

WHY SLOW QUOTES COST A FORTUNE

Insights into the costs of a delayed product market introduction for both OEMs and EMS as a result of long quote lead times

EMS providers must understand that slow quotes cost a fortune.

It is critical that EMS providers submit accurate and easy-to-understand quotes to customers, which also meet customers' Request For Quote (RFQ) requirements. These quotes should preferably be submitted ahead of those of competitors. The importance of fast and accurate quotes for your customers and for your EMS business must not be underestimated.

The importance for your customers.

Delayed or "slow" quotes often cost much more than you realise. In terms of the bottom line, have you ever wondered what a one-day delay in a product market introduction would cost your customer?

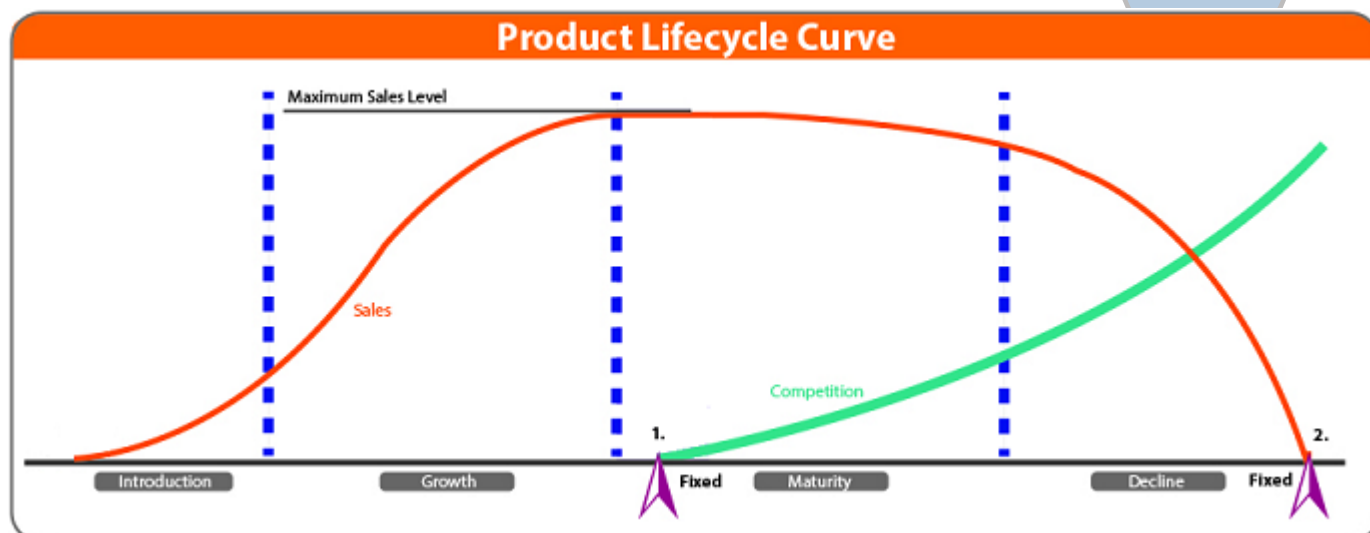
Customers want to release their products to the market on time. There are, of course, many reasons why customers do not meet their planned product introduction date and this can be costly and frustrating. Additional delays caused by delayed quotes are therefore extremely frustrating and can ultimately become very expensive. To understand this properly, let's take a high-level cost perspective to analyse what the cost impact of a RFQ response delay really means to your customer.

Not meeting the target market introduction date has two major effects in relation to costs:

- The customer loses money every day the product is not on the market.
- Every delay in a time-to-market plan will remove the revenue and profit of a period equal to the period with the maximum sales volume (from the middle of the life cycle curve).

Why is that?

Every commercial product follows more or less a standard life cycle curve. Take a look at the typical curve of a product life cycle*) and the associated revenue stream shown in the graph below.



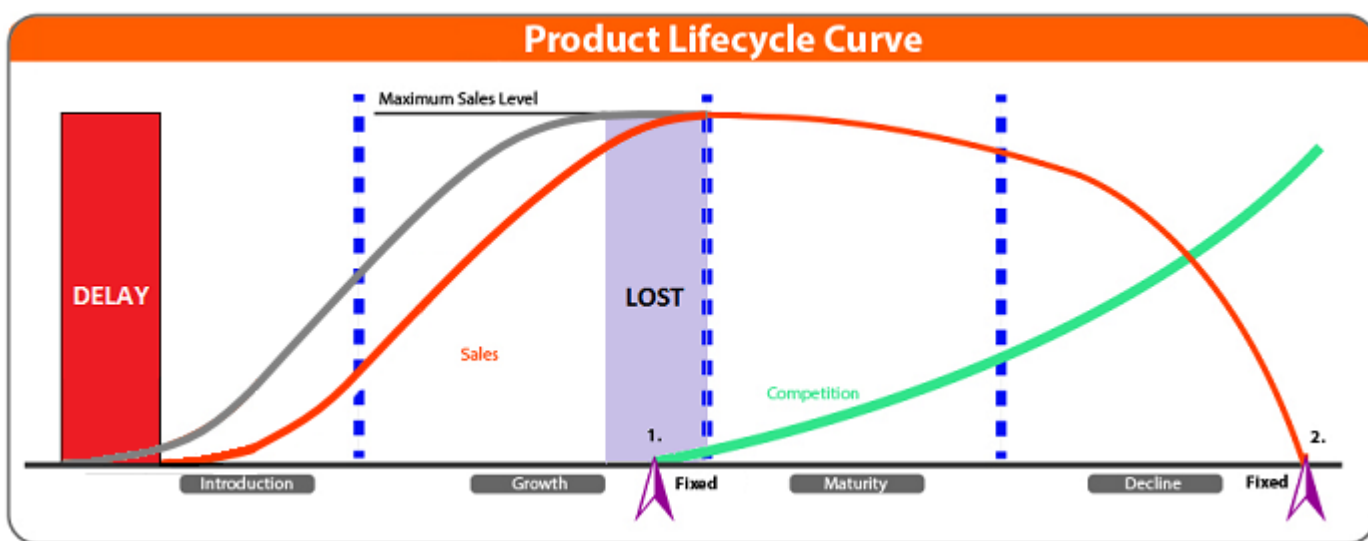
Note *) For simplicity reasons the graph in the image above shows sales for a full product life-cycle. For products with a long life time or products with a seasonal or event driven market the graphs are different but the revenue loss is the same at peak sales.

It is a given that:

1. the time at which competitive or new generation products enter the market (green line start) is fixed
2. the projected end-of-life date of a product is also fixed.

At a certain point in time, newly developed products can be expected to enter the market, therefore making the product less interesting and sales will decline and finally cease. Early upcoming competitors may negatively affect the end-of-life date.

In an ideal scenario, when the customer has a monopoly on the product or technology, the introduction and growth periods are also more or less fixed. But that is rarely the case. When the product introduction is delayed, in the worst case scenario, the upcoming competition will already thwart the revenue stream during the introduction and growth period, taking away a significant share of the market in an earlier than planned phase. This will consequently reduce the level of sales in the maturity phase and the product may fail even earlier than planned.



When the market introduction delays are adding up and the point of introduction to the market is gradually shifting further forward in time, the maturity period in which the maximum revenue is achieved will unavoidably be shortened. This will lead to a reduction in the most profitable period in the product life cycle and the resulting missed revenue and profit can be significant. A delay of just a couple of days or weeks can make a huge difference to market share, revenue and profit.

Conclusion for your customers.

The total cost of a product introduction delay may equate up to millions of Euros (Dollars), which means that RFQ response delays influencing a product introduction may ultimately cost your customer a fortune.

This is in fact a great responsibility for your company and a missed opportunity for excellent customer service.

The importance for you as an EMS provider.

There are many reasons why customers may not meet their planned product market introduction date. As a key supplier, you don't want to contribute to that problem. You want your customers to be successful and prosperous. Remember that lower sales revenues and lower profits for your customer will ultimately influence your sales to that customer as well.

But that is not all.

When you do not meet your customer's RFQ response times they will start to put you under pressure, sometimes a lot of pressure. Alternatively, they will look at competitive proposals and may even take unwelcome decisions.

You don't want your quoting process to be placed under significant pressure do you?

If your manual quoting process is placed under significant pressure, this will increase the risk of additional errors. Of course, an increased risk could be compensated by a higher margin, but this may put you in a difficult position in terms of competition, with the additional risk of losing the contract to a competitor.

Let's face it: the first quote will set the benchmark for the competition.

The first company to issue a quote will receive maximum customer attention and, in many cases, will be favoured and may even close the deal.

Why does it take so long to generate a quote?

Unfortunately, less than 30% of EMS businesses are able to submit an accurate quote within a 24-hour period (note the word 'accurate'). Almost 50% take more than a week. Some companies can even take 3 to 4 weeks or more to generate a quote ! So why is it that 70% of businesses cannot submit a decent quote to a customer within a 24-hour time-frame?

The answer is obvious. Today's largely manual quoting processes and practices simply do not allow shorter processing times without control being lost and involve risks increasing to an unacceptable level. Quoting for electronics manufacturing is complex. It requires a high level of knowledge and, in most cases, an entire team of skilled engineers. Current manual quoting processes simply cannot follow market developments. And the bad news is that it's getting worse. EMS providers will increasingly be unable to meet the customer's RFQ response times. The quickly upcoming praxis of "MaaS" (Manufacturing-as-a-Service) doesn't make it all easier.

Since the remaining improvement options for manual quoting processes are marginal and will not resolve the problem the next logical step is to automate the quoting process.

Therefore what should be done to ensure that generating an accurate quote in less than 24 hours is a realistic achievement?

Obtaining a reliable 24-hour turnaround time seems impossible considering today's extreme pressure on the quoting team to meet this requirement and the resulting negative risks involved.

The answer is undoubtedly automation, but that it is easier said than done. Every EMS is aware of the sheer infinite number of variables and exceptions that must be taken into account. The difficulties when working out material sourcing, availability and pricing. The endless number of potential production and test scenarios to choose from taking the requested product quantities into account, and so on.

But let's get a handle on this by splitting the quoting problem into four portions of related functionality.

Part 1. Bill-of-Materials (BOM) processing.

BOM processing is converting the customer's BOM (any type of BOM in any stage of development) into an error-free and complete list of materials to manufacture a product. This process can be highly automated and external sources can be integrated for maximum accuracy and speed. Compared to the first quote new BOM revisions should need only a fraction of the time to generate a new quote.

Part 2. Material cost, stock position and delivery time analysis.

The question whether material availability is more important than material costs can only be answered by the RFQ requirements. For prototypes, material availability is key. In other cases of larger production quantities, this may be the material costs. Both material cost and delivery time analysis depend entirely on manufacturer and/or vendor responses.

If time wasn't an issue, it may be worthwhile manually sorting out the best material offers for the job, but this is very time consuming and often impossible due to complexity. Fortunately, many component vendors offer access to their databases through APIs which enable real-time part code price, stock level and lead time information to be retrieved. This process can be automated to a very high level and, in most cases, covers the majority of the BOM items.

However, some vendors do not offer API access to their databases and BOMs also often contain bespoke materials. For these situations, a largely automated RFQ process, automatic vendor quote analysis and processing and a flexible manual editing process are the perfect additional solutions.

A **decision support system**, an elementary part of any automated quoting system, is extremely beneficial to achieve fast and accurate pre-selection of the best options, taking into account the data collected from many different suppliers and respective additional parameters.

Part 3. Production cost analysis.

Manufacturing costs are generally between 10% and 30% of the cost of a product. But it would be a serious mistake not to involve the production cost analysis in a quoting automation process. This could mean the difference between a job with a good margin or a job in which the profit on the materials actually compensates for losses in manufacturing.

As mentioned above, extreme pressure on the quoting process increases the risk of overlooking customer errors and design issues influencing manufacturability. This can also cause additional errors and miscalculations to be introduced to the quote preparation process. Ultimately this can lead to unprofitable and, worst case, loss-generating production orders.

But not only that.

Inaccurate production cost calculations and cost calculations based on ballpark figures may not provide accurate cost information and will add additional risks.

Of course, you are more than aware of this, so you add a juicy margin to compensate for the additional risks. But in a competitive situation this immediately introduces 3 major problem scenarios:

- You are too expensive and not competitive enough and lose the deal
- The price you offer is still too low and you shoot yourself in the foot
- It will be hard to defend or explain your calculations to customers

Problems 1 and 2 are the result of the same approach: an inaccurate production cost calculation in combination with a juicy margin to cover the risk. In some cases this may be accurate. But the approach provides a very uncertain basis for sales and account management in the fight for the order. They don't know when exactly they will enter the red zone.

Problem 3 is obvious. Try to explain a 'golden rule' to a customer....

“Industry 4.0” Developments

A mass-production plant for relatively simple products is totally unsuitable for the efficient manufacturing of complex prototypes. Of course, this is an extreme example, but apart from aspects like employee experience and quality management, for efficient and profitable operation of your facility, only a typical type of production is ideal.

An electronics manufacturing facility requires huge investments but has relatively narrow margins, even for the optimal type of production. The closer the job is to the ideal production order, the higher the return on investment will be and the more efficient and quality secure the staff can run the production.

When you are not accurate enough in your production cost calculations you will certainly lose a number of 'ideal orders' for your facility as well as you will get 'non-ideal' orders or even ones you don't want, like:

- Orders with a very small production profit or no profit at all. Not to mention possible losses, financed with the margin on materials.
- Orders not really suited to your manufacturing facility and that don't exploit the production capabilities to the maximum, meaning you will miss out on some of the potential profit.
- Orders that are not within the capabilities of the factory and staff, creating headaches, additional costs and that, worst case, cause problems with your customers.

Unfortunately there is very little chance of improving current (manual) production cost calculation practices, which are often based on ingenious spreadsheet models. We do not need to go into the advantages and disadvantages of this calculation methodology. It has served the EMS industry successfully for many decades.

But the fact is that for many if not most EMS, it no longer meets the requirements in the new world of Industry 4.0, in which most Business processes are automated.

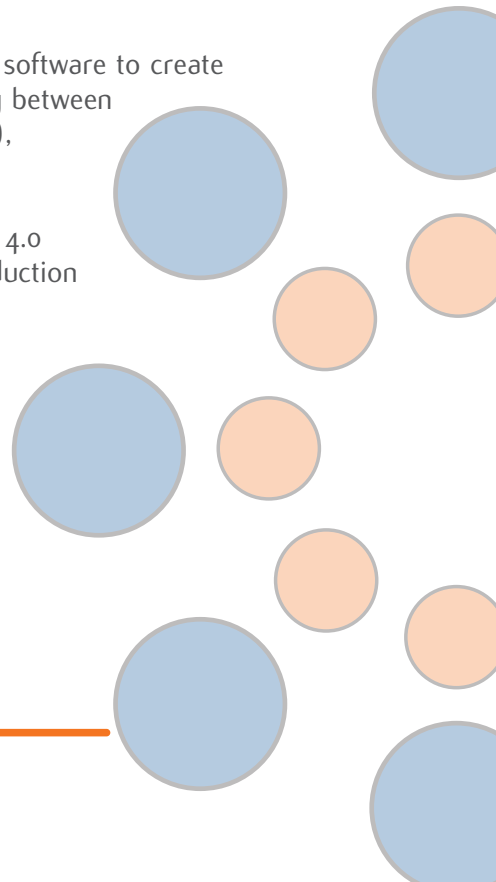
Industry 4.0, the new industrial revolution, has made clear that the combination of “company data” and modern software technologies are the basic tool to better serve customers, improve products, reduce risks and navigate and control complex business environments.

Every EMS is unique. Every EMS has it's own unique data.

It is a matter of organising this data in a usable way and configuring a dedicated software to create an integrated framework to use that data and enable the required interoperability between the existing digital business tools (e.g. Accounts, ERP, CAM and MES (if present)), to realize an optimal production cost analysis environment.

An interesting model that anticipates well and fits in with the practice of Industry 4.0 (Smart Industry) is a **dynamic virtual factory model**, the digital twin of your production facility, to calculate production costs.

In the past decade, virtual factory models have proven that they are an excellent tool for the optimization of production processes. Also for companies with an individual or unique type of production. So why not use it for cost calculations for quoting, using the input data from your own company for an accurate, realistic and fast production simulation?



The main objective of a Virtual Factory model is to create a production process model, equally applicable in small, medium-sized and large enterprises. Regardless of whether they have a standard or, as an EMS typically has, an individual and unique type of production.

“Industry co-evolution” forces EMS companies to deal effectively with the concurrent evolution of production systems, processes and products, to stay competitive. Any changes in production processes, employees and overhead costs, equipment utilization rates and multiple shift production, as well as (equipment) investments or the hire of an expensive indirect employee. They all have an immediate and sometimes dominant influence on the production cost structure. All changes should be effective in the costing model from day one.

A virtual factory model meets perfectly that requirement.

The combination of a dynamic virtual factory model with an integrated and dedicated costing engine is an ideal concept to eliminate the problem of slow and inaccurate production cost calculations once and for all.

A virtual factory

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- Orders not really suited to your manufacturing facility and that don’t exploit the production capabilities to the maximum, meaning you will miss out on some of the potential profit.
- Orders that are not within the capabilities of the factory and staff, creating headaches, additional costs and that, worst case, cause problems with your customers and generate questionable profits.

Only an automated quoting system with an **integrated production costing engine**, based on a **user-configurable dynamic virtual factory** (the digital twin of your production facility), will resolve the problem of slow and inaccurate production cost calculations, whatever the type of production.

Part 4. Quote generation.

Summarising: Fast, competitive, accurate and low-risk quotes can only be generated:

- By knowing the exact material availability and costs in any possible scenario.
- By knowing the exact manufacturing costs in any possible scenario.
- By not forgetting or ignoring any cost aspect, however small.
- By quoting quickly, repeatably and consistently, without being completely dependent on the skills of your quoting staff.

When accurate costs for material and manufacturing are known, pricing rules are defined and discounting rules are clear, quote generation is the easiest part of the quoting process.

Conclusion for you as an EMS provider.

There is very little chance of improving the current (largely manual) quoting practices.

To the contrary, the gap between the RFQ response requirements for speed and accuracy and the day-to-day practice is growing by the day. The only way to bring the quoting process back in line with market demands and to keep up with market developments is by highly automating the quoting process.

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