



Configuring production processes

A key technology that help companies manage their entire product development process right from concept development, design, validation to manufacturing through configuring and implementing ideal workflows is Product Life Cycle Management. The article deals with the application benefits of PLM to enhance productivity.



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The multi-faceted processes of product design, engineering and manufacturing have evolved to become much more inter-dependent, inter-disciplinary, entangled in iterative, long and complex design and development processes. So, how can a company make sense of it? How can they create order and symmetry in this cross functional & multilateral working environment? How does a company streamline processes and optimise workflows to increase productivity?

These are the challenges that any company involved in product development faces. Huge investments in infrastructure and resources, enormous amount of data generation, silo departments or dispersed manufacturing and R&D set-ups, big budgets and lower bottom-line, maximising productivity

and throughput through best use of existing facilities make it a monstrous task for the companies to align these functions in a cohesive, coordinated and structured environment to build an agile, lean, competitive and productive organisation.

Addressing challenges

The solution to these challenges can be found in latest technologies in CAD/CAM/CAE, PLM, digital manufacturing and Additive Manufacturing solutions. These technologies can help companies to compress their design and development cycle, build robust products, get designs right the first time, augment product design innovation, streamline workflows

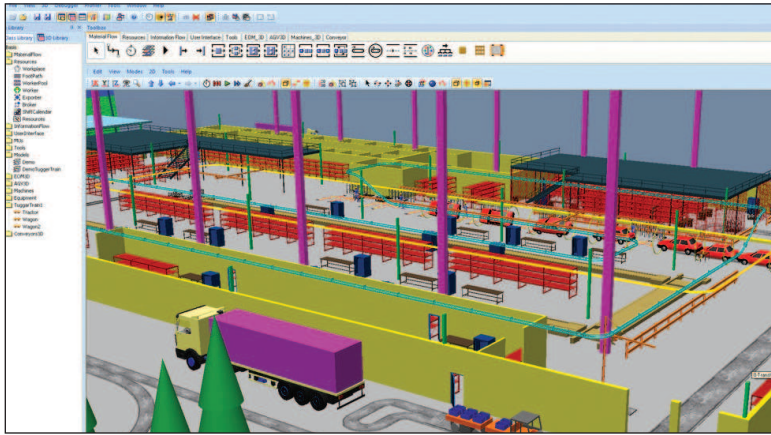
and configure optimised production processes, manage and control design data, optimise use of resources including machines, money, man-efforts, facilitate cross department functioning and achieve better data integrity between geographically dispersed facilities, achieve cost and time efficiency and hit the market early.

Automating the work flow

A key technology that can help companies manage their entire product development process right from concept development, design, validation to manufacturing through configuring and implementing ideal workflows is Product Life Cycle Management commonly referred to as PLM. It can assist companies to reduce wastage of time, man efforts, machines,

materials and other resources, manage data better, and bring more discipline and coordination between cross functional teams, departments & facilities, thus, enhancing overall performance and productivity of the company.

PLM basically helps companies integrate, configure and manage their design data, processes, and work flows right from the initial stages of product development cycle, i.e. concept stage to design, simulation and validation, right through to manufacturing and releasing the product to market. It helps companies with the setting up of effective data management systems, efficient workflow and process configurations, and overall system validation. In addition to this, it automates the work flows that helps exert a strong grip on the product development process, and thereby bring more control and discipline, and streamline the overall development cycle.



Digital manufacturing solutions help create 3D simulations of plant design

Towards synchronised development process

PLM typically works within and addresses five primary functional areas namely requirements management, project management, engineering process management, manufacturing process management and supplier relationship management. Benefits of PLM include end-to-end management of data, information, process and resources, collaborative product development, synchronised development process, zero-idle time, early time to market and increased market success.

While PLM can oversee the broader performance of the R&D departments, however, for a company to enhance their productivity and manufacturing quality, they need to set-up plants that rid them of all the bottlenecks in the processes, for example, unnecessary human efforts, duplication of work, a dysfunctional or incongruous plant layout and processes, etc. Digital manufacturing can enable companies to virtually simulate their plant layouts and processes in a 3D environment, which can help them anticipate, identify and address the bottlenecks in the manufacturing processes to establish processes that are smooth and streamlined.

Enhancing manufacturing efficiency

From manual manufacturing processes used in earlier times, the industry, today, has made a shift towards digital manufacturing. Digital manufacturing solutions help create 3D simulations of plant design, which includes man-machine interaction to help define the most efficient, safe, non-iterative and non-interfering or hindrance free manufacturing processes. Right from assembly lines, human ergonomic simulation to robotic simulation, plant layout, etc. could be defined and analysed virtually in the 3D environment.

Digital manufacturing solutions & technologies help the companies configure optimum work flows during the plant layout stage, which enables the companies in enhancing the productivity and overall output of the company. Issues concerning to constraints in manufacturing or feasibility of

manufacturing, popularly referred to as ‘manufacturability concerns’ or ‘ergonomic constraints’ are very difficult and highly expensive to rectify once the plant, work flows and processes are established. A prior validation would help companies identify such concerns at the earlier stage of planning and would hence save the time and cost of rectification. Even the existing plant could be rendered virtually and modified to see how manufacturing efficiency can be enhanced, which then can be implemented by the companies in their physical plant space.

Implementing success mantras

Companies that want to remain relevant in changing market conditions need to make corresponding changes in their design & development processes. Redundant technologies will stunt a company’s growth. Means to success is as important as the success itself to ensure long lasting and consistent success. It is crucial that companies keep striving to build and produce great products, remain innovative and adapt themselves time and again by reinventing and evolving their processes to achieve higher productivity. Companies that make inspection of current processes, comprehension of new solutions, anticipating market changes, and in accordance adapting to redefine their goals of products and productivity a habit, will always remain a leader in their industry.

Shrinking product life cycles, growing imperative to develop innovative products faster & better than the competition, and higher bargaining power of the consumers has necessitated the companies into product design and development to adopt these latest technologies in product design and manufacturing. This would help them compress their design and development cycle, and hit the market early with smarter products that perform, offering them to the consumers at competitive rates, thus, remaining resilient and relevant in today’s rapidly changing market space. □

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