FACTON
INNOVATIVE COST MANAGEMENT

OFFER CALCULATION – CHALLENGES AND SUCCESS FACTORS

EFFICIENT PREPARATION OF OFFER CALCULATIONS WITH ENTERPRISE PRODUCT COSTING (EPC) SECURES TOMORROW'S SUCCESS TODAY!

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1. SUMMARY

The sales proposal process is critical to enterprise success. Every proposal affects the future: A low, understandable price and fast submission of a proposal will decide who is awarded the contract; a precise and realistic cost calculation is also the prerequisite for not only winning the project but also completing it with the desired economic success. Against this background, efficient preparation of offer calculations can secure the success of tomorrow – making it all the more important to understand your challenges and optimally design your processes, methods and tools.

2. INTRODUCTION

Offer calculations are a critical success factor for any enterprise. To compete in today's global market, proposals must be as ambitious as they are realistic. If the customer cannot understand why the price of a project is high, they will award it to a less expensive competitor. On the other hand, if the contract is awarded based on terms t hat are too optimistic, you may find yourself having to deal with an unprofitable project for years. This is why proposals need to be calculated as accurately as possible. The challenge here is that it is very difficult to determine many future costs for a new product due to incomplete information and volatile cost components. For example, material and manufacturing costs are currently subject to a great deal of uncertainty.

This makes cost estimation one of the most important business processes for enterprises. It lays the foundation for the future project's profit or loss. It is part of management's responsibility to ensure that the offer calculation process is optimally designed in the enterprise with regard to processes, methods and tools. All too often the potential of an interdisciplinary proposal process with standardized methods and a high degree of automation remains untapped.

3. OFFER CALCULATION PROCESS

In an environment marked by rising price pressure, worldwide competition and global projects, **precise and quickly prepared offer calculations are a decisive competitive advantage**. For instance, it is not unusual for customers in the automotive industry to expect a binding offer just two to three weeks after their initial request for proposal (RFP). Such demands are now commonplace in ot her industries as well, such as in the mechanical engineering, aerospace and defense sectors. The following criteria must be met in order to ensure the best possible offer calculation:

- **Availability**: The data needed for the cost calculation is centrally managed and accessible with very little effort.
- **Data base**: All employees perform costing based on valid and consistent data.
- **Standardization**: The calculations follow a uniform, stringent logic and are created using standardized methods. Employees have a common understanding of costs.
- **Transparency**: The calculations are clear and understandable. Changes can be tracked in the system.
- **Competitiveness**: The department's input parameters must be competitive when compared with similar projects.

3.1. COSTING IN AN INTERDISCIPLINARY TEAM

The offer calculation is the result of **interdisciplinary collaboration**. Every department involved has one or more clearly assigned tasks throughout the entire proposal process:

- **Sales**: Act as direct customer contact; receive and acknowledge customer requirements; pricing; submit proposal
- **Development**: Create technical product description with corresponding development BOM
- **Purchasing**: Determine purchased part costs (request purchased parts from suppliers; purchased part price analyses); determine external resource costs.
- **Manufacturing/Process planning**: Determine routings, manufacturing concepts and investments
- **Controlling**: Verify and optimize input parameters; consolidate cost calculation; profitability calculations; cost breakdowns
- **Project management/Management**: Proposal strategy; location selection; project approval

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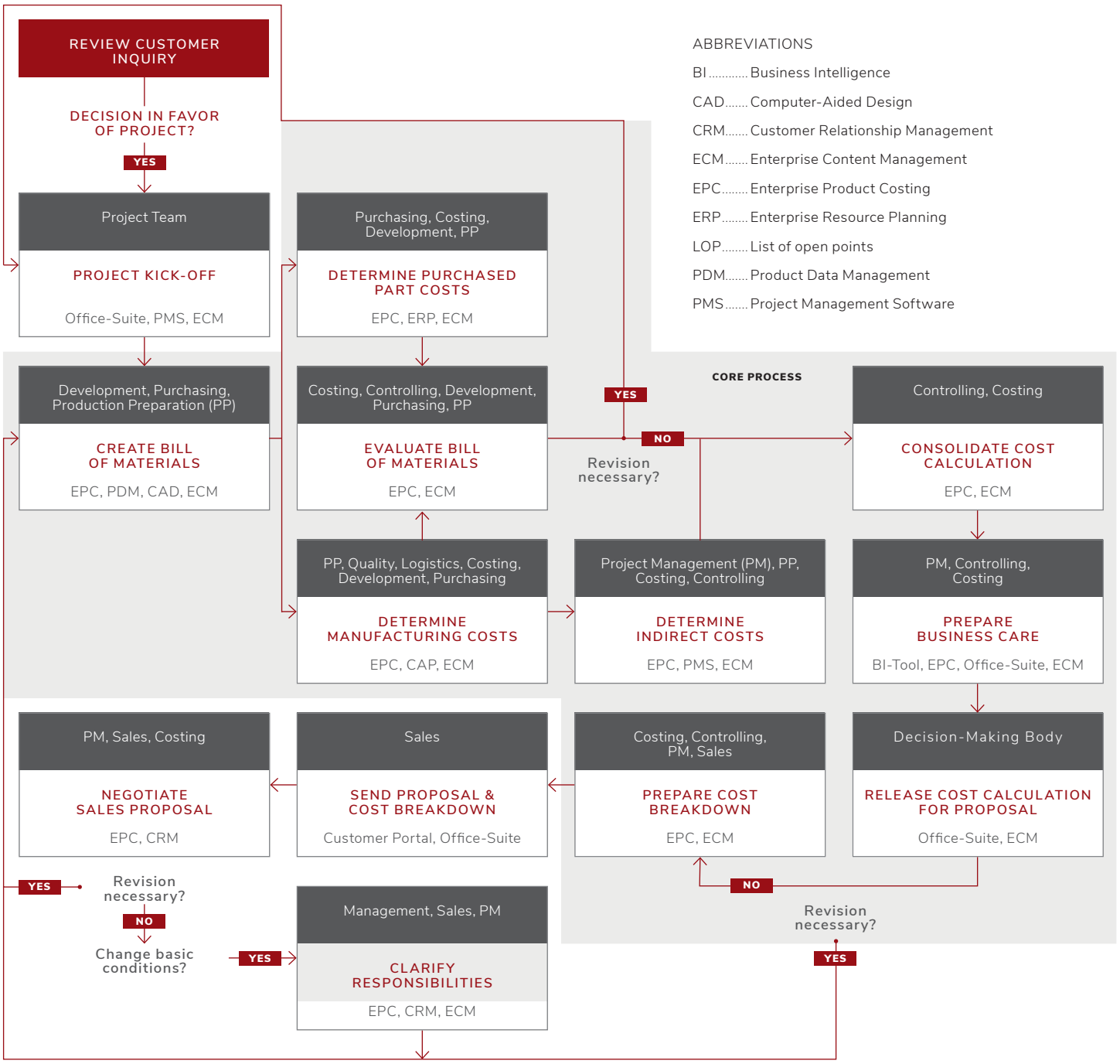
3.2. FROM RFP TO PROPOSAL

In enterprises with order-based development and manufacturing – as shown in a simplified version in Figure 1 – the proposal process runs in logically sequential or parallel steps. After receiving an RFP from the customer, a decision must first be made whether or not to submit a proposal for the project. If the enterprise is interested in this project, an interdisciplinary project team is assembled.



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STEP 1: GROUNDWORK IN DEVELOPMENT, PURCHASING AND MANUFACTURING

First you need to determine what exactly the customer has requested. All of the information associated with the RFP is collected and the corresponding basic parameters for the project defined.

The development department must technically describe the product and create a development BOM that includes all of the basic information for the colleagues from the purchasing and manufacturing departments: Purchasing uses this data to determine purchased part costs by contacting suppliers or evaluating costs by means of a purchased part price analysis, inquiries or derivations. At the same time, manufacturing creates the work plan, or "routing", compares possible manufacturing concepts and determines the investment needs. This also includes necessary investments in new tools or add itional human resources. Purchasing and manufacturing generally define vertical integration through make-or-buy analyses. **The result is the actual production BOM, which includes the materials, tools, routings, etc**.

The manufacturing costs are determined centrally in controlling or locally in the production plants based on the manufacturing concepts. It is critical that the calculated costs of the individual plants are comparable. Oftentimes the designated standards – provided any exist at all – and parameters change. This leads to comparisons that deliver incorrect results. **So it is essential that all parties involved do their work based on the same methods, standards and data uniformly defined and disseminated throughout the enterprise**.

STEP 2: PROFITABILITY CALCULATION BY CONTROLLING

The controlling department consolidates and reviews the results with respect to plausibility, competitiveness, opportunities and risks. The earnings expectation is then shown in a **profitability calculation**. **This represents an extensive overall assessment that includes, among other items, which costs will be incurred, the expected revenues, a cash flow analysis and how individual key figures look** such as return on sales (ROS) and return on investment (ROI). The report is then submitted to management.

Interdisciplinary collaboration in these first two steps plays a role in the sequential handling of tasks. This leads to a situation in which departments may have to wait until they can begin working on their area of responsibility, and there is often only limited time available for this when they finally start. And if the data provided by the preceding department is inconsistent, this creates loops that increase both the lead time and expenditure.

However, if comparisons and data transmission are automated and data is quickly available, this **significantly increases the "first time right" rate** and accelerates costing.

STEP 3: APPROVAL BY PROJECT MANAGEMENT AND MANAGEMENT; SUBMISSION OF PROPOSAL

Now the project management and management must decide whether to offer the project at the terms and conditions they have determined or if improvements are necessary. If approval is granted, the sales department can submit the proposal to the customer. In many cases, sales must explain the **defined parameters in a cost breakdown form**. This means that the internally prepared calculations need to be transferred to a document type designated by the customer.

Generally the customer will request several revisions and/or scenarios before awarding the project – the proposal process must then be repeated with the corresponding adjustments.

Keeping a clear overview of t he various scenarios that have been prepared is a challenge for many enterprises. **The price history must be represented with consistency across scenarios** – for both the customer and management. The number of documents frequently skyrockets. This makes it extremely difficult and very time consuming to link results back together with the associated data upon which these were originally based.

4. KEY FUNCTIONS OF THE PROPOSAL PROCESS

In order to illustrate the significance, requirements and potential of an optimal process design, it is worth looking at the top four topics in the proposal process: profitability analysis, reporting, open book accounting and tracking earnings.

PROFITABILITY ANALYSIS

All relevant cost data is consolidated as soon as it is available. The profitability of the project is then shown based on t he consolidated calculation. Ideally, this serves to create a **dynamic profitability calculation** and makes it possible to assess the value of the project based on various key figures (present value, discounted cash flow, return on sales, depreciation/amortization period, break even). Creating this calculation requires having special expertise when it comes to cost, revenue and earnings controlling.

A profitability calculation provides clarity in terms of the cost/benefit ratio. It is a basis for making decisions for or against projects and solutions concepts, selecting production locations and make-orbuy decisions.

REPORTING

In addition to the profitability calculation, which is purely economic, it is also necessary to create **specific analyses and reports** that provide management information on particular issues in the course of the proposal process. This can include location comparisons, cost structure analyses or risk and scenario calculations.

In the course of the proposal process, reports serve to provide management and project management with ad hoc information on the current status of the calculation, i.e. the "costing class". In this way it is possible at an early stage to identify the areas of the calculation where there are opportunities and risks.

OPEN BOOK ACCOUNTING

More and more suppliers from various branches of industry are being confronted with requests by customers for open book accounting (OBA). These customers want to know exactly how their suppliers create their sales price. In fact, it is common practice in the automotive industry to prepare a **cost breakdown**. Customers frequently provide their own special template into which the cost calculation must be manually transferred.

In open book accounting, every proposal must be airtight and if the customer has already received proposals in the past, the data must match up with the new offer. For example, if a part price to a standard part number was called up in the past, then this price must be named consistently in the future as well. If the numbers differ, the customer will insist on the lowest price quoted to him so far.

COSTING HISTORY

If individual parameters such as raw material price bases, exchange r ates or discounts granted change in the course of the costing process, these values must likewise be updated in all relevant cost calculations. This is also necessary when the customer has **change requests**. Carefully adjusting the calculation in such cases is important because otherwise you will be working with obsolete or different data, which skews the results.

It should be possible to understand the development of costs at every stage to determine which internal and external changes are responsible for any cost differences. This also includes the effects of any change requests made by the customer that increase costs to such a degree that price adjustments would be necessary. Cost calculations that clearly trace the entire development without any gaps provide solid ground for such negotiations. The ability to analyze what factors caused which ef fect on costs or results at what time is also the basis for a proactive designto-cost process. This means it is possible to verify whet her the use of an alternative material might be more expensive in purchasing, but the manufacturing will be less costly as a result.

5. SUCCESS FACTORS IN THE SYSTEM LANDSCAPE – A SHORT PRIMER

During the proposal process, the responsible employees in the different business divisions need quick access to **a large variety of master data** including raw material and purchased part prices, cost center rates, exchange rates and cost ing assumptions such as expected returns, payment dates and cost al locations. This information is generally **saved in different sources** including ERP, PDM, CAD, PMS and other IT systems. Even more complex project data such as costing BOMs and variants must be quickly accessible.

The problem here is that searching for this data consumes valuable working time. Moreover, manually compiling such data, for example in Excel spreadsheets, is prone to errors.

It is hard to imagine a reliable cost calculation with consistent and up-to-date data that has been created based on manually maintained Excel spreadsheets. Manual data maintenance is just one example of a highly error-prone process. **Every piece of incorrect data leads to additional correction loops** that not only tie up valuable HR capacities but also put more pressure on already tight deadlines. In the worst case, it is possible for errors to either go completely undetected or not be discovered for until much later, thereby leading to incorrect results.

The employees involved in the cost calculation should therefore be supported during the entire costing process by an IT system that provides optimal data management. The aim is to increase the share of value-adding activities to achieve better long-term results.

6. ENTERPRISE PRODUCT COSTING – A COMPREHENSIVE COSTING APPROACH

Enterprise Product Costing, or EPC for short, is a cost management method **for standardized, enterprise-wide product costing independent of location and department**. The aim is to control costs early on, starting from the development phase, and throughout every phase of the product life cycle. EPC incorporates all of the key areas of business – from development, production, purchasing and sales all the way to controlling and executive management. The latter benefit in particular because they are able to make business decisions that promote growth and earnings based on valid and consistent data analyses.

IT systems for EPC put this approach into practice: The software for all persons involved in the cost calculation supports the **complete costing process throughout the entire life cycle and standardizes all enterprise costing methods**. The EPC application's data pool provides the central interface for all IT systems integrated in the process. Cost data is thus collected, edited, processed and clearly presented in a single application. This ensures that all employees have the same valid data to base their cost calculations on.

An offer calculation in an EPC system does not need to begin with an empty spreadsheet: If there were similar proposals in the past, these can be used as a basis and simply adapted to the current specifications.

6.1. OFFER CALCULATION WITH ENTERPRISE PRODUCT COSTING

EPC systems ensure that the compilation of **all cost-relevant data within the offer calculation is faster and more reliable, thereby significantly accelerating the cost calculation process**. This frees up more time and resources to perform the necessary analysis activities based on a precise and transparent cost calculation.

EPC systems offer decisive advantages with regard to the top four topics in the proposal process described in section 4.

6.1.1. PROFITABILITY ANALYSIS – A FOUNDATION FOR DECISIONS

In order to make decisions, **management needs analyses and simulations** to base these on, which in turn r equire an abundance of data. The dramatic spike in data volume makes it necessary to automate the costing process to the greatest extent possible. EPC systems are designed to process large quantities of data. This enables cost accountants to provide management their results and profitability calculations in the shortest amount of time. What's more, the data is delivered in a clear and understandable form and in practical formats (as a preview, PDF, Excel, HTML, ...).

COMPLETENESS AND ACCURACY

Creating a profitability calculation is generally a complicated and methodologically challenging process. With an EPC system, however, it is possible to quickly and reliably compile a **solid and comprehensive basis of data** thanks to central data administration and numerous customizing options. Standardizing the calculation rules for individual key figures **delivers high-quality result**s and provides the necessary comparability. This is one of the requirements for management to be able to make solid decisions.

CLARITY AND TRANSPARENCY

The profitability calculation is presented in a **standardized and clearly arranged format**. Key figures such as net present value and return on investment, cash flow and depreciation/amortization duration are clearly recognizable, transparent and comparable in the EPC system. In addition, all key figures can be seen and evaluated in the overall context.

FLEXIBILITY FOR VARIANTS AND SCENARIOS

To be able to make decisions, management needs to have access to **various scenarios** for evaluation and weighing. These include quantity scenarios, exchange rate fluctuations, different payment dates or any allowances, for example. If management requests specific scenarios to be created, the EPC system can help **deliver fast and reliable results**.

6.1.2. REPORTS – QUICKLY AVAILABLE AND CLEARLY ARRANGED

Central administration of calculations in an EPC system allows users to **quickly create detailed reports and comprehensive analyses**. Formulating different questions sheds light on both live data and older versions. This includes cost structure and cost driver analyses, exchange rate analyses, risk and scenario calculations, for example. Changes can be clearly tracked, project versions easily compared, and data sorted, filtered and grouped in different levels of detail.

INTEGRATION OF MANAGEMENT

Ideally, management should be able to **quickly and independently access key figures** to individual projects, product lines or entire portfolios at any time. EPC systems are designed to directly integrate management in the costing process, providing options for the selection of various clear and standardized presentation forms and output formats such as PDF, Excel, SharePoint or an existing BI system.

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REPORTS FOR LONG-TERM PLANNING

Comprehensive reports based on all offer calculations throughout the enterprise are also helpful in providing insight into how sales and returns are developing across all new business. This information can additionally be presented by customer, product group and region, which also shows whether the offer calculation results and the long-term planning are consistent.

6.1.3. OPEN BOOK ACCOUNTING – DONE QUICKLY AND CONSCIENTIOUSLY

Using a central EPC database ensures that the customer always receives **consistent data** as part of open book account ing. It is also possible to automatically transfer the cost calculation to an external template. Separate reporting offers added security by showing all results and comparisons of the internal and external calculation results.

CONSISTENT DATA

Without the right system support, preparing a cost breakdown requires first determining which colleague named what price in the past for all of the relevant material numbers. In an EPC system, however, this information is instantly available because customer-specific values can be saved in the **central database**. This means it is possible to save different prices for different customers for every material number, which are automatically applied in every subsequent calculation.

LESS WORK, FASTER RESULTS

In addition to requiring open book accounting, customers often also provide their own template into which the cost calculation must be transferred. This is generally a very time-consuming step: The internal calculation logic is different from the external logic and needs to be translated first. Without an EPC system t hat takes care of this step automatically, this means manually entering the data into the customer's form – a task that can take hours to complete. System discontinuities, different data sources and the largely manual transfer of relevant cost data can also have adverse effects that require explanation. **In an EPC system, the cost breakdown forms are completed to a large extent automatically** thanks to the customer-specific costing schemes, purchased part prices and cost center rates stored in the system. The internal and external costing data is continuously synchronized when subsequent changes are made, for example, due to changing customer requirements or new assumptions.

6.1.4. COSTING HISTORY – TRACK DEVELOPMENTS

If costing parameters need to be changed because the customer has updated the contents of the RFP, it is sufficient in an EPC system **to adjust the affected data centrally**. The system documents the costing history so that you can see who made what changes when and how the cost calculation has developed.

The differences between the individual versions quickly become transparent thanks to **automatic comparisons**.

AUTOMATIC DOCUMENTATION

EPC software automatically documents individual changes that users make to the cost **calculation so that the calculation development is always clear and understandable**. This continuous control is a key factor in being able to r ecognize who made what change when. It is even possible to add explanatory comments to any changes and/or adjustments. The impact individual changes have on profitability is always apparent, which in turn can provide arguments for price negotiations.

INCREASING LEVEL OF MATURITY

In addition to a costing history, some EPC systems deliver **information on the quality of data** on which a cost calculation is based. Estimates are used in the early stage and then scales, for example based on a similar part, to help ind icate future costs. The **costing data becomes more detailed and precise** as the calculation progresses.

The cost calculation can be used to analyze how precise the current result is: For instance, for a offer calculation you can add a note to a ten percent return indicating that this proposal is 90 % accurate. The accuracy increases along the path to the product launch as more and more estimates are replaced by concrete supplier quotes or detailed calculations.

7. CONCLUSION – AN ASSESSMENT OF POTENTIAL

A central costing tool that allows you to automatically consolidate relevant cost data can significantly optimize the proposal process if it satisfies all the criteria listed in section 3.

PROCESS COST OPTIMIZATION

A central database t hat already has all of the relevant information eliminates time-consuming searches for data from different sources. It also ensures that all employees work with the exact same basic data, while the largely automated data maintenance removes most sources of error.

EPC systems optimize costing processes in the long term and minimize both manual activities and correction loops. This frees up the resources of all the employees involved so they can focus more on value-adding activities.

PRODUCTION COST OPTIMIZATION

Enabling employees to concentrate on their core activities creates **greater capacity for cost optimization**. This means there is more time to prepare profitability calculations, evaluate more scenarios, assess more supplier quotes – in other words, **there is more time to focus on the cost levers**. The continuous analysis of cost structures and benchmarks, and the evaluation of optimization concepts lead to a lasting reduction in production costs.

PRICE OPTIMIZATION

Providing a sound price argument is a critical factor in successfully closing a business deal. an ideal it system should therefore be able to show in detail how the sales price is composed and what impact changes have on it. this is a prerequisite for a clear line of argumentation when negotiating with customers. if sales is able to substantiate the price demands, you will be more successful in getting the **desired target prices and securing the required minimum margins**.

ABOUT FACTON

The FACTON EPC Suite is the leading Enterprise Product Costing (EPC) solution for the automotive, aerospace, mechanical engineering and electronics industries. Its specific solutions offer robust answers to the requirements of executive management and individual departments within the enterprise. FACTON EPC enables standardized, enterprise-wide costing independent of location and department for maximum product cost transparency throughout every phase of the product lifecycle. Businesses accelerate their costing, achieve pinpoint cost accuracy and secure their profitability.

FACTON was founded in 1998 and has locations in Potsdam, Dresden, Stuttgart and Detroit. Hasso Plattner, founder and chairman of the supervisory board of SAP SE & Co. KG, has supported this innovative company since 2006. The international portfolio of customers includes Ford Motor Company, Henniges Automotive, DURA Automotive Systems, Airbus, Mahle Behr, MANN+HUMMEL, Porsche and other renowned manufacturers.