

Daily News and Views Online TV & Cyber media. "Blunt and Sharp Daily News Portal" Monday 03-06-2024 Portal Website with online news daily at: sunnytimes.in Mobile: 9945116476

M.S.Yatnatti: Editor and Video Journalist: "Blunt and Sharp Daily News Portal": Swarnamba .R.L Freelance Video Journalist and Reporter

CAREERS IN CAD "ON DEMAND ENGINEERING DRAWING & DESIGNS SERVICES INDUSTRY" COMPUTER-AIDED DESIGN (CAD) AND COMPUTER-AIDED MANUFACTURING (CAM)



By: M.S.Yatnatti: Editor and Video Journalist Bengaluru: The AutoCAD and Alternatives to AutoCAD like Draft site , FreeCAD , LibreCAD, NanoCAD, Skechhup Make and ZWCAD are ruling the drawing industry and with an IOT .smart-home and 3 D printing boom there is an impending explosion predicted in CAD jobs opportunities across industries . According to reports Computer Aided Design (CAD) has been a real breakthrough in the drawing and design industry by becoming the primary source of communicating design intent. Before the advent of CAD, the only source for draftsmen was pencil and paper for drawing sketches and engineers were to sit with complicated geometry tools and huge drawing boards . The traditional method of manual drafting is iterative and time consuming. However, now there has been a paradigm shift from traditional manual drafting to cad design and drafting.

The prerequisites understanding the physical need of the idea translating an idea into engineering challenge and then using CAD software to solve these challenges is critical element of being employable as an engineer as while 1.5 million engineers pass out and graduate every year in India in engineering and technology institution.Learning CAD is very important aspect of being an engineer. Depending on your situation learn CAD in a small or big institution or choose MOOCS platform like coursesera that offer courses on CAD VLSI CAD and you can utilize AutoDesk university .Another company that provides lot of resources is Ansys. Lot of software tools are available like commercial and OSS .The AutoCAD and Alternatives to AutoCAD like Draft site , FreeCAD , LibreCAD, NanoCAD, Skechhup Make and ZWCAD and fusion 360 TnkerCAD BLENDER and other tools .The job descriptions vary between drafters designers and Managers and real key to succeed in CAD is composed of three things "Practice" "Practice" "Practice".

According to experts some of the benefits of CAD drafting are -Data storing and Accessibility - One of the advantages of CAD drafting is that the drawings need not be filed and stored in folder unlike in manual drafting. CAD drafting can be easily saved on the computer server and can be accessed from anywhere with internet connection. The chance of losing the documents is higher in manual drafting. As CAD drawings can be saved electronically without the use of paper, it is also an environment friendly method.3D views - 3D drawings are the best way to virtually represent a structure. Though one can manually create a 3d model, it wouldn't look as realistic as the 3D model generated by AutoCAD. AutoCAD breathes life in the 3D model and aid the visualization process. While creating 3D view manually is a challenging, time-consuming and tire-some job, it becomes much easier with software like AutoCAD. Revisions - While you create any drawing on paper or software, there is bound to be some amount of revisions or modifications. In manual drafting, you need to erase and redraw to make any modification to your drawing. CAD simplifies the revision process to a large extent with its various editing tools. With few clicks of mouse, you can undo, redo or delete your actions. You need not re-draw an object anytime later as you can modify the existing object by mirroring, stretching, rotating, scaling etc. Speed and Time - Technologies are invented to make our work easier, save our time and to complete the work faster. AutoCAD is significantly faster than the traditional method of manual drafting. It speeds up the task of preparing bill of materials, reports, scaling etc. The tedious task of drawing each line on paper can be done in few mouse clicks. As CAD software eliminates repetitive iterations, a substantial amount of time is saved. In AutoCAD, data describing a component or its family is associative in nature and hence revisions are automatically made to all places the data is used. Accuracy - In manual drafting, all the objects drawn must be of correct size and alignment. Each object need to be manually verified and dimensioned as the slightest error can be catastrophic to the entire project. With CAD, there are numerous techniques available to obtain exact dimensions thus leading to improved accuracy in the project. Owing to the numerous benefits in terms of speed, accuracy, data storage, revision CAD offers over manual drafting, it has become a standard for the AEC industries. CAD drawing services has changed the engineering industry in many ways, but all for the better. Those who use CAD outsourcing services for engineering find that they're more profitable and successful. Below, you'll find several more reasons how CAD has changed the engineering industry. Realistic Drafting. Before CAD, all drafts were drawn by hand. This means that all models and drafts were 2D (2 Dimensional). In order to make sure the structures were drafted properly multiple drawings were required to depict all sides of the model. Today, CAD software helps eliminate the hand-drawn drafts. With the use of CAD, engineers are able to create 3D (3 Dimensional) simulations of all drafts - whether it be a machine component, structure or other type of model. There's even an option to take a virtual 3D tour of the structures being drafted with CAD.Networking Capabilities. Before CAD software, engineers had trouble saving and transferring files without worrying whether or not they'd become lost or degraded. Now, with the help of CAD applications like BIM (Building Information Modeling), engineers are able to store their work and findings in a system that saves and transfers files without any complications. Multiple engineers can locate this information and work on a project using the views, tools and access for the same project.

Job Opportunities. Engineers can be expensive, and rightfully so. Their skill set and expertise is incomparable. Unfortunately, small businesses can't afford to hire engineers, in-house and pay them what they're worth. That's where CAD outsourcing has come into play. CAD has created thousands of jobs for engineers today, so that they're working in a place that offers specialized programs so they're able to learn to use CAD.Cost Efficiency. Engineering drafting by hand is an expensive and time consuming task. Today, CAD has offered a way for engineers to increase productivity in drafting, as well as eliminated the need for additional materials while drafting place, drawing sets and more. Precision. CAD drawing services software offers engineers a way to draw and create projects without error. CAD offers application tool to with measuring angles and lines with complete accuracy. Spending time correcting wrong dimensions and reworking is eliminated with CAD software. Simplification of the job, unmatched precision and cost efficiency when using CAD are just a few of the benefits offered when you outsource your engineering needs.

The progress of the engineering industry from time immemorial can be broken down into three stages which are the :The physical stage- were designs and manufacturing were done manually by hand, which dates back to the eras far before Christ. The mechanical phase- designs and manufacturing processes were implemented with the use of machines or machine components and this dates back to civilization in Egypt as well as Rome. The Computer Age- were designs, manufacturing, drafting and the coupling of mechanical/engineering components could be done with the use of robots and computers, programmed with software applications that could accomplish highly advanced tasks.

How has CAD reportedly changed the Industry?: The creation of computer aided drafting applications has been hailed as one of the great engineering inventions of our time due to its wide spread use by engineers of all discipline because of the following reasons. Cost- the tried and tested traditional methods of drafting engineering designs and ideas by hand has come to be an expensive venture due to the fact that the engineer will need to purchase numerous equipment such as drafting paper—which had to be changed when drawing new plans--, drawing set, a standard board etc. and any error made, meant that the engineer had to restart the drafting process with new paper as well as new tools in some cases. But the use of CAD software eliminates all these hassles for with a computer and your installed software, an engineer can work as cheaply as possible without wasting any materials. Accuracy - the proverbial error due to parallax has been nullified with the advent of computer drafting software for its application tools measure lines and angles to the highest form of accuracy possible. This has simplified the workloads of engineers who no longer have to deal with the time and effort needed to search for and correct wrong dimensions. Ease of networking - CAD applications such as the Building Information Modeling Systems has made it possible for multiple engineers located in different places, work on a particular project with all of them having the same tools, view and access to the project in question. This system also enables the transfer of files without the fear of loss and degradation that can occur to traditional drafting paper. Realistic representations - drafting by hand was or is only capable of achieving a two-dimensional viewing of the structure been built which called for multiple drawings before all sides of the structure can be adequately represented. The use of CAD eliminated the time and resources that used to be wasted in trying to accomplish a realistic view when drawing by hand, by providing virtual t

Computer-aided design (CAD) involves creating computer models defined by geometrical parameters. These models typically appear on a computer monitor as a three-dimensional representation of a part or a system of parts, which can be readily altered by changing relevant parameters. CAD systems enable designers to view objects under a wide variety of representations and to test these objects by simulating real-world conditions..Computer-aided manufacturing (CAM) uses geometrical design data to control automated machinery. CAM systems are associated with computer numerical control (CNC) or direct numerical control (DNC) systems. These systems differ from older forms of numerical control (NC) in that geometrical data are encoded mechanically. Since both CAD and CAM use computer-based methods for encoding geometrical data, it is possible for the processes of design and manufacture to be highly integrated. Computer-aided design and manufacturing systems are commonly referred to as CAD/CAM.

THE ORIGINS OF CAD/CAM:CAD had its origins in three separate sources, which also serve to highlight the basic operations that CAD systems provide. The first source of CAD resulted from attempts to automate the drafting process. These developments were pioneered by the General Motors Research Laboratories in the early 1960s. One of the important time-saving advantages of computer modeling over traditional drafting methods is that the former can be quickly corrected or manipulated by changing a model's parameters. The second source of CAD was in the testing of designs by simulation. The use of computer modeling to test products was pioneered by high-tech industries like aerospace and semiconductors. The third source of CAD development resulted from efforts to facilitate the flow from the design process to the manufacturing process using numerical control (NC) technologies, which enjoyed widespread use in many applications by the mid-1960s. It was this source that resulted in the linkage between CAD and CAM of the most important trends in CAD/CAM technologies is the ever-tighter integration between the design and manufacturing stages of CAD/CAM-based production processes. The development of CAD and CAM and particularly the linkage between the two overcame traditional NC shortcomings in expense, ease of use, and speed by enabling the design and manufacture of a part to be undertaken using the same system of encoding geometrical data.

This innovation greatly shortened the period between design and manufacture and greatly expanded the scope of production processes for which automated machinery could be economically used. Just as important, CAD/CAM gave the designer much more direct control over the production process, creating the possibility of completely integrated design and manufacturing processes. The rapid growth in the use of CAD/CAM technologies after the early 1970s was made possible by the development of mass-produced silicon chips and the microprocessor, resulting in more readily affordable computers. As the price of computers continued to decline and their processing power improved, the use of CAD/CAM broadened from large firms using large-scale mass production techniques to firms of all sizes. The scope of operations to which CAD/CAM was applied broadened as well. In addition to parts-shaping by traditional machine tool processes such as stamping, drilling, milling, and grinding, CAD/CAM has come to be used by firms involved in producing consumer electronics, electronic components, molded plastics, and a host of other products. Computers are also used to control a number of manufacturing processes (such as chemical processing) that are not strictly defined as CAM because the control data are not based on geometrical parameters.

Using CAD, it is possible to simulate in three dimensions the movement of a part through a production process. This process can simulate feed rates, angles and speeds of machine tools, the position of part-holding clamps, as well as range and other constraints limiting the operations of a machine. The continuing development of the simulation of various manufacturing processes is one of the key means by which CAD and



SUNNY TIMES DAILY NEWS PORTAL www.sunnytimes.in

Page: 2; Daily News and Views on Property Matters and Political Matters, Online TV & Cyber media. Monday 03-06-2024 "Blunt and Sharp Daily News Portal" Website at: sunnytimes.in Mobile: 9945116476

CAM systems are becoming increasingly integrated. CAD/CAM systems also facilitate communication among those involved in design, manufacturing, and other processes. This is of particular importance when one firm contracts another to either design or produce a component.

ADVANTAGES AND DISADVANTAGES: Modeling with CAD systems offers a number of advantages over traditional drafting methods that use rulers, squares, and compasses. For example, designs can be altered without erasing and redrawing. CAD systems also offer "zoom" features analogous to a camera lens, whereby a designer can magnify certain elements of a model to facilitate inspection. Computer models are typically three dimensional and can be rotated on any axis, much as one could rotate an actual three dimensional model in one's hand, enabling the designer to gain a fuller sense of the object. CAD systems also lend themselves to modeling cutaway drawings, in which the internal shape of a part is revealed, and to illustrating the spatial relationships among a system of parts. To understand CAD it is also useful to understand what CAD cannot do. CAD systems have no means of comprehending real-world concepts, such as the nature of the object being designed or the function that object will serve. CAD systems function by their capacity to codify geometrical concepts. Thus the design process using CAD involves transferring a designer's idea into a formal geometrical model. Efforts to develop computer-based "artificial intelligence" (AI) have not yet succeeded in penetrating beyond the mechanical—represented by geometrical (rule-based) modeling. Other limitations to CAD are being addressed by research and development in the field of expert systems. This field is derived from research done in AI. One example of an expert system involves incorporating information about the nature of materials—their weight, tensile strength, flexibility, and so on—into CAD software. By including this and other information, the CAD system could then "know" what an expert engineer knows when that engineer creates a design. The system could then mimic the engineer's thought

Expert systems might involve the implementation of more abstract principles, such as the nature of gravity and friction, or the function and relation of commonly used parts, such as levers or nuts and bolts. Expert systems might also come to change the way data are stored and retrieved in CAD/CAM systems, supplanting the hierarchical system with one that offers greater flexibility. Such futuristic concepts, however, are all highly dependent on our abilities to analyze human decision processes and to translate these into mechanical equivalents if possible.One of the key areas of development in CAD technologies is the simulation of performance. Among the most common types of simulation are testing for response to stress and modeling the process by which a part might be manufactured or the dynamic relationships among a system of parts. In stress tests, model surfaces are shown by a grid or mesh, that distort as the part comes under simulated physical or thermal stress. Dynamics tests function as a complement or substitute for building working prototypes. The ease with which a part's specifications can be changed facilitates the development of optimal dynamic efficiencies, both as regards the functioning of a system of parts and the manufacture of any given part. Simulation is also used in electronic design automation, in which simulated flow of current through a circuit enables the rapid testing of various component configurations. The processes of design and manufacture are, in some sense, conceptually separable. Yet the design process must be undertaken with an understanding of the nature of the production process. It is necessary, for example, for a designer to know the properties of the materials with which the part might be built, the various techniques by which the part might be shaped, and the scale of production that is economically viable.

The conceptual overlap between design and manufacture is suggestive of the potential benefits of CAD and CAM and the reason they are generally considered together as a system. Recent technical developments have fundamentally impacted the utility of CAD/CAM systems. For example, the ever-increasing processing power of personal computers has given them viability as a vehicle for CAD/CAM application. Another important trend is toward the establishment of a single CAD-CAM standard, so that different data packages can be exchanged without manufacturing and delivery delays, unnecessary design revisions, and other problems that continue to bedevil some CAD-CAM initiatives. Finally, CAD-CAM software continues to evolve in such realms as visual representation and integration of modeling and testing applications. THE CASE FOR CAS AND CAS/CAM: a conceptually and functionally parallel development to CAD/CAM is CAS or CASE, computer-aided software engineering. As defined by SearchSMB.com in its article on "CASE," "CASE "I is the use of a computer-assisted method to organize and control the development of software, especially on large, complex projects involving many software components and people." CASE dates back to the 1970s when computer companies began to apply concepts from the CAD/CAM experience to introduce more discipline into the software development process..Another abbreviation inspired by the ubiquitous presence of CAD/CAM in the manufacturing sector is CAS/CAM. This phrase stands for Computer-Aided Selling/Computer-Aided Marketing software. In the case of CASE as well as CAS/CAM, the core of such technologies is integration of work flows and application of proven rules to a repeating process.

BIBLIOGRAPHY; Ames, Benjamin B. "How CAD Keeps It Simple." *Design News*. 19 June 2000."CAD Software Works with Symbols from CADDetails.com." *Product News Network*. 11 January 2006."CASE." SearchSMB.com. Available from http://searchsmb.techtarget.com/sDefinition/0,sid44_gci213838,00.html. Retrieved on 27 January 2006.Christman, Alan. "Technology Trends in CAM Software." *Modern Machine Shop*. December 2005.Leondes, Cornelius, ed. "Computer-Aided Design, Engineering, and Manufacturing." Vol. 5 of *The Design of Manufacturing Systems*. CRC Press, 2001."What Do You Mean?" *Mechanical Engineering-CIME*. November 2005.and internet websites



ADVERTORIALS AND CONSULTANCY HELP LINE

You may have problems with Government Departments PWD, BDA, BMRDA, KIADB, TOWN PLANNING DEPARTMENTS AND Development Authorities BBMP, Taluka office, D.C. Office, Corporation, K.S.R.T.C., Commercial Tax Offices, K.E.B., Pension problems, Acquisitions of Land Problems, Khata, Bifurcation, Tax Revision. Banks Problems etc, which may be have been pending for months, and years in Government files etc.

Everybody is facing Problems, Problems?

Kindly write to us, we analyze and convince our selves and if appropriate then we will take your problems, to concerned authorities, ministries, i.e., through our news paper property politics and try to help you. We also provide consultancy and Liaison service on case to case bases as per agreed terms and fees. Write your problems with Xerox copies,

M.S.Yatnatti , Editor and Video Journalist Consultant Mobile: 9945116476 E-Mail: msyatnatti@yahoo.com propertypolitics@gmail.com

Online Portal Edited Printed Published and Owned By M.S YATNATTI No.107, Ground Floor "Royal Residency" Apartment Complex "Enkay Farms Valagerahalli, Dubasiplaya Kengeri Bangalore – 560 059 Editor –In –Chief M.S YATNATTI E-mail :sunnytimes.in@gmail.com Phone : 9945116476 Unsolicited material may not be returned. The opinion of writers are their own ,not our .We are not responsible for incorrect advertisement listings and .We do all we can to ensure correctness ,but readers are advised to recheck with concerned establishment before entering into binding contract .No part of this publication should reproduced without our written permission. Legal jurisdiction restricted to Bangalore only