



"Different paradigms for manying ideation and simulation are needed."
— Rajneesh Shinde, senior director, marketing & channels, Altair, India & GCC



"Companies embracing CAD/CAM will thrive in complex business environments."
— Suresh Nambiar, country manager & vice-president, PTC

THERE HAS BEEN a tremendous amount of innovation and innovation in the CAD/CAM domain over the past three decades, with most of the major changes coming in the past decade. The reason why CAD/CAM is now an inseparable process amongst mainstream manufacturing is because it has never failed to evolve and innovate.

"CAD/CAM tools enable designers to manage the data, variants, attributes, make instant changes and simulate each manufacturing, assembly and testing process, at work cell to the entire line or factory level. Once simulated, these tools are capable to generate CNC, robot or PLC programs automatically which can then be downloaded to respective equipment. Such a collaborative approach assures that the resultant optimised process will work efficiently and that the desired cycle time and production requirement will be achieved," affirms P. Ramesh Chandra, MD, Ranal India.

Nambiar professes that companies embracing CAD/CAM not only survive, but thrive in today's complex environment. "CAD/CAM drastically helps

in improving the productivity of the designer that translates into fast designing, lower designing cost and shorter project completion times and also helps in visualising the final product that is to be made. Since CAD systems offer greater accuracy, the errors are reduced drastically, leading to better designs. Hence, manufacturing is carried out faster and reduces the wastages that could have occurred because of the faulty design."

IT IS FASCINATING to see that despite the computerisation of design, the traditional process remain largely intact. "The ideation still remains a game of ideas based on experience and intuition. Naturally the number of design iterations has been reduced by the computerisation in a limited way. Costly iterations that involve changes to the concept cannot be avoided this way. The only thing that has changed is the tools the different design tasks are performed with," opines Rajneesh Shinde, senior director, marketing and channels, Altair, India & GCC.

The idea that engineering managers pondered

with is that early simulation, like early detection of design flaws will lead to shorter cycle time. Hence, many have identified moving computational validation early in the design process. "This is a step in the right direction. However, existing concepts of virtual product development don't turn this into new ways of designing better. They just introduce another task to the concept phase," avers Shinde.

In effect, he opines that there is a need for a different paradigm for manying ideation (concept design) and simulation (optimisation+validation). "Given into the hands of a designer, these technologies will help to conceive better designs, which are lighter in weight, right at the moment of geometry creation. The designer can evaluate ideas quickly without engaging in complicated simulation setups."

While this seems like a great idea, the challenge facing the manufacturing sector, like Chandra correctly points out, is lack of availability of skilled resources. "There is no proper infrastructure in engineering institutes for the students to get exposure to advanced tools and technologies. Secondly, in

PORT MACHINING AND BLADE/BLISK/IMPELLER MACHINING HAVE EMPOWERED THE PROGRAMMER TO CREATE EFFICIENT TOOLPATHS ON COMPLEX PROFILES

earlier days, design teams used to be located close to the manufacturing shop floors thereby last minute changes were possible by direct interactions between the design and manufacturing teams. The new approach of global sourcing has put an additional challenge to get the design and manufacturing processes 'first time right'," professes Chandra.

Today, designers may operate from one country, while manufacturing shops and the end customer maybe elsewhere. "This calls for rigorous execution and quality control processes and use of advanced simulation tools for validation of design, process and applicable ergonomics to get the right product that meets manufacturing standards," adds Chandra.

CAD/CAM TODAY IS also being used in industries that were earlier traditional and cottage based, such as woodworking, sign making, jewelry and footwear amongst others. "CAD and CAM are highly integrated into the value chain of any business today and the Indian market, according to me, is maturing rapidly. More importantly for businesses the complexity of products is also growing. So obviously, the need for efficiency that CAD/CAM or simulation can bring is quite invaluable," acknowledges Nande.

Seth has always been of the opinion that the CAD/CAM industry is highly segmented and will undergo an immediate and evident consolidation. "Now, it is happening," affirms Seth. "This consolidation will help all users of CAD/CAM in a very positive way. As far as the Indian manufacturing industry is concerned, I am very optimistic about the 'make in India' campaign and confident that it will foster a positive manufacturing change in the country, with an attitude to innovate and apply." ■



"The biggest challenge is lack of availability of skilled resources."
— P. Ramesh Chandra, MD, Ranal India

1. Designer working on a CAD blueprint monochrome image.