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7 Tips to Eliminate Late-Stage Redesign Work

TOP TIPS SHEET

aPriori, in conjunction with Machine Design and Industry Week, completed a survey to assess where manufacturing costs are getting out of hand and how many companies are making it a priority by investing in simulation software.

One of the key statistics discovered as part of this research study is that 37 percent of respondents indicate design to delivery schedules are shorter (9% of whom indicate delivery schedules are significantly shorter).

Across all industry verticals, there is significant pressure on product development teams to innovate, detail, test, and release new designs to manufacturing in less time than ever before. In order to accomplish all of these activities in less time, manufacturers must work smarter and rely heavily on technology to help them achieve their goals.

The following tips provide guidance around how digital manufacturing simulation software can enable manufacturers to identify and eliminate manufacturability issues and cost drivers early in the design process and reduce or even eliminate late stage thrashing to achieve target costs.

1 Focus on quick turnaround for product or subassembly cost estimates.

Not surprisingly, greater numbers of subsystems are purchased from outside suppliers. With 68% of cost estimates from suppliers taking a week or more to generate, this has a significantly negative impact on the design-to-delivery lifecycle. Consider arming your design/engineering team with digital manufacturing simulation software that generates precise cost estimates in real-time. Look for products that are integrated with your CAD software to make this process even easier.

2 Pay attention to your communications channels.

Nearly half of all respondents shared that organization and a lack of communication between design and manufacturing is the major obstacle they face to delivering a product within a projected timeline. Digital manufacturing simulation software that features a single database for cost and manufacturing analysis would greatly improve this collaboration. The product team can generate early phase cost estimates as the design is starting to take shape, and then sourcing, cost engineers, and manufacturing estimates can collaborate with the designers to fine tune elements of the cost estimate as the design matures.

3 Evaluate manufacturability and cost drivers early in the product lifecycle.

Cost overruns could be significantly reduced if manufacturability and cost drivers were identified and eliminated in the early phases of design. Such obstacles often occur in either the manufacturing stage (56% of the time) or in the prototyping stage (61% of the time). When discovered at this late stage, it slows down time to market, and often requires significant design re-work. Manufacturability and cost simulation software provides visibility to these issues long before the design is released to manufacturing.

4 Get a handle on material costs using digital manufacturing simulation software.

Two out of every three respondents agree that product design-to-delivery costs have increased over the past couple of years due to increases in material costs. Physics-based mechanistic digital manufacturing simulation software would greatly improve material utilization to reduce costs.

5 Eliminate expensive prototype evaluations and manufacturing reviews.

Product design teams often don't identify potential manufacturing issues early enough in the design-to-delivery lifecycle. Applying manufacturability and cost simulation software to early phase design concepts allows the user to quickly identify potential complications, and could eliminate the need to produce prototypes altogether.

6 Know who is responsible for the management of product cost.

Our research indicates that 41% of respondents suggest that the responsibility for product cost management is a function of design engineering. Another 29% suggest it is part of the business strategy. And 18% believe it's a manufacturing evaluation function. Perhaps it's all three and perhaps this indicates why product cost management is such a challenge when viewed as the sole responsibility of a single organization. In today's complex global manufacturing environment, everyone on the product team is responsible for cost. The only way to support a distributed product development environment is to implement digital manufacturing simulation software that provides tools for all members of the product lifecycle team to understand the cost implications of the decisions they make each and every day.

7 Make product cost evaluation part of your phase gate process.

Four in ten respondents (41%) are not consistently considering estimated manufacturing costs vs. target costs at key milestones. In most cases, this is because the design team does not have access to tools that would allow them to easily generate a cost estimate for the current state of the design model. If your designers and engineers could quickly generate a manufacturability analysis or a cost estimate it would be reasonable to request the engineering team provide a report on these items during every design review meeting. Furthermore, at an advanced level, the project management team could stipulate that a design must be at or below target cost in order to pass through a phase gate. Companies with this type of rigorous process often see significant improvements in product profitability and accelerated time to market statistics.

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