

Complete integration

From mechatronic kits to modular assembly



Integration has become overused as a buzzword. Even so, it is indispensable. Poor integration can put massive obstacles in the way of harmonious and hence efficient and effective collaboration, as demonstrated in society, politics and elsewhere. Plant planning is no different in this respect. When many and varied disciplines – from the bid stage through to production – use different approaches and tools there's scope for everything to combine and create an epic muddle, bringing in its wake a vast effort devoted to agreements, data export and error correction. Unless Engineering Base (EB) happens to be at work.

This highly integrative software system not only unites mechanical, hydraulic and electrical engineering on a single platform. It also integrates PLC and process control system planning, as well as information for assembly automation from the milling machine through to the labelling machine. The platform speeds up planning even further by offering the simple import of article master data in various formats (see p. 3). Because of its powerful integration capability, the consistency that can be achieved on engineering tasks using EB can hardly be matched by any other system. Each individual integrated feature makes savings in data input, complex agreements, sources of error and administrative burden.

Quality tested - project time halved

EB's database makes it possible to maintain a full kit of quality tested mechatronic units that are instantly available and can be reused simply, quickly and safely to build complete machinery and plants. Not only can designers take advantage of this but so can sales, as early as the bid phase. Thanks to AUCOTEC's collaboration with Perspectix, impressive schematic and 3D visualisations are available to customers. This eliminates costly errors that otherwise only rear their heads when a system is actually assembled. Variants can be handled with absolute confidence because editing of components is underpinned by rules that ensure that only genuinely functionally compatible units can be combined together. With this kind of configuration, a binding bid is only one press of a button away, while planning for the machine or system itself will take just half its usual project time.

Save weeks with process control system integration

EB can also combine electrical and process engineering on a single platform. The packaging industry is just one example of a sector where this has already proved invaluable. In both plant construction and process engineering, process control systems are an important component in automation. With its links to ABB's 800XA for example, or the Siemens PCS7, up to four weeks can be gained in the software creation process. (Details on p. 4)

Engineering without limits

With EB's link to 3D tools including SolidWorks, building a prototype cabinet becomes redundant. All the information in EB is available for 3D design and vice versa. The optimum positioning of components in the cabinet can be carried out directly on the 3D model by the CAE specialist with no prior briefing.

➔ continued on page 2

Editorial

Dear readers,



the common thread running through this edition is integration. Our conviction and our experience together inform our view that this is the answer to the ever more complex tasks facing our customers.

Our software's extraordinary capacity for integration is the result of AUCOTEC's strategic orientation whose goal is not only to support our customers in their product innovation, but equally to enable radical process innovations. Because the optimisation of processes is key to making sustainable positive impacts on the speed of development that firms can achieve, and hence their commercial success.

The results from AUCOTEC AG clearly show that more and more customers are using this recipe for success. Following growth of over 40% in the last two years and having installed many thousands of Engineering Base licences, we have already recorded a double-digit percentage leap in sales in the first seven months of the current financial year.

We are using this positive development to make further investments in AUCOTEC's technological and strategic positioning. In the months ahead we will be expanding our global presence further and at the same time reinforcing our offices with additional staff, especially in the USA, China and France.

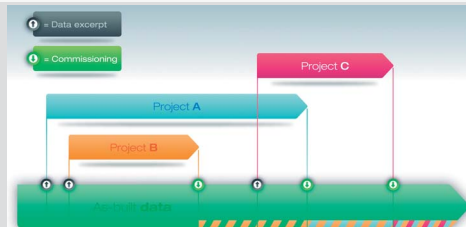
AUCOTEC and the people behind it will thus remain a reliable partner promoting the innovative power of its customers with ultra-modern solutions into the future.

Yours



Markus Bochynek, Executive Officer

➔ **There is no faster or safer way!**
Consistent integration of exported projects
Page 2



➔ **Extraordinary reading skill**
Simple master data import from eClass Advanced and EPLAN P8® standards
Page 3



➔ **"No firm working in product development can escape it!"**
Interview with Eugen Kienzler, Managing Director of AUCOTEC's partner, CAE Consulting
Page 3

➔ **Success stories:**
OYSTAR Group's Dairy Business Unit is expecting great things from interdisciplinary engineering
Page 4

Visit us at:



SPS/IPC/DRIVES/
Elektrische Automatisierung
Systeme und Komponenten
Fachmesse & Kongress

Nürnberg 27. – 29. Nov. 2012

AUCOTEC: Hall 7A, Stand 140

Complete integration

From mechatronic kits to modular assembly

In the EB scheme the same approach also applies to the integration of fluid and pneumatic planning: all disciplines work on the same set of data in an object-oriented way.

Because the data and diagrams created in electrical engineering planning form an essential component of the company's expertise, more and more firms also wish to administer them in their ERP, PLM and EDM/PDM systems. EB's accessibility and AUCOTEC's specially-developed Automation Framework means that all-round availability for all connected departments, from procurement to finance, is a convenient option. System and release-independent connection to the widest possible range of systems and technologies is facilitated by an ultra-simple configuration process. AUCOTEC has now secured an expert partner for customer support during implementation (for more on this see interview, p. 3).

EB demonstrates further aspects of its vast integration capabilities with more links, including component dimensioning for servo drive systems and facilities management for production

installations. In the building layout for example, electrical engineering requirements for the plant can be considered and previously-determined dimensioning data can be provided for direct further use through EB. But – of course – that is not all:

Fastest to the finish in manufacturing

For optimised project handling, integration that is relevant to manufacture is also very important. EB has it all covered: There are links to Kiesling Perforex drilling centres for mounting plates, enclosures and cabinet doors, Steinhauer eCAB PWA for wiring, Phoenix CLIP PROJECT planner for terminal blocks, Phoenix Contact labelling software, Weidmüller terminal, device and cable marking, the RailDesigner terminal configurator and Wago smartDESIGNER for terminal rails; EB communicates simply and securely with all of these and many more. All links can be called up directly from EB. Optimally prepared data means that manufacturing can be completed significantly faster.

Consistent integration of exported projects: There is no faster or safer way!

Nearly every stage of any plant's lifecycle is characterised by repeated modification work. Mid- to long-term and sometimes overlapping planning projects in a wide range of areas mean that ensuring an absolutely up-to-date as-built status of a plant when working in parallel is a highly complex task. Within an organisation, because of the varied disciplines involved such as process engineering, measuring and control technology, automation, electrical and hydraulic/pneumatic engineering, the range of tools that is in use tends to lack homogeneity. In addition, sub-projects are frequently exported. When sub-contractors are involved in the planning process, their outputs must also be integrated into the up-to-date documentation. The key requirement is that different documents not only detail the same devices but also the same status of those devices.

Even when the firm exporting the work specifies which engineering software must be used, consolidating the outputs is a complex matter, especially if the main plant is undergoing further

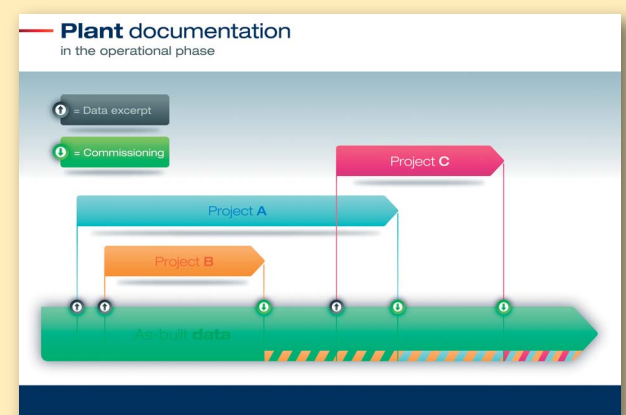
development or modifications due to maintenance work during the period when the export takes place. Lengthy reconciliations are unavoidable. Not true with Engineering Base (EB)!

Checked for consistency

Thanks to its database-driven software, EB is ideally placed to combine engineering, data management and documentation in an interdisciplinary, integrated approach. In EB's virtual plant model, each concrete element is represented by a single object. Objects exported for modification are highlighted in the documentation status together with all their logical relationships, not only in the graphic and tree displays but also in all wizards.

If the modified project is later re-imported after completion, a special synchronisation manager assists in making a fully consistent integration of the data into the new documentation. Using the interactive reconciliation process the planner is

able to keep full control of all modifications. This is a unique approach; so far, no system has been capable of guaranteeing similarly consistent as-built plant documentation during operation and modification phases.

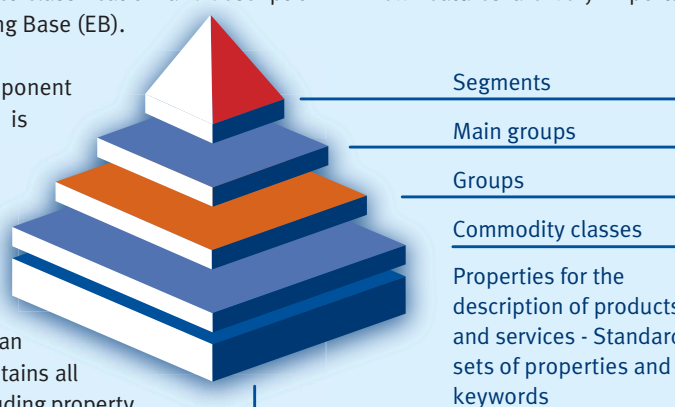


Standard overhauled for CAx compliance AUCOTEC on duty on the eCl@ss stand at SPS IPC Drives

At the Nuremberg Trade Fair, visitors will be able to find AUCOTEC in its usual spot in Hall 7A and also at eClass in the same hall (Stand No. 612). An AUCOTEC software expert and an eClass specialist will be there with practical demonstrations and advice to guide anyone who wants to know more about the international standard for product classification and description and how it relates to AUCOTEC's platform solution Engineering Base (EB).

"When the need arises to exchange article data between component manufacturers and users, the standardised eClass format is terrifically helpful," says Norbert Ott, EB Product Manager. "Instead of the elaborate creation and management of data in multiple formats, the manufacturers only need to write one version that can be read by E-CAX systems."

eClassAdvanced: more exacting product description
eClass Release 7.0 has been completely overhauled with an improved structure based on the ISO13584 data model. It contains all the structural elements of the eClass classification system including property blocks and dynamic elements such as reference properties, polymorphism and cardinality blocks. Being an expansion of the 7.0 Basic Version, the Advanced Version goes further than the contents of the Basic Version, including additional structures that enable the user to create more detailed product descriptions.



By opening the Advanced 7.x Standard to, for instance, master data information such as geographical location of connections, including designations that can be used for CAE, eClass generates a unique depth of information. This helps engineers use the data efficiently. The new features are very important for production and wire length calculations. In the past, designers had to put a great deal of effort into working out connection positions. Many component manufacturers have announced that they will be supplying this information in the near future. Engineering Base is already perfectly prepared for that. (see p. 3)

Standard with AUCOTEC expertise

AUCOTEC has been a member of eClass for four years but for much longer than that, by participating in the association's CAx working group, it has been applying its expertise in support of the development of the standard for the design process. Today, all the leading CAE system manufacturers are members. The standards body emphasises the value of its indisputable sector

neutrality and its unique selling point which is its focus on the creation of standards. In an earlier INFOpaper interview, Friedhelm Hausmann, Chairman of the Board of eClass, described how this offers global security for firms and other organisations.

Extraordinary reading skill

EB enables simple master data import from a range of standards



Using newly-developed reading capabilities, Engineering Base (EB) provides two benefits in one. Both eClass Advanced and EPLAN P8® article master data can be read by the platform and easily imported for further processing.

eClass Advanced: With its new and unique depth of information, the eClass Advanced 7.x standard at last provides engineers with CAE-compliant master data that can be effectively applied to their task areas (see p. 2). EB is perfectly equipped to handle this. The database-driven platform is already able to instantly read any master data complying with this standard that

is provided by the component manufacturers. In this way it is instantly available for use in the design process.

EPLAN P8®: In addition, AUCOTEC will also be presenting its newly developed import filter for EPLAN P8® master data at SPS IPC Drives: EB can now directly import all the information included in the EPLAN P8® article master data, which is based on the widely-used XML format. The format is characterised by the fact that it not only contains the usual commercial and technical data (e.g. order code, current rating and performance), but also the symbols for displaying the components.

EB is able to import all this information easily in one operation. Over 40 big-name manufacturers already provide their article master data in this format.

More proof of EB's extraordinary accessibility and capacity for integration. And for component manufacturers, the question of which format to deliver is superfluous... EB can read (almost) everything!

© EPLAN Electric P8 is a registered trademark of EPLAN Software & Service GmbH & Co. KG

“No firm working in product development can escape it!”

Eugen Kienzler (59), Managing Director of AUCOTEC's partner CAE Consulting, talks about PLM, ECAE and the special symbiotic capabilities of the new collaborative solution.

CAE Consulting GmbH is a leading supplier of PLM integration solutions for electrical, electronic and software engineering applications and since 2011 has been a subsidiary of xPLM Solution GmbH, Dresden. Among CAE Consulting's customers are international players in the automotive industry, the mechanical, plant and electrical engineering sectors and in aerospace.

The decades of experience gathered by xPLM and CAE Consulting create an ideal match with AUCOTEC and its history, as does the range of its clients' sectors of activity. Down the years they encountered one another on many occasions. The completion of one joint project brought about agreement on a lasting collaboration which has secured AUCOTEC a thoroughly knowledgeable partner for integrating the firm's software with every kind of PDM system.

Visitors to SPS IPC Drives will be able to see a specimen solution for linking Engineering Base (EB) with an Oracle/Agile PDM system.

Product Lifecycle Management is a hot media topic; is this a flash in the pan or is it now a really unavoidable issue?

No, these days no firm working in product development can escape having a PLM strategy. The proof of that need emerged some years ago in the field of MCAD and PDM/PLM systems. The concept of Engineering Data Management (EDM) used to be more common, but today all the talk is about PDM/PLM (Product Data Management/Product Lifecycle Management). Today there are something like two dozen PDM systems, primarily used in mechanical engineering. However, because of the growing importance of mechatronics it has become obvious that the worlds of electronics and mechanical engineering must and will edge closer and closer together.

Why is PDM so important?

The information that has to flow from a company's development departments and into production often demands laborious manual inputs. Creating bills of materials in an ERP system is an example of a task that takes a huge amount of time, and is not helped by the associated unavoidable transmission errors. In addition there's the effort caused when released, up-to-date drawings and official manufacturing documents are not provided automatically for production; a PDM link can eliminate this.

What role does your software solution play here?

PDM systems that evolved out of the mechanical engineering world are not generally suited to the requirements of electrical engineering. We have been successfully plugging this gap for over 20 years which is why CAE Consulting with its integrate2 software solution is today's leader in PDM-E-CAE links.

Our software provides an automated, bidirectional connection between the PDM and the development and production data. This saves a huge amount of processing time and again prevents errors due to multiple data inputs. Another important topic is traceability in the context of product liability which integrate2 handles conveniently. This results in a significantly greater process reliability and transparency in the organisation.

What do you expect to gain from the collaboration?

It's quite simple: A standardised ECAD-PLM solution is a substitute for intensive programming

effort and this significantly higher added value for the customer also carries over to us. When there's a sustainable gain from a combination of quality improvement for engineering, faster market access, more flexible product strategy etc, word is going to get around. Of course we also tracked the increasing uptake of the EB platform which promises so much; we wanted to stay on the ball.

You have worked with a great many engineering systems; from your experience, what makes EB special?

In EB, all the information for a project is available in object-oriented form in the SQL database. It enables distributed processing of project data at a number of locations. Because of its accessibility, EB is able to accept the process-oriented way in which integrate2 works. As an example, an existing rights system in the PLM can be adapted to the prevailing rights management in EB to arrive at a fusion of PLM and EB having the same rights. Besides this, the product structures that already exist in the PDM system can be represented in EB.

Overall, this leads to a sort of symbiotic integration that's only possible with EB. The user does not notice the transition. He selects a function in one system which is executed by the other; that really is what you would call a one shot solution!

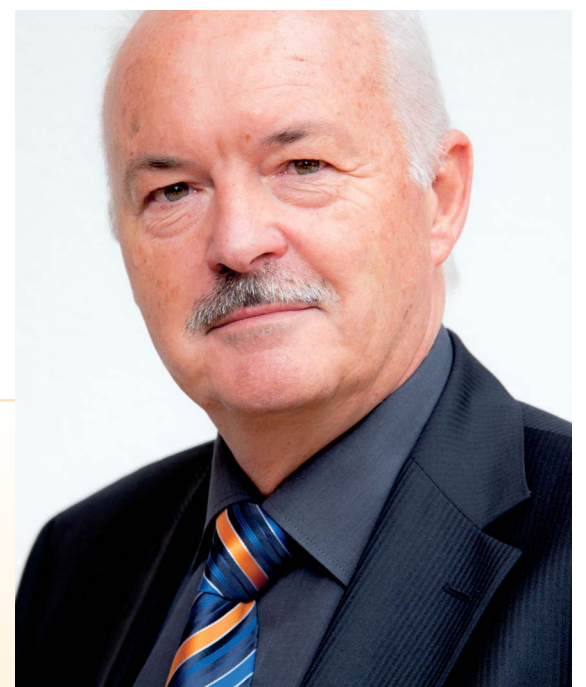
And as far as the link is concerned, are there differences?

integrate2 exploits the advantage of EB's object-oriented and database-driven structure by creating links between the objects in EB and the structures that exist in the PLM. All established PDM systems on the market can therefore fuse with EB. In many other CAE tools, adaptation requires far greater effort.

What is your assessment of further developments in the market?

I already touched on the increasing interconnectedness of electrical and mechanical engineering. The consolidation of structured bills of materials from those two fields of technology is one example. This tends to raise the market expectations on system suppliers like AUCOTEC and CAE Consulting in terms of functionality and options for optimising processes. We see a great deal of potential there.

Mr. Kienzler, thank you very much for talking to us!



Engineering Base gets a grip

OYSTAR Group's Dairy Business Unit is expecting great things from interdisciplinary engineering



Aucotec's software system Engineering Base (EB) has been selected by OYSTAR Group, one of the world's leading packaging solutions companies, for plant engineering functions at its Dairy Business Unit. The key decision maker was OYSTAR's subsidiary Hassia, which specialises in high-quality forming, filling and sealing machinery for the dairy and food industries.

"At OYSTAR Hassia, different machinery lines of the group operate together so, for us, consistent, uniform planning is a must," says Engineering Director Andreas Kurth, whose contributions to regular exchanges with specialist colleagues at other OYSTAR subsidiaries are vital.

Process engineering integrated

The impetus for the decision came from EB's track record in process engineering and the simple link to these special planning requirements. "In our new aseptic area which ensures hygienic machines with cleanliness that is up to food production standards, while also handling yoghurt tubs, milk pouches, etc, we wanted to make our electrical systems equally "fit" for the process engineering," explains Kurth. "A number of suppliers' products are well capable of handling pure electrical engineering, but this combination of electrical and process

engineering expertise plus interdisciplinary working is unique," says the department chief.

In addition to enabling different disciplines at different locations to work in parallel on the same project, the database-driven nature of EB guarantees maximum consistency. Duplicate data inputs, transfers and elaborate reconciliations are a thing of the past. For the firm working in a modular way, EB secures knowledge by its use of blocks that require processing only once, and generates time savings, for instance with its highly-flexible handling of variants and freely-scalable multi-user inputs. OYSTAR Hassia regarded the options for linking EB to SolidWorks as a further plus.

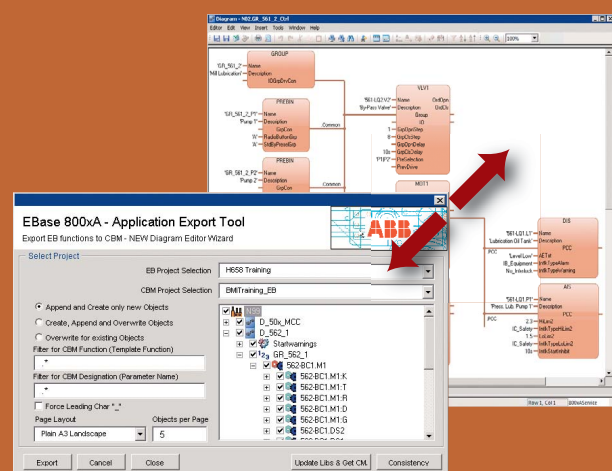
A new level

The other companies in OYSTAR Group's Dairy and Pharmaceutical Business Units will gradually be switching to EB. The route has been prepared to perfection: data acceptance functions more or less at the press of a button because a number of OYSTAR units have been working for some time with AUCOTEC tools of which EB is the successor. But as Andreas Kurth himself admits, it was not just the time-saving aspect that persuaded him to take the partnership to a new level but above all the many years of trusted collaboration with AUCOTEC.

Weeks saved:

Using EB as the integration platform for engineering the control system software makes huge inroads into the time taken to create software

Engineering Base, AUCOTEC's system platform, does more than just support total hardware planning. Furthermore it enables plant designers to specify the necessary software elements for each of the measurement (and actuator) tags.



Link to ABB's 800xA and Siemens PCS7 AES

Starting with the defined measurement tags and loads, first the device technology is defined using EB. Using the plant infrastructure that was developed in parallel, the cabling and the flow of signals through to the control system are planned in one integrated process. Some years ago, working in collaboration

with a leading construction material manufacturer, a further integration step was taken, namely integration of the Siemens PCS7 control system software. On the very first pilot project, a huge time saving became apparent: originally scheduled to take four weeks, the software development was replaced by a task of entering data into EB that amounted to about an extra half a day.

Today, EB goes a couple of steps further than that. The first users are putting EB to work in specifying their software modules for the latest Version 8 of PCS7, known as the Advanced Engineering System AES. Another process control system integration is close to ready for use on ABB's 800xA system. This link was put through its early proving stages in four major plant projects in the mining and cement sectors.

"EB and 800xA complement each other ideally"

"Using the comprehensive link between EB and the 800xA Engineering Tools, all functions and devices for Electrical, Instrumentation and Control Engineering can be administered and configured centrally in EB," says Martin Knabenhans, Product Manager for System 800xA in Mining and Cement Applications. "EB and 800xA complement each other ideally and enable significantly more efficient project processing with far greater consistency and quality of data. "And he continues: "This does not work with every ECAE tool; the fact that such a tight link is even possible is due to the open structures and applications interfaces that EB

and 800xA possess; they are two genuinely open systems." "This made it possible to develop direct export of the functions and devices between EB and 800xA that are relevant for process control systems; export takes place in a single step and can be carried out in multiple iterations." The ABB Business Unit "Mining and Cement" will be introducing this solution by stages into all its local operations. "The link is also ideal for plant maintenance! With one simple click within 800xA, the electrical schematic for the relevant function can be opened in EB, the user can navigate between the two systems at any time, system boundaries disappear."

A saving wizard

AUCOTEC has created a wizard for defining software modules that enables the user to select standard modules from a list. Besides this, thanks to the basic expandability of the EB data model, additional attributes for parameterizing the modules have been implemented. Even pure logic functions can be created in the plant hierarchy in addition to the measuring and control functions; these can also be provided with software modules in the same manner. The definitions integrated in engineering for the control system software are exported for process control system planning purposes. The update of the interconnections in the control system is automatic because the parameterization and group assignment have already been done in EB.

And besides ... here are some more examples of companies who have recently opted for AUCOTEC:



HUAXIN CEMENT
Hubei, China



Hustadmarmor AS
Elnesvågen, Norway



Klauke Slovakia s. r. o.
Dolný Kubín, Slovakia



Mangin Egly Entreprises
Vitry-Le-Francois Cedex, France



BaDaK, s.r.o.
Levice, Slovakia



SAG Elektrovod
Brno, Czech Republic