Tech-Clarity

Optimizing the Bidding Process

How Industrial Equipment Manufacturers Can Win More Business

Table of Contents

Executive Overview

Growth and profitability are important to any business and industrial equipment manufacturers are no exception. Those looking to accomplish this without investing heavily into additional resources and increasing costs can be challenged. Global competition adds further difficulty and makes it even harder to differentiate the business and its products. One way to address these business challenges is to optimize the bidding process. With a focus on bidding, industrial equipment manufacturers can boost profitability without adding more resources, while offering their customers the responsiveness and level of service that will help them stand out from the competition

With a focus on bidding, industrial equipment manufacturers can boost profitability without adding more resources.

While an effective bidding process is critical to the success of the business, it is not easy, particularly for those industrial equipment manufacturers offering Engineer-to-Order (ETO) products. Bids must be both fast, to create a competitive advantage, yet accurate to maintain optimal profit margins. Balancing this can be very difficult. Anvil International, a pipe support manufacturer, has turned to software to help and they are enjoying great success as a result. Their bids are more competitive because they can respond more quickly to customers. Also, with better insight into actual costs, their bids are priced more competitively. Says Jennifer Fogarty Armitage, Manager of Commercial Operations, "*Our improved bidding process has led to greater efficiency so we are able to focus on the right business which has been more profitable for us*."

Our improved bidding process has led to greater efficiency so we are able to focus on the right business which has been more profitable for us.
Jennifer Fogarty Armitage, Manager of Commercial Operations, Anvil International

The success of companies who have adopted practices like those implemented at Anvil is also supported by Tech-Clarity survey research. Best Practices for Developing Industrial Equipment finds that Top Performing industrial equipment manufacturers have:

- Grown revenue 2.2 times more than their lesser performing competitors
- Increased profit margins 2.4 times more than average performing companies

A rules-based approach is key to the success of Top Performers as they are 3 times more likely than competitors to use it. PLM is also important to Top Performers and they are 34% more likely than lesser performing Industrial Equipment manufactures to use it. This

paper discusses how to optimize the bidding process in order to help industrial equipment manufactures win more business while improving profitability.

Review your Bidding Process

The bidding process is key to winning business. It creates an opportunity to set yourself apart from your competition. However, getting it right is a very fine balancing act. It means the difference between higher profitability and losses.

Getting bidding right means the difference between higher profitability and losses.

Understanding the true cost is an important part of developing an accurate bid. A bid that is too low is competitive, but you risk losing money. No one wants to win business they will not make money on. A bid that is too high means higher profitability, but it will not be competitive. It must be just right. The approaches Top Performing companies have taken have led to more accurate bids. From Tech-Clarity's Best Practices for Developing Industrial Equipment, "*Survey analysis indicates that top performing manufacturers develop quotes for configured or custom products within 7% accuracy. This compares to the average across all companies of 13%. To put that in perspective, top performers' capability to generate accurate quotes gives them a 6% margin difference to confidently offer lower quotes to win business and drive growth*."

Responsiveness is an important part of optimizing the bidding process. The first to respond is often at a competitive advantage. This bid will set expectations for others. In addition, if it is more complete and accurate, customers will be more confident in it, which puts later responders at a disadvantage. This means an efficient bidding process creates a competitive advantage.

An efficient bidding process creates a competitive advantage.

Bid accuracy is also important. To get that valuable jump on the competition, pricing needs to be as efficient as possible, without sacrificing accuracy. Manual spreadsheet driven processes will work, but they may not provide the combination of efficiency and accuracy needed to achieve a competitive advantage. With manual spreadsheet driven processes, pricing information can be harder to find or may not even be available. It is also harder to make updates so the information used to develop a bid may not always be accurate. In addition, with a manual process, pulling together all the details required to assemble a quote can be very tedious and time consuming.

For companies looking to stand out from the competition, a combination of automation and the ability to centralize product information can help.

For companies looking to stand out from the competition, a combination of automation and the ability to centralize product information can help. Automation tools can link across various databases of costing information, combined with engineering specifications to quickly arrive at an accurate price. Managing all of this data allows existing designs and prior bids to be reused. Plus, a single source of truth helps to ensure outdated information is not used to prepare a bid. Behlen Manufacturing Company is a steel fabricator whose product lines include farm and ranch equipment, building systems for factories, warehouses, offices and other applications, commercial grain systems, and custom fabrication. "*We knew we had to improve collaboration across departments so we centralized our engineering information. This has improved our workflows across engineering, sales, manufacturing, and procurement because we are all working with a single source of information from the same PLM database,*" says Shane Wemhoff, Process Improvement Department Team Leader at Behlen. "*We can now reuse more of our existing engineering intellectual property in both our bids and designs. This saves us both time and cost*."

We knew we had to improve collaboration across departments so we centralized our engineering information.
Shane Wemhoff, Process Improvement Department Team Leader, Behlen Manufacturing Company

Developing a bid with the right level of automation and integration to product data makes it easier to provide additional engineering details with the quote. Plus, when a level of customization is needed, without these things, it can be difficult to validate that the quoted product meets customer needs. The fast response and additional engineering information not only reassures customers the proposed product meets their needs, but it also offers such an improved experience, you set yourself apart from the competition.

Win More Business

In today's competitive environment, it can be very difficult to stand out from the competition. Engineers need the bandwidth to develop products that have the innovation, quality, performance, and lower cost of ownership to standout. However, when ETO is important to the business, engineering resources are often diverted from activities that focus on this. They can often get involved in repetitive tasks that consume their time. They may even have to get involved with bidding to assess technical aspects that will drive up cost. Minimizing these time intensive tasks frees up engineering resources so that they may focus more energy on engineering work. This is exactly what Anvil wanted to do. Anvil offers a complete line of piping connections and support systems on a wide

range of applications, from plumbing and mechanical, HVAC, industrial and fire protection to mining, and oil and gas. "*We wanted to find ways to leap frog our competition. As we were evaluating our options, we realized it did not make sense to pay engineers to do basic stuff so we began looking at software*, " observes Armitage from Anvil. Anvil decided to invest in software that automated the ETO process, starting with the bidding process. This has proven to be a very successful approach for them.

We saw an immediate improvement in our design project cycle times. We decreased our estimate cycle time by 20%.
Jennifer Fogarty Armitage, Manager of Commercial Operations, Anvil International

By implementing the software to automate the ETO process, Anvil benefited from business improvements right away. "*We saw an immediate improvement in our design project cycle times. We decreased our estimate cycle time by 20%*," says Armitage. Not only did the ability to respond to customers more quickly give them a competitive advantage, but the benefits did not stop there. Adds Armitage "*With the software, we could turn around design proposals faster and with less manpower. This means we can get more estimates out and the more estimates you put out, the more business you will bring in*." Bringing in more business translates to higher revenues. With the ability to develop more accurate estimates in far less time, Anvil has found they can be more selective about the projects they bid on. "*We can focus on the more profitable business opportunities and the type of projects we do best*," says Armitage.

With the software, we could turn around design proposals faster and with less manpower. This means we can get more estimates out and….more business.
Jennifer Fogarty Armitage, Manager of Commercial Operations, Anvil International

Anvil has also achieved their goal of freeing up engineering resources. At Anvil, a typical design may involve 3000 supports. "*Before using the software, we would have to develop the design, evaluate it, and price it. It would take a month to estimate it and still that estimate could be off. Now we can do all that work in a week and we have a more accurate estimate of both the cost and effort involved*," comments Armitage. This has enabled their engineers to focus more energy on challenging tasks.

Win Customer Loyalty

In addition to responding more quickly to customers with a bid, using software to optimize the bidding process improves the customer's experience in other ways too. Not only is it difficult to determine the exact cost of a custom product, but it is also difficult

to assess the amount of work involved. In fact, research from Tech-Clarity's Best Practices for Developing Industrial Equipment finds that meeting customer delivery schedules is the top challenge of developing industrial equipment, reported by 38%. The right software that automates bidding and integrates with engineering information can also provide an accurate estimate of how long it will take to produce the product. "*With the software, our ability to manage customer expectations is better and delivering on time gives us a competitive advantage*," says Armitage from Anvil. Anvil's improvements are particularly impressive considering how hard it is for other companies to accomplish this.

Prepare for the Future

One of the challenges many businesses face is an aging workforce. In many cases, manual processes have been acceptable because of the tribal knowledge from seasoned workers. As these valuable employees reach retirement age, companies need to capture that knowledge before it is too late. Like other companies, Anvil has experienced this as well. "*Over the period of two years, we were faced with a situation where 90 years of experience walked out the door*," says Armitage. *"The software is helping us capture that tribal knowledge and now a new person has access to that knowledge. It helps guide people through the process*." With the software to automate both standard processes as well as account for exceptions that only an experienced employee could recognize, Anvil is much better positioned for the future.

The software is helping us capture that tribal knowledge and now a new person has access to that knowledge.
Jennifer Fogarty Armitage, Manager of Commercial Operations, Anvil International

Another interesting aspect of the aging workforce is that buyers are changing too. Buyers have also lost some of their experienced workforce so the needs of those making the purchasing decisions have evolved. "*Compared to what we were doing 10 years ago, estimates need to be much more complete*," comments Armitage from Anvil. "*Our buyers are younger and need more information so that they can make an informed decision*." Because the software automatically provides this detailed information, Anvil has evolved with the needs of their customers and can provide them with exactly the detail they need.

Because the software automatically provides this detailed information, Anvil has evolved with the needs of their customers and can provide them with exactly the detail they need.

Extend Bid Automation to Engineering

Developing an accurate quote means tying into costing information. Accessing costing information can be a tedious and time consuming process because it is often located in multiple databases. Centralizing that information and using a solution that can automatically pull costing information across these different databases can be very helpful.

Another challenge is that customers do not always know what they want, especially when customization is involved.

Another challenge is that customers do not always know what they want, especially when customization is involved. Including engineering information or visualizations of the proposed design with the quote is not only useful to the customer, these details can be a powerful addition that sets the quote apart from competitors. Automatically producing engineering information with the bid, improves accuracy, saves time, and gives customers a higher level of confidence they are getting what's needed. Software that integrates the bidding process with the engineering process can do just this. "*For design projects, our bidding process is integrated with engineering so that with the bid, the software can spit out the design, drawing, and BOM. We have it set up so that it goes right on the cloud and is centrally available*," says Anvil's Armitage. "*Eventually we will be able to give customers access too and they will be able to look at different options themselves*."

For design projects, our bidding process is integrated with engineering so that with the bid, the software can spit out the design, drawing, and BOM.
Jennifer Fogarty Armitage, Manager of Commercial Operations, Anvil International

With the right level of automation and integration, engineers can continue innovating without the disruptions of getting involved in the sales process. Plus they don't need to waste efforts on the more standard parts of the design that are not changing. They can focus their energy on the parts of the design that require a deeper level of expertise. Automating the development of complex geometry, understanding it, and associating the right cost to it is not easy and not all software can accomplish this. Companies that have this capability, save time because so much of the engineering work is completed during the bidding phase.

With the right level of automation and integration, engineers can continue innovating without the disruptions of getting involved in the sales process.

A rules-based approach is one way to drive this automation. Research from Tech-Clarity's Best Practices for Developing Industrial Equipment report finds that top performing companies are 3 times as likely as their competitors to use a rules-based design approaches, indicating that it is key to helping top performers differentiate themselves. A rules-based approach uses defined rules to tie the features the customer needs to the correct engineering criteria. This approach can support working with an existing design by automatically tweaking it just right to meet customer requirements

Enable Collaboration

Work on ETO products involves multiple groups who are all accountable for ensuring the customer's satisfaction. Engineering, procurement, and manufacturing all need access to the submitted bid to ensure the right product is delivered and contractual requirements are met. Product Lifecycle Management (PLM) can be a way to centralize all of this information, especially since it has the ability to understand the complex relationships involved with product information. Tech-Clarity's Best Practices for Developing Industrial Equipment finds that Top Performers are 34% more likely to use Product Lifecycle Management compared to competitors. This is especially useful to ensure no one wastes time reinventing the wheel. "*Before we had PLM, if you needed information on an order, you would have to hunt down the paper folder. Things were not all in one place*," says Shane Wemhoff, Process Improvement Department Team Leader at Behlen Manufacturing Company. "*PLM has really helped us a lot with our communication and everything is centralized*."

PLM has really helped us a lot with our communication and everything is centralized.
Shane Wemhoff, Process Improvement Department Team Leader, Behlen Manufacturing Company

With so many different groups needing access to information, each with different needs, Behlen also appreciates the flexibility of their PLM system. "*When we have meetings, people can provide feedback on what they need. Then it is simply a matter of setting up a view in PLM and they have easy access to exactly what they need, when they need it*," explains Wemhoff. With information more centralized, more intelligence, such as manufacturing information, can be embedded into the design to further facilitate collaboration and streamline access to product information so that downstream work is more efficient. Ultimately, this is one more way to ensure customer delivery commitments are met.

Select the Right Vendor

For companies looking to minimize their investments into software tools, it makes sense to evaluate tools that are compatible with what is already available in-house, both from

an engineering perspective as well as the existing IT infrastructure. "*Since we were already very happy with our existing CAD tool, we looked at a PLM solution that would be compatible with it,*" says Wemhoff. Considerations can include compatibility, ability to customize to support existing processes, integration with other IT solutions, and availability of APIs that are open and documented. Another benefit of this approach is that since you are just expanding the current toolset, existing processes are not disrupted and deliveries of existing orders are not put at risk.

The vendor's reputation may also be an important consideration. "*We did not want to make an investment and then find our selected vendor went out of business in five years*," says Wemhoff . "*Our vendor has a solid reputation and we know they are not going anywhere. This was very important to us*."

Our vendor has a solid reputation and we know they are not going anywhere. This was very important to us.
Shane Wemhoff, Process Improvement Department Team Leader, Behlen Manufacturing Company

Conclusion

Industrial manufactures looking to grow and improve profitability may find that optimizing the bidding process will help them meet these goals. Many companies have found a lot of success with solutions that integrate design automation with PLM. This approach has allowed them to improve bid response time. In addition, the tie to engineering information has improved accuracy for both pricing and delivery. Bids that take advantage of this approach can also include visualizations, engineering drawings, and BOMs, which set the bid apart from competitors and improves customers' confidence they will get what they need.

Many companies have found a lot of success with solutions that integrate design automation with PLM.

An optimized bid process helps companies with more competitive bids and as a result, they win more business. It also frees up engineering resources to focus on more technical tasks that bring innovation to the product. Companies will also be better positioned for the future because they can capture tribal knowledge and use it to automate and guide processes for less experience engineers.

An optimized bid process helps companies with more competitive bids and as a result, they win more business.

The combination of rules based design and PLM can help companies achieve their growth and profitability goals without investments in more resources. This approach has helped companies like Anvil. Says Armitage "*Our software solution as given us a competitive advantage*."

Recommendations

Based on industry experience and research for this report, Tech-Clarity offers the following recommendations:

- Provide means to automate the calculation of accurate costs
- Streamline access to cost information so that it can be automatically pulled from all relevant sources
- Automate routine engineering tasks that do not require engineering expertise
- Ensure the accuracy of delivery estimates to remain competitive, while managing customer expectations
- Capture cost and engineering expertise so that tribal knowledge is not lost
- Include relevant engineering details such as visualizations, drawings, and BOMs to set quotes apart and provide buyers a higher level of confidence the final product will meet their needs
- Implement a rules-based approach to drive geometry creation directly from the bid
- Use PLM to centralize order and product information to improve collaboration, streamline access to required information, and connect to existing workflows
- Ensure the selected vendor can support company needs and has offerings that can span across your processes for bidding, engineering, and production

About the Author

Michelle Boucher is the Vice President of Research for Engineering Software for research firm Tech-Clarity. Michelle has spent over 20 years in various roles in engineering, marketing, management, and as an analyst. She has broad experience with topics such as product design, simulation, systems engineering, mechatronics, embedded systems, PCB design, improving product performance, process improvement, and mass customization. She graduated magna cum laude with an MBA from Babson College and earned a BS in Mechanical Engineering, with distinction, from Worcester Polytechnic Institute.

Michelle began her career holding various roles as a mechanical engineer at Pratt & Whitney and KONA (now Synventive Molding Solutions). She then spent over 10 years at PTC, a leading MCAD and PLM solution provider. While at PTC, she developed a deep understanding of end user needs through roles in technical support, management,

and product marketing. She worked in technical marketing at Moldflow Corporation (acquired by Autodesk), the market leader in injection molding simulation. Here she was instrumental in developing product positioning and go-to-market messages. Michelle then joined Aberdeen Group and covered product innovation, product development, and engineering processes, eventually running the Product Innovation and Engineering practice.

Michelle is an experienced researcher and author. She has benchmarked over 7000 product development professionals and published over 90 reports on product development best practices. She focuses on helping companies manage the complexity of today's products, markets, design environments, and value chains to achieve higher profitability.