus any amendments can be made to the design easily as per the requirement of the costumer.

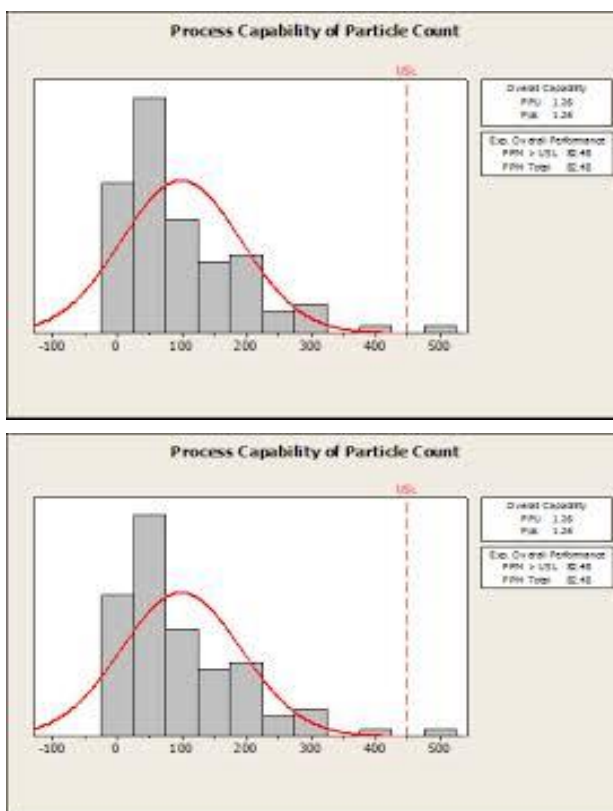


Fig 2: Glimpses of Designing department of a Textile Industry

C. Use of Data Analysis Software

Minitab, Systat, Systica, SPSS, E-Views are some Computer software which uses a comprehensive set of powerful statistics in order to effectively explore the data and helps to make Conclusions and draw Inferences from the data based on the various Quality Parameters of the Production Process.

These Softwares makes use of Statistical techniques in a very simplified and systematic manner in order to produce the desired results in a significantly short time. In Context to a Textile Industry, the various process parameters of a production process; For Instance, The count/strength of a yarn can be easily studied with the use of Statistical techniques involving Control Charts, Regression Analysis etc. considering the specifications pertaining to each parameter. It enables a quick plot of Control charts, Regression analysis plot, Pareto charts and scatter diagram etc in order to study the capability of a production process.



Thus, the use of these softwares can be illustrated as:

1. Basic statistics: Access a complete set of statistical tool including descriptive statistics, hypothesis test, confidence intervals and normality test.

2. Control Charts: Monitors the process over time in order to evaluate the stability.
3. Quality tools: To determine if the measurement Instruments are adequate. It also access how well the process meets the specification limits and create sampling plans.
4. Reliability and survival: determines a product's life time characteristics using a wide range of tools including distribution analysis.

D. Use of Computer system to monitor the on-going process and its Automation

The use of Computers largely enables us to monitor the on-going process in terms of its quality aspects; For instance by coordinating the designing machines or equipments with the computer systems, the manufacturing of the desired patterns and designs can be easily monitored. The computer systems also enables us to develop such applications and commands if may be given once in order to complete a given operation or to monitor the ongoing operation.

Apart from this the computer systems also enables us to control and modify the design operations by using various commands and viewing the different patterns under different set of conditions in order to meet the requirements of the design as well as the specifications of the costumers.

Conclusion

The use of the Computer systems and its soft wares have brought a remarkable and commendable revolution in the Textile Industries. It has not only resulted to a significant Improvement in the quality of the manufactured product but also made the process and product simpler and accurate along with the economical advantages.

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