

Image: sduben / istock.com

Everything under control?

How change management becomes clearer, more consistent, more efficient

The saying about the permanence of change is as old as it is true. It is always the case - even more so with engineering. In the process of plant development, planners have to deal with quite a few changes and corrections, some self-initiated, many made and transmitted by others - or not. Here, at the latest, is when chaos threatens. The same applies to plants in operation, which are serviced, converted or expanded umpteen times in the course of their lives.

Central data: reliably up-to-date

Visibility of changes to all stakeholders - without the need for extra communication and without the risk of forgetting anyone - is a given in the Engineering Base (EB) cooperation platform. This is due to EB's cross-discipline, centralized plant data model, in which each object exists only once. All core engineering disciplines can edit the objects from their point of view at any time and be sure to always have the current status in front of them. Everyone can see how far other departments are and can

deftly further develop what is already there. Waiting was yesterday!

State always known

But EB goes even further. After all, changes not only occur in the ongoing development process. Often, someone changes an object that neighboring disciplines assume they are done with. How do they get that this is no longer true? Who has to inform whom and when? In a document-oriented tool chain, the person triggering the change would have to send out various emails or make phone calls, describe the change, and ask all affected parties to draw their conclusions. These consequential changes must then in turn be communicated.

EB is completely different: Here, all objects can be assigned a state. If the nominal diameter of a line had the state 'checked', but the flow measurement resulted in a new requirement, the state is set back to 'to be checked'. EB's data tracking function then informs the responsible editor that

something still needs to be done.

Fully tailored to the role

EB's latest version, however, makes organizing tasks around changes even more convenient. Objects often have 150 attributes and more, but not all of them by far are of interest to everyone. Therefore, attributes can now be assigned to users or roles. Whether automation, process or electrical engineers, everyone can then use the worksheet filter to list the appropriate attributes with state in an instant and see their own open tasks at a glance. Groups or departments can also assign roles to themselves.

'So check ...'

This also works the other way around: If a process engineer needs a higher pump pressure, he can create a task for the person who is responsible for the next logical step. He simply leaves the reason in the change history. This way the information stays on the object, no need to write, email and archive a separate

word document. In the task, the objects to be checked are defined and assigned to a person or group. When the addressees open 'their' EB, they directly receive a display of how many tasks are pending.

Release processes: automatically efficient

Clicking on it will take you to a worksheet with all the tasks. This takes you directly to the objects to be edited. In addition, customer-specific wizards can be defined that create tasks automatically. For example, certain data can be checked automatically under defined conditions. The automatic creation of tasks will in one of the next EB releases even be possible from within SAP, for maintenance tasks, for example.

EB therefore ensures that not only in engineering no change is 'lost'. Release processes also benefit. The organizational level can

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Digitization in AUCOTEC's DNA

Dear Readers,

We are all experiencing very turbulent times right now. Many developments unsettle us. Things are changing very quickly, and in many areas it is hard to predict what will happen next. Accordingly, we have to weigh up more and more risks, both privately and in business. At the same time, however, new opportunities are emerging.

This is the spirit in which we act at AUCOTEC. We are convinced that optimized processes in the engineering, construction and operation of plants and mobile systems are a decisive key to being prepared for the challenges of our time, such as the energy

transition or the skills shortage. The digitization issue is also putting pressure on our focus industries of energy distribution, the process industry and mobility. They all need and want to optimize through digitization and develop new business models. This is exactly what we have in our DNA at AUCOTEC with the Engineering Base cooperation platform.

And because we see at our customers that the platform can make a decisive contribution to meeting all the requirements, we continue to invest in growth. For example, we have further expanded our direct global presence and established new subsidiaries in India and the Netherlands.

Whether in vehicle design or in the development and operation of energy distribution networks to process plants: Read in this infopaper what added value EB can also generate for you!

Yours sincerely
Uwe Vogt
Management
Board



Image: AUCOTEC

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thus automatically control the complex interaction of review, revision and approval. This not only saves time, but also increases the quality of data and documentation. New document revisions are not released until everything is checked.

Dashboard for management level

Project management and other responsible parties can also use EB at any time - without having to be familiar with the platform in

detail - to run state evaluations and obtain an overview of work progress via a dashboard. For this purpose, for example, a list can be opened on the P&ID that displays all attributes of a thermal process on request. Or a diagram illustrates how many states are 'ready for approval'.

Since EB's audits go deep into the details of the data instead of being document-oriented based on plain imaging, revisions gain

significantly in quality. In advance, the dashboard shows whether a document is ready for revision; this saves quite a few 'loops'. It can be individually defined which objects are relevant for releases or determining state and degree of completion.

Of course, all this also applies to changes in running plants. Maintenance tasks, for example, ensure that no maintenance is overlooked, and retrofitting tasks ensure that

physical changes made by the technical team are reflected promptly in the documentation. Only in this way can the digital twin always represent the current as-built status and retain its enormous value, even for retrofitting and expansion measures. Thus, EB's extra control automatically brings extra quality and thus safety for every phase of the plant's life.

'THE engineering location worldwide'

New subsidiary in India: AUCOTEC strengthens its presence in the Asia-Pacific region

In the spring of this year, AUCOTEC announced the establishment of two new subsidiaries, in Rotterdam, the Netherlands, and in Pune, India. Infopaper spoke with Olaf Streit (56), head of AUCOTEC activities in the Asia Pacific region, about the Indian subsidiary, which inaugurated its new office premises in September with a moving, traditional Indian puja ceremony. Besides the head of AUCOTEC India, Dileep Miskin, his wife and Olaf Streit, important customers also attended the ceremony and conveyed their congratulations. Some had traveled especially from cities like Mumbai and Bangalore for this.

Mr. Streit, AUCOTEC is already represented in Asia in South Korea and has been in China for over 20 years, why now India?

India has now become THE engineering location worldwide. All major EPCs have their engineering companies there, and all global players in process automation use the know-how of the well-trained Indian experts on site for their engineering. One of the most important and world-renowned universities for engineering is located in Pune. India is virtually a springboard for highly qualified specialists, who also make up a large proportion of the engineering experts in the Middle East and the USA. And last but not least, India is one of the most dynamically developing economic regions in the world, for example in the pharmaceutical sector, but also in the energy sector. It was therefore only a matter of time for us - and we are very pleased and proud that we are now much more present in this important market focus.

So AUCOTEC was already active in India before? You already have customers there.

Yes, we were represented there for many years via a partner.

And why a subsidiary? What do customers get out of it?

For many customers, especially the large ones, easier access to headquarters is important; it gives them more engagement. And they can draw on more direct know-how because, unlike a partner, we are completely focused on our products. Customer proximity is the keyword from our point of view. It is also helpful for us to have more direct contact. As we learn more from every project that AUCOTEC manages itself. And this, in turn, benefits all customers.

Which industries do the Indian customers come from?

They are mainly EPCs. One, for example, is the world's largest general contractor in food and beverage plant manufacturing. Another works in India for the world's largest manufacturer of chemical products.

Will there be more AUCOTEC branches in the Asian region?

Yes, we are already planning to expand our presence, especially in Southeast Asia.

Here we are thinking of sales and support offices in Indonesia, Malaysia and Singapore. India as a subsidiary is to play a central role in this.

Thank you very much for speaking to us, Mr. Streit!



> Mr. Bharat R. Mehta, Senior Vice President of the Indian customer Reliance Industries, opens the new site in Pune



> Dileep Miskin, Managing Director of AUCOTEC India, with shareholder and wife Geetanjali Miskin



> Olaf Streit, Director Asia Pacific at AUCOTEC

Standards for easy exchange

Communicate easily using CFIHOS and DEXPI - beyond the limits of proprietary software formats

Data models are as individual as their engineering projects. However, this can lead to problems when working with suppliers and service providers. For example, plant legacy data often has to be transferred to other systems during retrofitting work. However, it cannot be ensured that the target system interprets them correctly. In addition, not every plant model contains all the information that the subsequent editor needs.

This is exactly where the meta-standard CFIHOS (Capital Facilities Information Hand-Over Specification) comes in. It is initially intended to further standardize communication between EPCs and owner/operators. Already, many suppliers and consultants have recognized the benefits in various use cases and are contributing their experience. 'Most companies have the problem that they work in increasingly complex digital ecosystems in which information has to be reconciled in different ways,' explains AUCOTEC expert and product manager Leon Hanke. "That's why it's even more important to create overarching standards and interfaces that help with data interpretation and implementation." The CFIHOS initiative aims to do just that: describe the necessary objects, information and relationships.

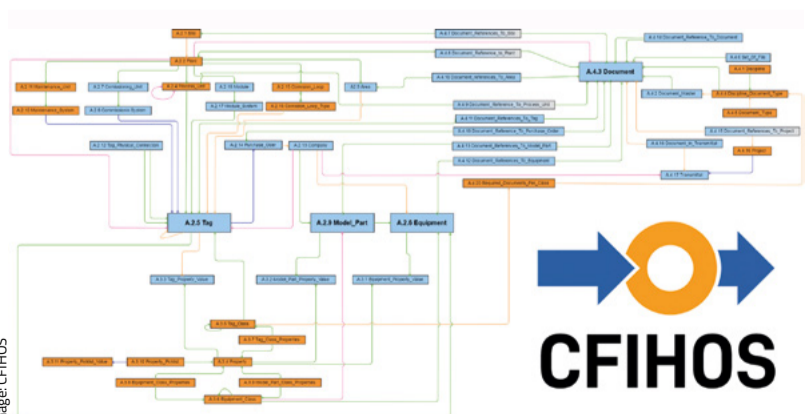
Those who already work with the Engineering Base (EB) cooperation platform will find this standard particularly easy to use. "We welcome the important work of the CFIHOS group and actively support the project. It's an ideal fit for our object-oriented software and our understanding of a plant model," says Hanke. "With EB, we can already map most of what the standard defines, and we will continue to follow it closely."

DEXPI-capable by nature

However, standards are becoming increasingly important not only in the description of data models. For example, CFIHOS, under the leadership of IOGP (International Association of Oil&Gas Producers), works closely with other initiatives such as DEXPI, which also set standards in their fields, as the best model description is invalid if different systems cannot talk to each other. And this is where DEXPI (Data Exchange in the Process Industry) comes in, an XML format that creates more interoperability when exchanging P&ID diagrams. "This is a big step in the right direction," Leon Hanke explains. "Here, too, EB has an advantage with its for-

ward-looking data model. In it, users already have all the data they need, which they can export or import via flexible mapping in DEXPI format."

AUCOTEC is an active member of the DEXPI group, which includes various software manufacturers. "We are pleased to be able to work with one of the largest energy companies in Europe to make the DEXPI format ready for practical use in an ongoing project. In addition, we are eagerly following the expansion of the format to other types of diagrams (DEXPI+) such as the process flow diagram (PFD)," says Hanke. "Since in EB the foundations for the P&ID are laid through functional planning in the PFD, we also offer a suitable data model here. More importantly, we know the relationships between functional and physical objects, which eliminates the need for reconciliations or a handover."



> A simplified look at the CFIHOS data model.



> Leon Hanke



Image: hayoshika / stock.adobe.com

Growing together for more efficiency

AUCOTEC and entegra link 2D and 3D engineering in power distribution

When the 3D experts in the primary engineering design of substations have done their work, their results usually have to be transferred again, with some effort, to a 2D system in order to work out the secondary engineering in it. The challenges: Duplication of work, transmission errors, loss of time. AUCOTEC's partnership with the primary engineering professionals at entegra GmbH, which is currently being prepared, is intended to break down these barriers.

Faster planning, more efficient maintenance Planners of large substations will be able to work together on an intelligent data model for the plant right from the start with the future coupling of entegra's primtech software with

Engineering Base (EB). All participants enter their own definitions and everyone benefits. For example, you can not only see which circuit breakers are actually installed, but you can also retrieve all the associated specifications directly, regardless of which system you are working in. This also allows a rough calculation for the planned substation to be calculated at a very early stage.

The convergence of EB and primtech also supports maintenance. In the future, it will be possible to forward or retrieve relevant changes at any time - thanks to EB's software architecture also client-independent via web service. Each change only needs to be entered once, but both systems remain consistent and

up-to-date. "In this context, EB will be the hub for all information on the devices as a single source of truth," explains AUCOTEC product manager Michaela Imbusch. The reference markings, material descriptions and the like can also be defined in EB according to any desired standard and are then automatically uniform everywhere. "The exchange runs through EB's 3D Portal interface, so it's easy to install and maintain," says Imbusch.

Virtual plant tour shows all data

Anyone who does a virtual tour through the primtech plant model with mixed reality glasses can also benefit from the connection. In addition to the primary technology and asset data, this also allows all other relevant plant

data from EB to be displayed in 3D space. For example, device and wiring information about a circuit breaker. Wolfgang Eyrich, Managing Director at entegra, says: "By linking the two worlds, we are a decisive step closer to the digital twin for the energy and network industry." "In order to be able to offer customers precisely such added value, we have thus made EB open to connectivity," adds Michaela Imbusch.



> Michaela Imbusch

"The industry needs a digital solution!"

Chris Breeden, Breeden Wiring Systems, on the challenges in the mobility industry

Chris Breeden (age 40) is founder of Breeden Wiring Systems (BWS). His company provides professional engineering and consulting services for the design of wiring harnesses and control panels, both for the automotive industry and for other industries, such as marine or large drives. In addition, the company provides prototypes to shorten the time needed for development for its customers



> Chris Breeden

Mr. Breeden, you are our expert for wiring harnesses and harness design in the USA. Are there any special challenges in this area for the US market?

The challenges in wiring harness development today are the same as ever: lack of design integration, frequent changes and manual processing of information all affect quality. In addition, there are long lead times and strong cost pressure. However, with the rapid emergence (integration) of new technologies that are expected to make

nearly all mobility applications autonomous, for example, there are far greater challenges ahead for an industry that is already struggling to meet current demands.

In addition, wiring harnesses are very labor-intensive. Often, work is outsourced abroad to reduce costs, however, this is suboptimal because technical knowledge is often lacking in development there. Given the rapidly increasing complexity of mobile applications, shortened time for development cycles, higher frequency of change, and current resource issues, investment in development is urgently needed.

How must engineering transform to meet these challenges?

Many wiring harness designers use 2D and 3D CAD systems and processes, especially for mechanical parts. While these tools speed up design and allow 3D printing of prototypes, for example, they are not effective for wiring harness development. Document-based designs often need to be handled manually, which leads to different processing statuses. This design practice is error-prone and time-consuming, and a major reason for long development cycles and high costs. In addition, manual processing can lead to

fluctuations in quality. To compete in today's world, the industry must move to a digital solution so that customers, engineers and manufacturers can collaborate efficiently.

In Europe, there are extremely high requirements for the functional safety of vehicles, especially as regards autonomous driving. What is it like for you and how can modern engineering bring more efficiency here?

By using a modern digital solution such as Engineering Base Cable (EB), it is possible to develop rule-based design checks. For example, by connecting a predefined electrical device to a wiring harness, EB can automatically generate the validated connector assemblies, terminals, gaskets, accessories, conductor sizes, cable types, potential designations, and more. Thanks to EB as a 'single source of truth' (SSoT), the potential for errors is also reduced, as is the time required. For example, if you make a change to an object in the platform, it is automatically applied to all other references in the design, including wiring diagrams, layout drawings, board layouts, section drawings, etc. In addition, EB Cable also automatically records the details of the changes; this provides unique revision tracking and control.

Data exchange with common 3D CAD systems such as Creo and Catia for accurate determination of space requirements, dimensions, bending radii and diameters is very easy thanks to a bidirectional plug-in. It not only interprets the results from the 3D in EB's data model, but also generates 2D harness or form board drawings and associated graphics. To improve wiring harness design beyond the basics, data transfer to and from analysis tools such as ETAP, Ansys, etc. can now also be done more efficiently and without the risk of manual errors, thanks to EB Cable.

The entire industry is strongly future-oriented - how do customers need to be prepared for this so that they can implement their ideas and visions in the future?

OEMs and their wiring harness suppliers must eliminate bottlenecks and become much more agile and flexible to remain competitive for the future in rapidly changing markets. Our customers using EB Cable are already taking full advantage of

this potential and are well positioned to connect with the future automation of manufacturing processes and controls that will make traditional wiring harness manufacturing obsolete.

You have recently been able to convince the manufacturer of a new eVTOL aircraft (electric vertical take-off and landing aircraft) of EB. How do the challenges there differ from those in harness planning for cars?

Application standards, regulatory requirements, functional requirements and unique materials are some of the key differences between the fields. Integrating these unique specifications in a reliable, and cost-effective manner is a primary responsibility of engineers. The eVTOL customer here from the US realized in the middle of a rapid development cycle that traditional methods of documenting the wiring harness design would not meet the requirements. AUCOTEC and BWS worked hand-in-hand to quickly roll out software and training, as well as to migrate and update the project design in parallel with the completion of the prototype design. This allowed the company to move to the more efficient solution without project delays or downtime.

Why are you so successful with Engineering Base in the various mobility sectors?

I have been very fortunate to work with many talented people around the world over the past 17 years. However, my passion is not only for wiring harnesses, but above all for the success of our customers and therefore for the products they need to succeed. My team and I understand the challenges, frustrations and pressures that so many wiring harness professionals face. We have seen and evaluated every development solution available. EB Cable was the first system to meet all our challenges. So I'm simply trying to share my enthusiasm for the possibilities EB offers with all wiring harness engineers who work hard but are unnecessarily hampered by ineffective tools.

Thank you very much for the interview, Mr. Breeden!



Image: pepper motion GmbH

A second life as electric

Electrification specialist plans truck & bus conversions with AUCOTEC's EB

pepper motion GmbH is the first digital OEM to electrify new and used commercial vehicles. Because pepper's conversion projects use existing resources, the vehicles are the most sustainable and energy-efficient in their class. With currently around 110 employees at four locations, pepper ensures an environmentally friendly 'second life' for trucks and buses with at least another eight years of use. In addition, high development speeds impress customers worldwide.

"Consistently digital"

For a matching engineering system, the electrifiers looked around thoroughly on the market. "As a highly innovative company, we did not want any of the conventional document-oriented sign systems. Our solutions are forward-looking, and our engineering software should be too. That's why we were looking for a consistently digital system that could also efficiently support the much-cited

'functional safety' of ISO 26262 modern mobility concepts," reports Daniel Zimmermann, systems and field engineering expert at pepper. Result of the search: AUCOTEC's Engineering Base Cable (EB) cooperation platform.

Continuously networking

"EB was able to meet all our demanding requirements and still requires relatively little training," praises Zimmermann, for whom the consistency of the platform is particularly important: "We use it from the first function and system plans to the documentation of the complete wiring harnesses for production at the supplier's." This includes, among other things, the derivation of the parts lists for purchasing or the circuit diagrams, which occur virtually incidentally in the development process and also make the after-sales area more efficient.

"The association of components and installation locations in EB is also a real help, it makes the interrelationships more

transparent," explains the engineering expert and tells us how important it was for pepper to also have a seamless, bidirectional connection to the 3D CAD in order to best support the cable routing. "This has been a great success," he confirms.

Central data model gains time

The Electric/Electronic division for drive design and the Predevelopment division for systems and field engineering now work on the same data base and build on each other. "EB's central data model improves data quality while saving time on consultation, transmissions and the associated sources of error. This gives us more time for the essentials, namely more projects," sums up Zimmermann. For this reason – and because the company and its product portfolio are growing continuously – pepper will continue to expand its EB capacities. Sustainable retrofitting of trucks and buses is in demand, and this way the environment also benefits from EB.

EB drives forward network expansion in Bavaria

Bayernwerk Netz GmbH relies on data consolidation in engineering



Image: Bayernwerk Netz GmbH

For over 100 years, Bayernwerk has stood for secure and reliable energy supply in the Free State of Bavaria. Bayernwerk Netz GmbH has a key role to play in this. With the urgent need for new solutions to integrate renewable energies, the company is focusing on digitization and innovation and is systematically working on the expansion of energy networks - from lines to substations and compact switchgear.

New processes - more output

"Due to the rapid development of renewable energies, we need a massive plant expansion. Fast!" says Michael Renghart, Head of Planning/Construction Substations & Switching Stations. "For the necessary increase in output, we have to rethink processes and modernize the engineering. AUCOTEC's Engineering Base (EB) platform supports both in a highly digital way," he explains. EB can already accommodate the single-line definitions of the primary technology and allows the secondary technology to be developed on this basis - without time-consuming coordination,

duplicate entries and associated errors. This minimizes system breaks and improves data quality. This also applies to EB's ability to take data from complementary systems and process it intelligently. For example, the planned automated exchange with the plant maintenance system or the parameterization tool of the protection and control technology also saves a lot of work.

With a module kit from one week to a few hours

A highlight for Renghart is EB's modular principle including [Advanced Typical Manager](#). "This reduces the configuration work for plants from a week to just a few hours - per project!" Although a module kit requires initial work, it quickly pays off because: "With just a few clicks, you can create [standard-compliant plant documentation](#), from the single-line design to the wiring manuals and the data model."

Overview and evaluation at any time







Renghart also sees an important prerequisite for future-oriented engineering in being able

to view project statuses at any time and easily run evaluations. Document-oriented tools are unsuitable for this, but EB's central plant model plus web services orientation allow the data of any object to be used from any discipline-specific view at any time. For example, EB's [Workflow Assistant](#) makes all project steps controllable and traceable. Another plus is that EB's database and online availability supports Bayernwerk's initiative to further reduce their CO2 footprint by significantly reducing paper printouts.

Convincing know-how

Not only the platform, but also AUCOTEC's know-how and support were convincing. "The software professionals have been very helpful to us in optimizing processes and avoiding stumbling blocks," says Michael Renghart. This is one of the reasons why some sister companies of Bayernwerk Netz GmbH are also already interested in EB.

And we also welcome the following new customers to the AUCOTEC family:

 CarbonEn <small>Carbon dioxide for Environment</small>	 Dragados Offshore	 ecointegral	 ENCOSC GMBH <small>ENGINEERING • CONSULTING • SOLUTIONS</small>	 FES GMBH <small>FUTURE ELECTRIC SYSTEMS</small>	 KFL AUTOMATION	 Plasser Australia
<small>CARBONEN Pohang, Kyungbook South Korea</small>	<small>Dragados Offshore S.A. Puerto Real (Cádiz) Spain</small>	<small>ECOINTEGRAL INGENIERÍA, S.L. Córdoba Spain</small>	<small>ENCOSO GmbH Burghausen Germany</small>	<small>FES Elektrotechnik GmbH St. Gertraud Austria</small>	<small>KFL Automation Markaryd Sweden</small>	<small>Plasser Australia PTY Ltd. North St Marys NSW Australia</small>

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Imprint
 AUCOTEC Infopaper

Publisher
 AUCOTEC AG
 Isernhagen

Responsible for the content according to the law:
 Johanna Kiesel | presse@aucotec.com
 Press and Public Relations

Layout
 www.linienflug.design

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