Infopaper

AUCOTEC

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Hidden Treasures

How to optimally exploit the value of plant data

Millions of pieces of data are generated, changed, updated and documented in plant engineering. This costs time, money and expertise. What happens then? The plant is delivered and in operation, but the documentation lies unused in some files, in just cardboard folders in a surprising number of cases.

However, plants change, expand, and become older. Their documentation usually does not keep up with this development as changes are not reflected in the planning tool. Although hard copies of diagrams contain redlining entries from maintenance, the overview is easily lost in the process. The up-to-date status is often unrecognizable due to the number of corrections in red. Furthermore, the more outdated the documentation, the more difficult it is to ensure targeted, efficient maintenance.

This means that aging plants not only lose value, but also their data that has required such effort in its creation. One of the largest chemical companies in the world estimated the legacy data value of its Cologne site alone at around five million euros. This is a good reason in itself for the company to switch to Engineering Base (EB).

In the event of a malfunction or planned maintenance: quality and speed are worth more

This is because it is not only unnecessary to accept loss in value, but also to refrain from using the added value provided by up-to-date legacy data that is easily accessible and usable. AUCOTEC thus relies on EB's versatile data model, which maintains all engineering information across disciplines and also supports maintenance with practical solutions. It enables technicians to easily and promptly pass on the results of their work, even without special engineering knowledge. They use an app to send their redlining information via the Cloud directly to the design department, which checks it and implements it in an appropriate position. If desired, the corresponding changes to an object are immediately visible in all its representations in EB, or they are controlled via proposal fields. This ensures that data remains consistent and up-to-date.

The value of such data is evident, for example, in the event of a malfunction when every minute counts. A lot of money can be saved by immediate knowledge of what exactly needs to be exchanged and having the right device available. Plants often have long paths.

Up-to-date plant data is of immense value even for planned revampings. The data model, for example, immediately indicates the amount of reserves the plant has in terms of signal inputs or the status of the cabinet capacities. EB also offers highly efficient management of major change measures (execution management). They are made directly to the central plant model. During this process, EB coordinates the subcontractors, even at multiple assignment levels. It also facilitates the design of new measuring functions, actuators and loads, which are independent objects in EB. The software modules for their control can be designed at the same time for the distributed control system. Time-consuming manual parameterization becomes superfluous, which is another added value.

From as-designed to as-is

How do you obtain an up-to-date plant model, however, if you have worked without EB thus far and the design documentation has never received any service information? For this purpose, AUCOTEC further developed its intelligent migration solution for legacy data. A southern German chemical park operator used it to successfully transfer 1,800 tags with a total of 6,700 diagrams of the most diverse plants in just one weekend. The data is configured, mapped and imported in common formats such as DWG or XLS. Thus the system consolidates all information about a particular object from different disciplines into an object model.

All imported objects, from the pump in the P&ID to the terminals in the cabinet, then form the comprehensive as-is plant model with all logic links, that is typical for EB and editable for everyone involved.

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Editorial

Sunny prospects with the Cloud

Dear readers,

Spring is here and we are all looking forward to warm, sunny days. However, the issue of clouds is currently even more popular at AUCOTEC. Of course, we are not referring to gloomy rain clouds here, but rather very useful digital clouds that contain data and applications instead of rain.

At the Hannover Messe (Hanover Trade Fair), we will be showing once again how our cooperative platform Engineering Base (EB) can be operated in the Cloud to ensure that multiple users can work simultaneously on the same data and projects from globally dispersed locations. In addition, mobile applications can be used for „live" access to the same data via web services.

Our licensing models also offer you maximum flexibility. The token model enables you to use almost all EB modules, without having to define in advance which modules you need, and when, for which teams.

With these modern technologies, you, as the user, have maximum freedom in terms of the scalability and operation of EB. Whether for your own IT infrastructure or for on-demand infrastructure and application from the Cloud as a service, or for license purchase or time-based token usage: it is your choice and you can adapt your operation optimally to your current and future requirements.

We are sure that sunny prospects are in store for your engineering!

Yours faithfully,
Uwe Vogt
Executive Officer

HANNOVER MESSE

We are looking forward to meeting you!

Hanover,
23rd - 27th April, 2018
Hall 6 / Stand K 28

Further topics:

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When importing, EB compares the legacy data with the allocation lists in the distributed control system. This is because a distributed control system naturally reflects the up-to-date status of an operating plant. For each import, EB automatically displays the delta between the existing model and recently added data. Discrepancies can be eliminated directly, with EB thus gradually consolidating the documentation into a consistent „single source of truth" for everyone involved, regardless of the system with which it was originally developed.

Smart data evolves from big data
This versatile model constitutes the highest level of digitization and further increases the value of the existing data because it can be used at any time in terms of Industry 4.0, unlike in PDFs, DWG graphics or scans. Just as a navigation system cannot read one-way streets or traffic congestion information from a simple digital street map, PDFs & other documents impede engineering experts because the objects in them are not available separately. In contrast, EB's corresponding data model transforms big data into smart data which enables future-oriented use without limits in terms of discipline or format, also beyond maintenance and revamping.

Thus a major AUCOTEC customer uses, for example, the structured data in EB's up-to-date data model in order to avoid having to manually configure its predictive maintenance system. This enables the company to offer its customers world-wide predictive maintenance and continually optimize its products at the same time. This constitutes a business model that could not have been thus realized without EB.

It's not possible to be more digital: the logical twin
Conventional plant overviews can only display objects graphically. The invisible intelligence behind them is only comprehensible with a data model. EB contains the logical representation of mechanical and electrical engineering and control data. On the one hand, this also reduces work and errors in connected systems such as automation, ERP or 3-D. On the other hand, a central model is THE prerequisite for mapping the digital twin of a plant, not only from a mechanical point of view, but with the complete structure including logic, connections and device manufacturer data.

There is added value in every plant, and one only has to unearth the treasure with Engineering Base!

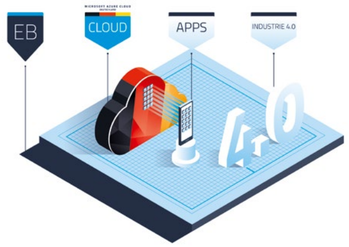
"Apps make the data more valuable"

Four questions about Cloud engineering and mobile apps

Four questions about Cloud engineering and mobile apps
The response to AUCOTEC's new Cloud concept was huge when it was presented at SPS IPC Drives 2017. It is possible to design in the Cloud without dedicated server hardware and with the required scalability, and you can use Engineering Base (EB), regardless of hardware and client installations. There has also been a positive response to the fact that AUCOTEC offers maximum data security with Microsoft Azure from Microsoft Cloud Germany. We asked Eike Michel, Head of Development at AUCOTEC, the following four questions:

Why is Cloud engineering becoming increasingly important, Mr Michel? "Binding software to a fixed workplace is simply no longer contemporary. The flexible and fast compilation of teams, also of globally dispersed teams, is becoming more and more of a priority."

And what about the apps?
"Apps will not replace an entire engineering job for the time being, but they are an ideal additional element. They are mobile specialists for special applications, for example, for insights into certain engineering areas or for creating data on limited tasks. This will result in completely new user groups that neither need nor have to understand the entire complexity of EB. The extended usability of data, once created, by apps also increases its value because its areas of application multiply."



What are these extended applications?
"For example, a technician can use a mobile device, which fits into any pocket, to view all relevant EB data from anywhere at any time and send his information directly to the design department. Or a manager obtains an overview per app of the status of all tasks in his area. Linking EB apps to other web services, for example, for replacement part ordering from Amazon or to book a train ticket for the next business trip of a service employee directly from the maintenance app are conceivable. EB is flexible and open enough."

› Eike Michel

Is that possible with every engineering system?
"No, at least not as easy as with EB. The Web Communication Server based on REST and WSDL only allows the flexible connection of apps, while EB's generic data model also allows access to all processed engineering data. File-based or distributed database systems can't do that."

AUCOTEC at Fachtagung Schutz- und Leittechnik 2018 (Congress on Protection Engineering and I&C)

"EB can significantly accelerate network expansion"

More than 600 national and international experts in the area of protection engineering and I&C as well as from the environment of power electronics and the manufacturers of production plants came again this year to the meeting of the Forum Netztechnik/Netzbetrieb (FNN, Forum Network Technology/Network Operation) of the Energietechnische Gesellschaft (etG, Energy Technology Society) of the VDE. There were very interesting presentations and workshops. AUCOTEC was also represented there.

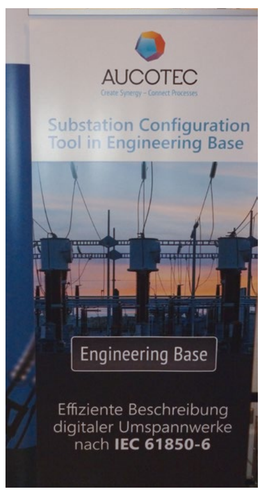
Solution based on IEC 61850
"The conference is one of the most important events for our energy supply customers and prospective customers. Our consistent solution based on IEC 61850, which we presented here in connection with H&S and Phoenix Contact, was very well-received," said Tim Sausmikat, Major Account Manager for the Power division at AUCOTEC.

The many discussions once more clearly revealed the need for innovative, intelligent engineering solutions due to the change in the energy market. "The potential of our cooperative platform Engineering Base (EB) to significantly accelerate network expansion attracted far more participants to our stand than we had expected," said Sausmikat.

› Congress and solution partners: from left AUCOTEC Executive Officer Uwe Vogt and H&S Manager Jan Arph

Standard-compliant plant structuring significantly facilitated
EB's ability to describe digital substations highly efficiently, and in a manner compliant with the communication standard IEC 61850, was one of the most frequent topics of discussion with visitors. With the solution from AUCOTEC and H&S, redundant data maintenance is a thing of the past, the special consistency minimizes errors, and only one system configuration tool is necessary. "This significantly simplifies the process of plant structuring and greatly facilitates comprehension of the neutral Substation Configuration Language SCL," explained the power expert.

Impressive in practice
Visitors' questions repeatedly revolved around the difference between EB and classic CAD/CAE. "The recognition by many prospective customers of the opportunities posed by data-driven work in a cross-disciplinary plant model yielded a large number of appointments for the next steps," enthused Sausmikat. Of course, the experience gained from the practical implementation of the EB solution also contributed to this interest. "What we have already achieved with customers such as TenneT, Siemens, Transnet BW, Stromnetz Hamburg, Amprion or GE Grid is obviously impressive," said the account manager.



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Magnet for the needle in a haystack

Despite big data: retrieving and using plant legacy data becomes child's play

Having the right information immediately available in the era of big data can be decisive for a company's success. This applies to maintenance tasks and to the avoidance of plant downtime as well as to the reuse of proven sub-projects for a fast and realistic offer including implementation.

Comprehensive data model meets smart search engine
In order to significantly reduce the search for relevant engineering data in big data sources, AUCOTEC has teamed up with the U.S. AI (artificial intelligence) expert QuickLogix. Engineering Base (EB) is AUCOTEC's contribution to the solution. With its cross-disciplinary plant model in a central database as a big data source, EB can provide all information in a targeted manner and without system disruptions, also via the web thanks to AUCOTEC's Cloud concept.

QuickLogix contributes a search engine which, thanks to AI, can interpret unstructured queries in common language. It acts like a magnet for the proverbial needle in a haystack and also provides accurate results to users without special knowledge. Furthermore, configurable algorithms access in a web-based manner either EB directly or the data layer of QuickLogix in which EB is embedded.

Project details immediately available
The result of queries like "show all oil storage tanks for a maximum of 20 bar pressure" or "all switchgears with X kv for customer Y" appears as a list within a few seconds. The results most likely to be relevant are shown at the top of the list. You can navigate directly from the list to all project details, from the P&ID via instrumentation and electrical design to maintenance history. Thus you immediately see how appropriate the information is and can copy it directly.

For big data of plant operators and EPCs
Especially manufacturers with hundreds of documented large-scale projects can save valuable time, as can operators who have to have millions of pieces of data available. The Digital Grid Automation Systems Group of Siemens AG, a joint customer of AUCOTEC and QuickLogix, has already tested the solution and confirmed: "It has the potential to significantly accelerate established processes worldwide."

"Transforming challenges into a competitive advantage"

Interview with Dr Ales Kobylik, CEO of AUCOTEC's partner TECHNODAT

Image: Dr. Kobylik

› Dr Ales Kobylik

AUCOTEC maintains a worldwide network of partners and subsidiaries in more than 45 countries. One of its oldest and most successful partners is TECHNODAT in the Czech Republic and Slovakia. CEO Dr Ales Kobylik explained why this is the case.

How and when did your cooperation with AUCOTEC start, Dr Kobylik?
In 1995, we started to cooperate with Debis Systemhaus which, at that time, owned the RUPLAN system, which we successfully distributed in the Czech Republic and Slovakia. After AUCOTEC bought the RUPLAN division of Debis, we founded our subsidiary Technodat Electro, s.r.o. in 1999, with which we have been offering the entire portfolio of AUCOTEC solutions ever since in the Czech Republic and Slovakia.

Since its foundation in 1992, TECHNODAT has been focusing on strong solutions in the area of computer-aided engineering for product development in these two countries. AUCOTEC's portfolio fits perfectly into this philosophy, on the one hand, because of its quality, but also because of the close relationship with the industry in Germany and here with us.

In which industries has TECHNODAT proven itself and where do you operate?
We are still concentrating on the Czech Republic and Slovakia. Above all, we operate here in the automotive and aerospace industry – also among the suppliers of these industries. In addition, our engineering solutions in mechanical engineering and the energy sector are successful.

Do your market segments pose special challenges?
We face many challenges. In the automotive industry alone, we see clearly that, in a few years, this industry will be completely different from what we know today due to the trends towards electromobility and autonomous vehicles. The same applies to mechanical engineering due to the challenges that Industry 4.0 poses for us. However, I am convinced that TECHNODAT's solutions and our team have the best prerequisites to transform these challenges into a real competitive advantage – both for our customers and for us.

TECHNODAT celebrated its 25th anniversary in 2017. What has changed over the years?
TECHNODAT started in 1992 with four people. We now have more than 150 employees and more than 1,000 customers across all lines of business. That speaks for itself. We have become one of the strongest suppliers of software solutions for product development in the Czech Republic and Slovakia.

In the last five years, we have gone through a significant content-related transformation that has two dimensions: on the one hand, the transition from a company that sells software licenses to one that offers solutions. As a result, one focus today is on comprehensive and individual consulting, including precise analyses of customer needs.

The second dimension is digital marketing. Here, we set new priorities and use the new communication channels to reach our customers. The results in recent years show that TECHNODAT's change was successful.

Where are you particularly successful with AUCOTEC software?
We are strongest with AUCOTEC solutions in two areas: in energy generation and distribution as well as in the mobility industries. In energy distribution, we have succeeded in winning 100% of the Slovak market. This includes the companies SEPS, VSD, SSD and ZSD. In the Czech Republic, the energy solution is mainly used by E.ON and PREdi.

In the area of mobility, we have been able to impress such interesting customers as ŠKODA TRANSPORTATION, ZETOR, TATRA, AERO and LOM PRAHA in recent years. However, we also invest a lot in the third strategic area, namely process and detail engineering, where we also serve interesting customers such as Howden ČKD Compressors, ProCS and ZAT.

What do you see as Engineering Base's share in this success?
When I spoke of our transformation with the emphasis on consulting, this was aimed especially at Engineering Base (EB) as a solution that fits exactly into this development. We want to reach the top management of our potential customers and convince them that the aforementioned challenges also necessitate change for them. We have the required knowledge and, with EB, a system that offers customers a real competitive advantage.

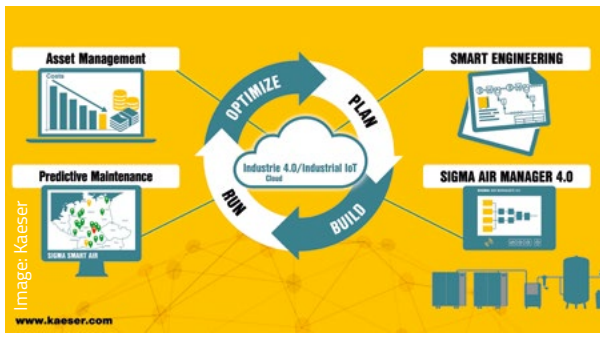
What do you think is special about Engineering Base?
If we look around, we are increasingly surrounded by "platforms", from Apple's device platform to the platforms of various booking systems. EB is an outstanding example of a successful platform. The merging of different engineering disciplines into one common model in a central database is really special. It saves time, avoids errors and ensures better data quality. I am convinced that it will enable new customers to cope with modern challenges. Thus EB's distribution will continue to grow in the market.

Thank you very much for this interview, Dr Kobylik!

Efficient even under pressure

Compressed air specialist Kaeser uses digital twin to save time and increase quality

Kaeser Kompressoren SE is one of the world's leading suppliers of compressed air products and services. Founded in 1919, the family business now has production facilities at two German sites and has around 5500 employees worldwide.



> **Digitization strategy: EB as core of Kaeser's engineering interlinks all disciplines**

"Smart compressed air"

Compressed air is just as important to industries as electricity. For even more reliability and higher design efficiency, Kaeser has developed a new digitization strategy, supported by AUCOTEC's data-driven software Engineering Base (EB). Under the banner "Smart compressed air," Kaeser offers networked compressors with intelligent control. Its digital twin allows the real-time monitoring of operating data, which is not only used for breakdown analysis and optimized maintenance intervals, but also for the continuous improvement of the product range and engineering.

The heart of the digital twin

"EB is the heart of our 'smart engineering,'" explained Project Manager Patrick Dietz from Kaeser. "This is where the 'digital twin' of the compressed air plant is created." Its design, including control configuration and data transfer, is based on the analysis of the customer's situation. Its results, which are maintained in EB, can be traced over the entire project lifecycle.

Integrative database

All master data and documents accumulated over the service life of the plant are collected and processed in EB, including P&IDs or sketches. "EB is perfect for the integration of all technical information and changes, even from connected systems such as 3-D or automation," said the project manager. He claimed, "For the first time, everyone involved - including external partners - has access at all times to up-to-date data that is relevant for them, that is highly integrative!" EB's database ensures consistency and completeness: information is only entered once and appears immediately in each representation of the edited object.

Efficient predicting

One of EB's highlights is its automated configuration of the data transfer from the distributed control system to the predictive maintenance system (PdM). "Without EB, we would not have been able to offer PdM as such a good service," explained Falko Lameter, Head of IT at Kaeser. First, the PdM receives a list of all possible tags from EB. EB then "briefs" the distributed control system as to what is relevant for the PdM and how often and how precisely it should report the operating data to the PdM.

> **Maintenance before a plant fails thanks to predictive maintenance with EB support**

Vision

Kaeser is continuously expanding its use of EB together with AUCOTEC. "The decisive factor for our migration was EB's unique architecture with its central database core. Without them, we could not have realized our vision," concluded Falko Lameter.

Increasingly more efficient

Škoda Transportation modernizes its engineering processes with AUCOTEC

For over 150 years, the Czech company Škoda Transportation has successfully developed and produced rail transport technology worldwide. In the Czech Republic alone, more than 4,500 employees produce low-floor trains and trolley buses, hybrid vehicles for environmentally friendly local transport as well as trains and locomotives. In addition, Škoda Transportation is represented by subsidiaries and joint ventures in Germany, Finland, Hungary, Russia and the U.S.

> **The complete electrical engineering documentation of the Deutsche Bahn project was achieved with EB**

Supported by AUCOTEC's Czech partner TECHNODAT, the company had been working with AUCOTEC software for years when it decided to take the next step in 2013 and chose the database-driven platform Engineering Base (EB) for the fundamental modernization of its engineering processes.

Under pressure

This was due to the increasing pressure to constantly complete projects faster. The new system was intended to significantly reduce manual data transfers and consistently coordinate projects which were edited at different sites within the Škoda Group depending on capacity. Another objective was to optimize the documentation of electrical engineering diagrams and the corresponding production data. The new platform was also to be used to standardize the increasingly different tool environments in the subsidiaries and enable them to meet the needs of different departments from the vehicle concept to production and service.

"Much more efficient processes"

"We looked around the market thoroughly," said Zdeněk Sváta, Technical Director at Škoda Transportation. "EB was able to provide the best solution to our needs. EB's openness, multi-user capability and the consistent linking of different object representations in the various documents were the main deciding factors in addition to the already positive experience with AUCOTEC."

The complete electrical engineering documentation of a local train project for Deutsche Bahn was the company's first real application of EB. This project confirmed the existence of other advantages, as Sváta reported. One of the most important of these advantages is the ability to work alphanumerically in lists. Mass data handling is greatly accelerated by filter, evaluation and sorting functions. Users also appreciate the change tracking, the time-saving conversion to different representations in all documents and reports as well as the intelligent navigable PDF.

Sváta's conclusion: "By switching to EB, our processes and handling of documentation became much more efficient. Every planned train that is completed further improves our standardization. Thus we have already started to expand the solution, from the 3-D connection to the PLM link."

And furthermore ... the following companies, among others, have recently opted for AUCOTEC:

AUFEER DESIGN, s.r.o.
Prague | Czech Republic

Auto-Kabel Management GmbH
Wolfsburg | Germany

HAKO
Bad Oldesloe | Germany

Helmink Engineering
Duiven | The Netherleands

ISES S.A.S.
Barranquilla | Colombia

Knorr-Bremse Systeme für Schienenfahrzeuge GmbH
Bissendorf | Germany

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AUCOTEC AG
Oldenburger Allee 24
30659 Hannover
Telephone +49 511 6103-0
Fax +49 511 614074
Web aucotec.com

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