



The Stages and Gates of Prototype to **High-Volume Production**

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COATING TECHNOLOGIES LLC



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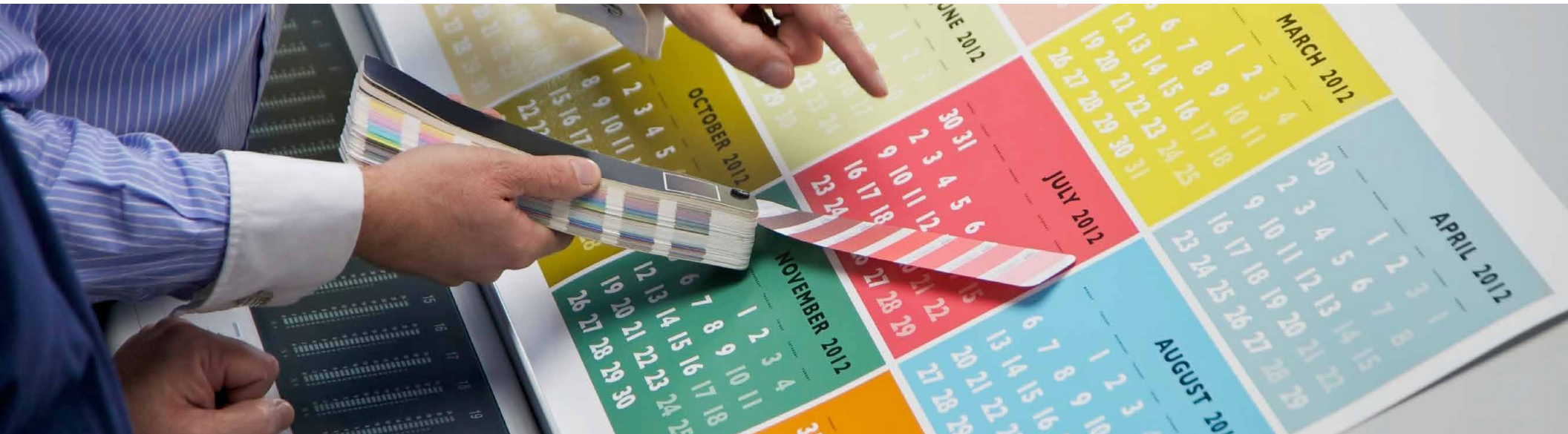
One of the most critical considerations in product design and development is knowing how (and when) to switch gears into high-volume production. However, making the transition from prototype to high-volume requires a substantial investment of time, capital, and other resources.

Making this leap too soon could result in dire consequences for your company and its products. Prior to committing to high-volume production, you need to have a working prototype that has been extensively tested, as well as a comprehensive understanding of your target market. It's also critical to realize the associated costs and challenges you will face when bringing your product to that market.

Several companies utilize stage and gate methodologies to improve the potential profitability, time to market (TTM), and overall quality of their products. Staging and gating serves as a step-by-step framework for innovating products, and it has become the new standard among industry professionals.

If you are evaluating whether your company is ready to make the move to high-volume production, here are the four steps you'll need to keep in mind:

- 1) *Identify Your Market*
- 2) *Consult R&D Specialists*
- 3) *Determine the Economic Feasibility of the Project*
- 4) *Test Your Prototype*



Consult R&D Specialists

Research and development (R&D) specialists can help you reduce the risk of your project while enhancing your product's overall value. Taking your product from prototype to high-volume production often means that your company will be moving into a new realm of expertise; your technical staff simply might not have the experience working in this area, which can inhibit progress.

R&D specialists fill in any knowledge gaps with their in-depth experience in your industry. They have knowledge of industry regulations and conventions to guide your company to successful results. With the guidance of these specialists, you will often be able to move products into the market faster and more efficiently, boosting profitability in the long run.

Determine if the Product Is Economically Feasible to Manufacture

Next, consider the economic feasibility of your product. This step entails a comprehensive economic analysis of your entire project. Keep in mind that this analysis needs to take place before any kind of manufacturing begins; it should also carefully consider tradeoffs in materials and processes that affect pricing in order to determine the direction of development.

You will need to consider the costs associated with: developing and prototyping the product; testing the product and obtaining certification; sales sampling; and much more.



When conducting an economic study, be sure to consider the following:

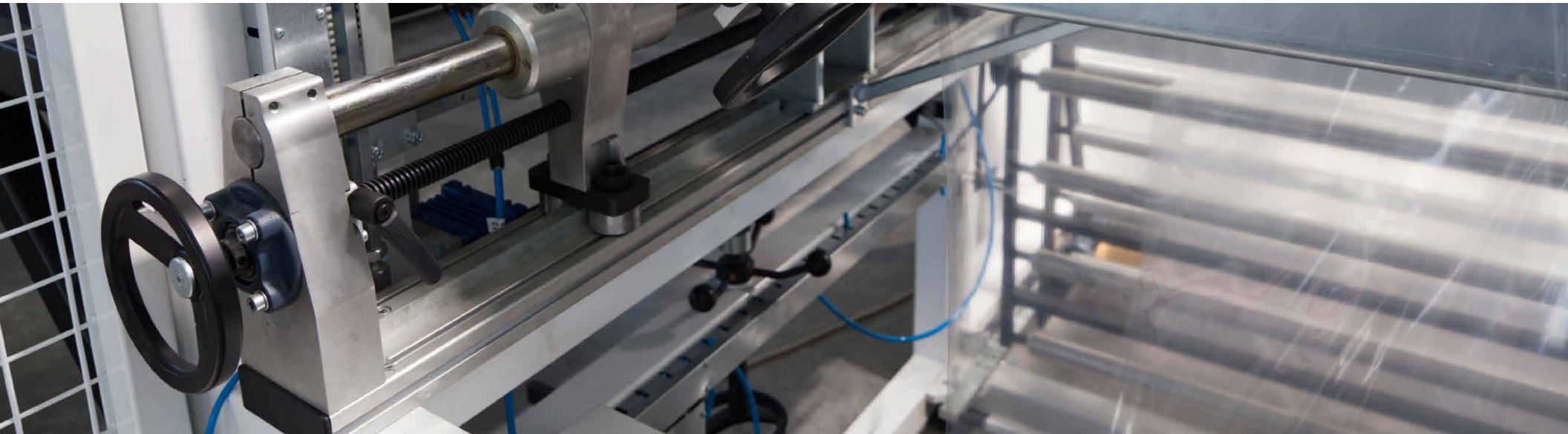
- **BOM (Bill of Materials):** The bill of materials refers to the complete cost breakdown of the materials needed. This will depend on the types of material and the quantity of material needed, as well as such considerations the number of parts in your product and whether it is open market or custom fit.

Look at the complete cost breakdown of each specific portion of your product when it comes to the BOM, so you can ascertain which parts are absolutely necessary, and which could potentially be forsaken to cut costs (if necessary).

- **MOQ (Minimum Order Quantity):** When making the move from prototype to high-volume production, one of the

greatest challenges that companies, particularly startups, face is minimum order quantities. Minimum order quantity (MOQ) refers to the lowest quantity of raw materials that a supplier is willing to sell. This means that suppliers will mandate potential buyers to purchase a certain amount of materials in order to keep their operations profitable. The MOQ will largely depend on your specific supplier.

The problem is that oftentimes ideal raw materials are sold in quantities that simply aren't attainable for many startups, and in most cases there is no way around MOQ requirements. Therefore, it is crucial to note that you may not be able to use your preferred materials right from the start of your project—especially when preferred materials are expensive.

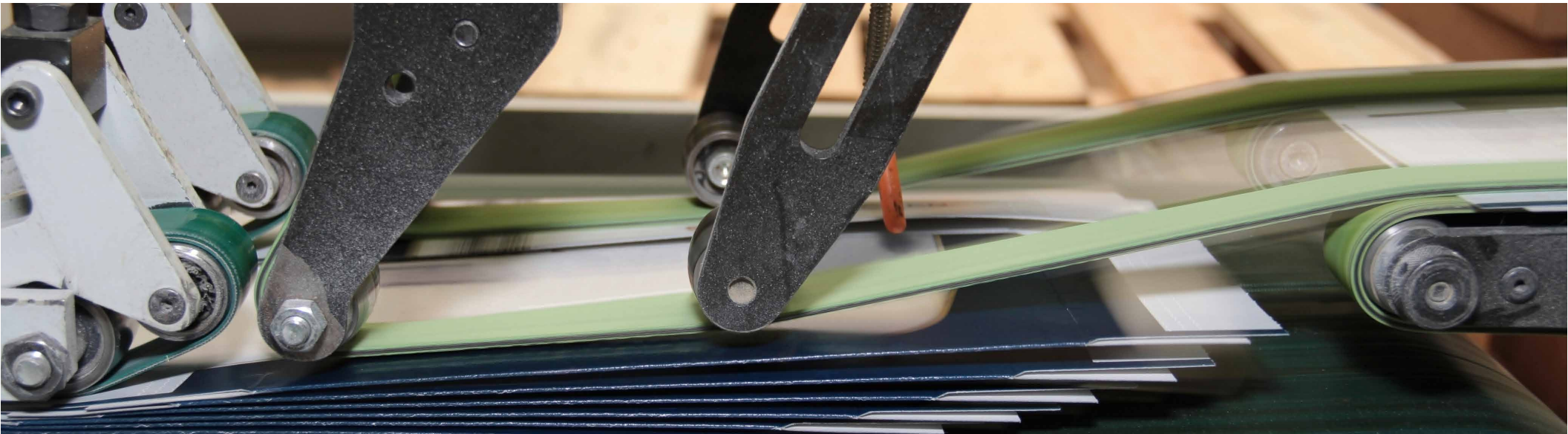


Before you spend the extra capital, you need to be sure that you will sell enough products to recoup the expenses.

- **Tooling:** If you're working with paper or plastic in the manufacturing process, you may incur substantial costs. You will need to consider the cost of tooling in regards to the equipment you plan to work with. If you switch factories or manufacturers, you may require new tooling.
- **Packaging and Shipping:** The logistics of manufacturing are a major part of the process. How a product moves through the supply chain and ends up ready to sell hinges on proper details. First and foremost, ensure that every step of the process has been tested for any kind of setbacks that might cause delays. Production delays can potentially ruin a product launch.

Once you are confident in your production method, it's time to figure out shipping. No matter your chosen method of shipping your product, keep in mind that you will want to budget somewhere between \$1,000 and \$5,000 for shipping and transportation costs. You may even need a bigger budget depending on the quantity of product you are shipping.

Of course, you will also need to pay special attention to the packaging of your product, which can act as a separate product in and of itself—this means that it also needs to be tested and prototyped. You will need to make sure that your packaging adequately protects your product—especially if you will be shipping over long distances—and that it is both functionally and aesthetically pleasing to your consumers.



Test Your Prototype

Soliciting feedback from target consumers is important to the development of your product. However, it should be noted that this step is easier said than done, especially if you are developing a product that has new performance metrics—that's why it's essential to build a sample product that can be tested in a focus group.

Prior to starting production, you should have already identified your target consumers; you'll need to know who will potentially buy your products to effectively cater to their needs. Also, what production methods will you utilize, and what will be the total cost of production?

Speaking of costs, it's also prudent to consider the marketing budget for your product. Companies can spend millions of dollars on promotional content per year; as such, your

product must be able to assure profitability.

At Sierra Coating, we are well-equipped to help create prototypes as well as research materials that solicit meaningful feedback from potential customers. Before you enter into high-volume production, work toward attaining valuable customer input regarding your prototype.

One viable option for obtaining feedback is setting up a focus group. While these tend to be an expensive option, watching how consumers interact with your product can provide you with stimulating insight. However, when conducting focus groups, you need to create an atmosphere that makes participants comfortable and encourages feedback. A focus group consisting of between six and ten people is optimal. We also recommend having a professional moderator lead the focus group to provoke meaningful discussion.



Once you have feedback from your consumers, it's time to implement any necessary product changes accordingly.

Benefits of Staging and Gating

Throughout the product development process, it can be advantageous to utilize “staging and gating” to enhance the quality of your new product while decreasing your risk of failure. This technique is part of the phase-gate model of development, in which new product development is divided into different stages.

These stages are separated by gates, and in order for the development process to continue from one stage to the next, it must pass through the corresponding gate. The project manager will decide whether the product can pass to the next stage based on a range of different criteria, including

the business case, risk analysis, availability of necessary resources, etc. The specific criteria will largely depend on the unique specifics of the project.

Ready for Manufacturing

If you've made it through the necessary gates and feel you are finally ready to get your product manufactured, it's time to contact Sierra Coating.

Sierra Coating provides first-class contract manufacturing services to various printing and packaging companies. We understand the challenges faced by developers and engineers seeking to scale up their efforts; our team is well-suited to assist you commencing and managing your expansion.



Our team has developed a highly beneficial manufacturing model that considers many critical factors, including:

- *Varying Market Prices and Volumes*
- *Product Demand (Current and Future)*
- *Uniformity of Products*
- *Equipment Procurement and Maintenance Costs*
- *Time to Market (TTM)*
- *Return on Investment (ROI)*
- *And Much More*

The development of new products will always have its share of risks, but the contract manufacturing services of Sierra Coating can significantly lower those risks. We can help you cut equipment-related costs while saving your company up to 12 months in development time.

The path to commercial success is long and arduous, but you can be assured that Sierra Coating will support you throughout your journey. We have nearly 20 years of experience supporting various commercial and industrial clients—contact us or request a sample today to learn how we can bring your ideas to market faster.