



**Information Unlimited**

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# STANDARDS VS. ***Dreams***

*» It seems as though standards  
primarily mean: creating legitimacy,  
ensuring quality and saving costs.*

*But where are the dreams?  
Where – between all the standards  
and directives – is the room for them? «*

# CONTRIBUTORS

EMILIAN AXINIA

Describes how zenon approaches the balancing act between standardization and flexibility in food & beverage production.

JÜRGEN RESCH

Shares some bright ideas for the demand-driven grid of the future (smart grid) and tells us what happens when software agents prescribe themselves ontology (OntoReA research project).

BERND WIMMER

Presents the zenon dynamic car manufacturing interface and explains how it supports quality assurance in the automotive production process.

MARKUS HELBOK

Explains, in the third part of his series “Efficient Engineering”, how you can save time and effort with symbol handling in zenon.

REINHARD MAYR

Presents the most recent software update, zenon 6.51, and shows you how you, as a user, can benefit from this update.

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## IMPRINT

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For his support with the OntoReA research project article

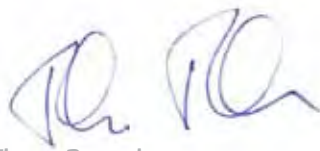
## EITHER – OR? OR, BOTH GO TOGETHER!

We devote this edition of our magazine to two worlds which could not be more different at first glance. On the one hand, a world in which standards rule, where we automate recurring tasks and are led by various regulations or directives. On the other hand, a world that is closer to dreams; where we can play with inspiration and creativity, where nothing appears impossible and we allow ourselves to be led by our imagination. Adherence or changing the world? Or, to put it another way: standards versus dreams.

Standards and dreams – apparently an obvious contradiction? But are standards really opposed to dreams? Could it be that standards often have something to do with dreams? Two corresponding worlds that add to each other for a perfect reciprocity. Take the example of a goal in soccer – aided by a standard situation (a corner kick) and achieved thanks to inventive, original implementation. We don’t even think about so many of the processes and situations of our everyday life which are based on a standard. Standardization leads to routine and, thus, the process becomes a given. As well as replaceable.

However, it is often precisely the things we take for granted that offer significant freedom. We only need to discover and unlock the potential of it. It is therefore up to us to use this freedom; to fill it with our dreams, desires, ideals and ideas and thus ensure the decisive element of surprise. The perfect symbiosis (such as man and machine) is neither “either”, nor is it “or”. The perfect correlation requires “both go together”. For this reason we have decided to inhabit both of these two worlds. zenon is at home in both of them – and supports our customers equally when they are implementing standards and when they are dreaming.

Decide for yourself where you would like to place your emphasis! With this in mind I hope you enjoy our new edition of Information Unlimited.



Thomas Punzenberger, CEO





# Standards vs. Dreams?

*There are currently over 18,000 standards and norms listed in the ISO (International Organization for Standardization) catalogue. The German Institute for Standardization (Deutsches Institut für Normung, DIN), which has been active since 1917, had over 31,000 norms in its catalogue in 2008. The current rate of annual growth is approximately 2,600 norms, pre-norms and drafts. The DIN was created because the uncontrolled growth of German technical companies’ dreams was becoming a war-hazard. Ammunition was to be made according to uniform quality criteria and it had to function reliably. In 1946 the ISO then adopted the first internationally agreed standardizations.*

**It seems as though standards primarily mean:** creating legitimacy, ensuring quality and saving costs. But where are the dreams? Where – between all the standards and directives – is the room for them? How can you find or invent a new product in accordance with ISO 9000? Rifts are developing: standardized creativity? Unthinkable. Reliable products that can be used around the world without standards? Not even in your wildest dreams. We must therefore decide. In one corner: the standards. In the other corner: the dreams. Let battle commence! Or is there another way?

**STANDARDS – OR: HOW WE SURVIVE**  
Where would we be without standards? Probably not where we are now, not enjoying this lifestyle, never having achieved as much as humans have. We have a pressing need for standards just to survive, regardless of ISO and DIN – and even technology.

Standardization is in our genes, because our brain is a resource hog. In comparison to our size and weight, we require a very sizeable amount of our daily calories to power the little grey cells. Our brain looks after itself and reduces its energy requirement for things that it always repeats, so that it always has energy in reserve for new and unexpected things. It achieves this by leaving recurrent tasks to what is known as the implicit area of the brain. From the point of view of somebody involved in automation: our brain automates everyday processes. And this automation is standardized. Which leaves us with sufficient energy for conscious thinking and considered actions.

Our automated processes are often very complex. For example, consider driving a car. What is a confusing game of steering movements, pressing pedals, numerous looks outwards and backwards and which is,

initially, a new cause of stress becomes an automated process with increased practice. Virtually every car driver knows the moment: They arrive at a destination, having solved a problem or having been engrossed in music, and have no idea how they actually got from A to B.

Standards make it possible for us to automate processes so that they work reliably and so that we always receive the same result, with the same quality.

**DREAMS – OR: HOW DO WE CHANGE THE WORLD**  
Dreams are created in precisely the same place in which we use the standards we’ve created for our own, internal automation; where we unify language so that phrases and sayings are actually sufficient to deal successfully with a whole lifetime. From where we put completely new thoughts into the world: our heads.

André Heller: “Dreams are only in your head. If they are not in your head, they are not anywhere.” It’s good that we have them, our dreams! Nothing is impossible in a dream: apparent contradictions can be united, limits of time and space disappear, laws and standards cease to apply. In a dream, it is possible to exceed limits without danger and without consequences. Good or bad? True or false? If – then? – No way! We create stories, according to our rules, in a night-time dream just as with a daydream or the consciously created vision for a company, a project or our lives.

Dreams make it possible for us to act outside standardized models of thinking and acting, to move away from what is normal, try out new things and previously unknown things. Pure freedom. And the start of many successful company stories. Would they exist if there had been a standards godfather there from the start?

**EITHER – AND! OR:  
WHY ARISTOTLE SHOULD RETHINK**

Not all people think the same. We have different ways of thinking and standards that make it possible for us to come to terms with the world. For European philosophy, Aristotle is a pioneering thinker who we often still refer to today. “Decide!”, “Either – or!”, “Choose, because two opposites require a point of view.”; “For or against?” This is how we’ve interpreted Aristotle over the millennia. A world of thought that requires clear answers.

There are people who have learnt things differently. Eastern philosophies permit the equal, concurrent and valid existence of opposites. The yin and the yang: “Both together”, instead of “either – or”. And we mustn’t confuse this with synthesis or compromise. It is difficult for us to understand this philosophy; we live in a different world of thoughts. But it helps us if we understand why we often see standards and dreams as opposites. Standards that unify but also provide safety. Dreams that let us grow, but somehow seem dangerous. But if we look closely, we also live in a “Both as well as world”, at least factually. Because as much as we divide and classify, we experience dreams and standards alongside each other every day. And they work together and supplement each other every day. In sports, for example.

In soccer, the standards are called “set plays”. These are actually situations such as a corner, free kick and so on. That is, balls that start as stationary but with which a precisely thought-out and practiced and automated game starts – and from which new, creative situations develop. Jörg Stiel, goalkeeper of the Swiss national team described them in 2008 in an interview about “set plays” for a publication for the working group for further education at the University of Zurich: “Set plays are extremely important.” According to Stiel, they can decide championships. How do you deal with them? “You have to practice, practice and practice again. They must be practiced until the movements and reactions are almost

automatic ... The most important thing is the organization. Everybody needs to know what his job is, where he has to stand ... You cannot manage it with hard work alone. It also requires talent and instinct.” Here they are again: orderly standards – and unregulated, unrestrained actions against the rules.

**INDUSTRY = STANDARD. OR:  
REGULATIONS DO NOT ALLOW FOR CHANCE**

Automation experts need imagination. How else could they discover, develop or implement new processes, cost-reducing technologies, and always come up with new developments? And they need rules: strict rules, standards. How else could a great idea work in many facilities? How else should their many colorful building blocks – control units, machines, data cabling, control programs, visualizations, data, software etc. – be combined in such a way that they always work perfectly, on each new day and at each new location? Industry standards make automation possible and ensure that it makes sense.

Consider the Weihenstephan standards, or those of OMAC, IEC 60870 and IEC 61850 or the OPC UA standards, designed to make quality possible and replicable. They are all good reasons for COPA-DATA to work with many organizations which develop standards and to implement their standards quickly and with no ‘if’s or ‘but’s. These standards ensure that communication can work reliably, different technologies are integrated smoothly and innovative solutions are possible.

But standards can have their limits. They cannot be stretched to regulate everything. Some experts ask themselves what an ISO 9000 standard has to do with the continually changing course of a charity or a communication agency. Something that ensures a predictable overview and consistent quality in industrial facilities, hospitals and logistics cannot reasonably be used everywhere. This is because ISO 9000 regulates the quality of a process, not the content of it. Even the production of an

airplane made of washed-out concrete could, in principle, be standardized with ISO 9000.

Norms and standards must be understandable in order to be met. But also defined and precise enough to become discretionary. The German economics magazine “brand eins” quoted, in its October 2010 issue, one single, short sentence: “Quality is a degree in which a set of inherent properties meets requirements.” – the definition in accordance with ISO 9000.

**BOTH GO TOGETHER. OR:  
ZENON = STANDARDS ☯ DREAMS**

Anyone who speaks many languages can make themselves understood more easily, faster and better. This applies for technical systems just as much as for people. Communicative systems benefit from a clear information advantage compared to closed systems. And the better a system can communicate directly without an interpreter, the more unnecessary costs and potential errors are avoided. However, this knowledge and ability is not incidental; it must be learnt.

Anybody who plays an instrument knows that nobody starts with improvisations and jam sessions; they first learn the basic rules – reading music, harmonics, rhythm – playing known classics and automating movements. At some point, they can then go their own way. The wider and better founded the basic knowledge is, the more they can move.

Standards often create the basis for creativity. And these new creations in turn need a structured framework and maintenance to grow. Thus, standards. To achieve this, many companies orientate themselves using affiliated companies in order to learn from their experience. This is a good approach to recognize weaknesses and attain reasonable success. However, the drawback is that you can never lead anybody if you are always following in the footsteps of others. In order to play in the highest league, you need your own ideas and the courage to dream.

Standards and dreams – we deal with these on a daily basis at COPA-DATA. We have a burning interest in each new automation standard – we are often involved in creating them – and they are quickly integrated into zenon if this is important for our customers. At the same time, we let both our users and the developers dream: what should the zenon of tomorrow look like and how will automation work in the future? At the same time zenon is a standard itself in many companies. And, therefore, in the centre of the action. One of the most important reasons why is because zenon can be operated in different ways, with different ways of working. Anyone who is looking for a creative solution does not want to be hindered by standardized processes. Anyone who is transferring their perfect solution to many different facilities – perhaps over five continents – will value standardized norms. We have learnt from this.

Standards and dreams belong together, but are often only different aspects of the same project or different moments in the project lifetime. Everybody must have the freedom to set one’s own focus so that both work together congenially in the process. You find this principle again in zenon: with a high degree of flexibility, simple expansion using VBA and VSTA and individual design of user interfaces or information. But also with precisely implemented standards.

**STANDARDS VS. DREAMS. 1:1**

Standards are individual. Not in terms of their content and not in terms of their regulated processes. But in terms of who is using them and for what purpose. Dreams are subject to rules as soon as they become technical reality. Anyone who only uses standards stays sitting on the fence and is quickly overtaken. But also, anybody who only thinks in dreams quickly loses the ground under their feet and thus their credibility. Successful projects need both: a sound basis that is subject to clear rules. And a clear vision that provides an advantage over others. In the language of zenon: Do it your way. ☯ **III**

» Dreams are created in precisely  
the same place in which we use the  
standards we’ve created for our own,  
internal automation. «

\* Source: [http://www.afh.uzh.ch/instrumente/standardsituationen/Standardsituationen\\_05\\_21.pdf](http://www.afh.uzh.ch/instrumente/standardsituationen/Standardsituationen_05_21.pdf)

*» We create stories, according to our rules, in a night-time dream just as with a daydream or the consciously created vision for a company, a project or our lives. «*



A difficult balance? – Standardization vs. flexibility

# Food & Beverage: Implementing standards using zenon

*Why is standardization so important in the Food & Beverage industry? Is such a dynamic and creative industry able to benefit from standardization at all? How can a regulated environment provide the flexibility necessary to repeatedly launch new products on the market, while pushing the limits of plant performance? Certainly, it is a great challenge to continue to comply with standards and, at the same time, support the dynamism and flexibility needed to move your business forward.*

**Mandatory standards and regulations** such as those that provide a framework for the required quality level of food products, or the safety of the production environment, do not allow for the choice of whether to implement them or not. In order to be compliant at both a national and international level, their implementation is a must: essential for the existence of the production entity. However, compliance always provides an opportunity to off-set the costs of standardization, often by leveraging the opportunity to make process or system improvements that directly affect the TCO (Total Cost of Ownership) of Plant systems and Infrastructure.

International food manufacturers are increasingly working to standardize their entire production guidelines to ensure that their products are identical, no matter which country they are consumed in or at which manufacturing site they are produced. Professional standards organizations, such as the Organization for Machine Automation and Control (OMAC), develop comprehensive concepts for achieving interoperability of production equipment independent from the supplier. Engineering teams expect a reduction in the cost of integration and maintenance of systems, and flexible upgrades, when implementing standards at their production sites.

But do standards really always imply pragmatic results and practical benefits? Or, are standards always developed in representative working groups? How much do marketing, politics or the interests of certain companies or organizations influence the industry standards? If a choice is possible, it is the role of every management team to analyze and decide which standard to adopt in order to benefit in both the short and, more importantly, the long term. Whether it be through compatibility, repeatability, interoperability, or commonality, does standardization directly lead to more effective production and higher quality output at an

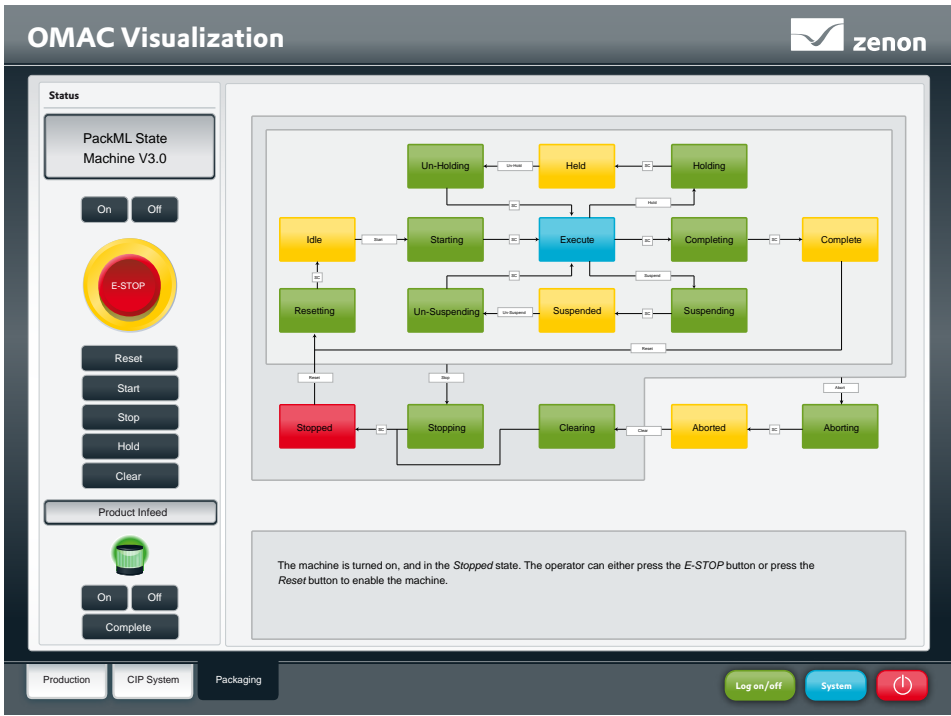


Figure 1:  
zenon allows advanced engineering of  
the machine state model visualization

optimized cost? Let’s have a look at some examples how zenon supports standardization in the Food & Beverage industry.

## STANDARDIZING TO GET THE BEST OUT OF YOUR MACHINES

Today, machine constructors face a great variety of demands from Manufacturers which they must aim to fulfill in order to stay competitive. The holy grail of manufacturing requirements is high reliability and performance with the best possible Return on Investment (ROI).

As a machine designer, you are challenged to choose hard working automation components that offer enough freedom to react to fast changing conditions, with minimum effort. Being a truly hardware-independent software, zenon allows you to select the most appropriate and effective PLCs, industrial PCs or interface panels for your machine.

At the same time, an increased standardization of machine modules and functionalities guarantees reusability and, thus, zenon reduces development costs. From out-of-the-box and configurable components, to a broad template-oriented approach to engineering, zenon gives you state-of-the-art tools for application standardization. The zenon wizards bring an advanced level of standardization, while offering the opportunity to customize certain aspects of the application. As a result, the engineering efficiency increases dramatically.

Example: OMAC is one organization which proposes standardization starting at machine level. One of its objectives is to achieve standardization of the machine state visualization model. A dynamic visualization of

the state model, as described in the OMAC standards, is a requirement for any HMI software. As shown in Figure 1, zenon’s advanced graphical tools provide appropriate support for the implementation of these standards.

zenon offers reusability through the easy creation and reuse of graphical elements, or ‘symbols’, fast “connection replacement” and XML import/export, all of which reduce engineering effort and allow for further improvement or change. The machine operator will also benefit from zenon – particularly its Chameleon Technology which provides skins that are easy to implement using centrally configurable and switchable color palettes. Their advantage? Better clarity of visualization and the information it provides.

Using zenon, it is easy to ensure machine and process compliance – while staying creative and flexible at the same time. Moreover, with only a few clicks you can share the dynamic real-time machine state model visualization across your plant network with all the appropriate people.

## STANDARDIZING TO GET THE BEST OUT OF YOUR PLANT

When a manufacturing plant is intensively focusing on quality, there are various standards that may apply, beginning with ISO 9000, continuing with Hazard Analysis Critical Control Point (HACCP), Total Quality Management (TQM) and FDA 21 CFR Part 11, right through to corporate and internally developed policies and procedures.

In the context of equipment effectiveness, a standard approach can



be achieved using strategies, concepts or philosophies such as Total Productive Maintenance, Kaizen, Six Sigma etc. The rich practical experiences in different industries with using these concepts have resulted in them being adopted by numerous Food and Beverage manufacturers. Standards such as DIN 8782 specify performance indicators which are making performance measurable and comparable. One very well known, and almost ubiquitous, Key Performance Indicator (KPI) is Overall Equipment Effectiveness (OEE). The optimization of consumption in the production process is directly linked to sustainability concepts and is one more opportunity for a more standardized approach. For example, the DIN EN 16001 standard, published in 2009, relates to Energy Management Systems and provides manufacturers with a clear plan detailing how to continuously reduce energy costs in their plants.

But what are the common elements of these standards relating to food production plants? Firstly, adequate tools for their efficient implementation are necessary in order to collect the relevant process data, store this data, offer real-time and relevant information, analyze historic trends, and plan for evolution. zenon is designed to implement these requirements with fast results: always open and flexible.

Most of all, a software tool based on zenon is applicable in every plant thanks to zenon's openness – because the software allows connection to your old and new equipment. You have the freedom to consider any component within your system which has relevance to performance optimization. Additionally, zenon offers numerous modules which allow quick implementation without programming: data archiving, alarm

and event management, data processing and reporting, graphic trends, communication over the network etc. The flexibility to update or add functionality to the application at any time reduces constraints and increases engineering convenience.

Example: Real-time information is key for every system used to manage production. Relevant information delivered at the right time to the appropriate people facilitates informed decision making and ensures the appropriate action can be taken when it is needed. An advanced way to communicate real-time – or historic – key information to the production team is via the OEE Waterfall Diagram, implemented with zenon as shown in Figure 2. The diagram offers, supplementary to the OEE indicators, valuable orientation to detect hidden improvement potential for further equipment effectiveness improvements.

zenon supports the standardization of such tools across the production plant. On the one hand the Editor ensures speedy engineering and easy handling – even for non-specialists in software development. On the other hand, thanks to zenon's network technology, any updates can be done at a single point (on the server) and can then be automatically propagated to the other (client) computers, including mobile devices.

#### CORPORATE STANDARDIZATION TO GET THE BEST RESULTS

How can big corporations manage various production locations when performance benchmarking and process compatibility have the highest priority? What are the common elements which, when available in every plant, harmonize communication content and information flow to sup-



Figure 2:  
Identifying improvement potential  
with zenon by standardizing the  
OEE Waterfall Diagram

port standardization? One solution is a corporate roll-out of a standard automation system, whether it be an Equipment Performance System or an Energy Management System. Such a roll-out supposes corporate-specific standards for every software application, covering user interface, symbols, color conventions, machines and their data tags, functionalities, KPIs, Measurement Units, Reports, international language terminology, communication protocols and so on.

A pragmatic approach to the standardization of machine tags and system functionalities in the Food and Beverage packaging environment is provided by the Weihenstephan Standards. The compliant machines and data acquisition systems are clearly defined, with the benefit for manufacturing plants to optimally integrate production equipment from different suppliers.

It is exactly for such requirements, that the zenon standardization wizard technology offers state-of-the-art support. The wizard programs are designed to ensure the compliance of the application with the respective standards, but they also offer the possibility to configure all those elements which differ from plant to plant in a customized way, for example: which machines are located in a given production area, which specific functionalities are needed and so on. Figure 3 illustrates the principle of zenon's wizard technology when applied to the corporate standardization and roll-out of automation systems designed to increase productivity and optimize consumption.

Today, it is usual for an international corporate group to have a network infrastructure allowing internal communication (Intranet, VPN). Integrated over such a corporate or plant-wide facility, zenon offers ad-

ditional possibilities, including centralized production data storage and centralized application-source management – see Figure 4. To aid Production Management, the real-time or historic benchmarking indicators (e.g. OEE, or ratios such as energy consumption relative to production) and comparison reports, stored centrally and reliably, are made available transparently at every location where they are required. To aid the automation engineers, the multi-user engineering of zenon supports the change management of standard elements and of all local applications. This way, the engineering of your application can be tailored to meet the individual security standards of your business.

#### STRIKING THE DIFFICULT BALANCE

As we have seen, standardization is hugely important for Food & Beverage Manufacturers. With the right tools, a regulated environment can drive process and performance improvements – even in this dynamic sector, where creativity and flexibility are highly prized.

We've looked at several levels at which standardization is important: at a machine level, system level, plant level, conceptual level and at a corporate level. Let's have a final look at the main advantages zenon offers when standardization, in all its different guises, is applied in Food and Beverage manufacturing:

- At a machine level, because it is a truly hardware-independent software, zenon allows for the free choice of the most effective PLCs, industrial PCs or interface panels for your machine.
- At a system level, zenon's native philosophy of standardizing and reusing application components reduces engineering costs.

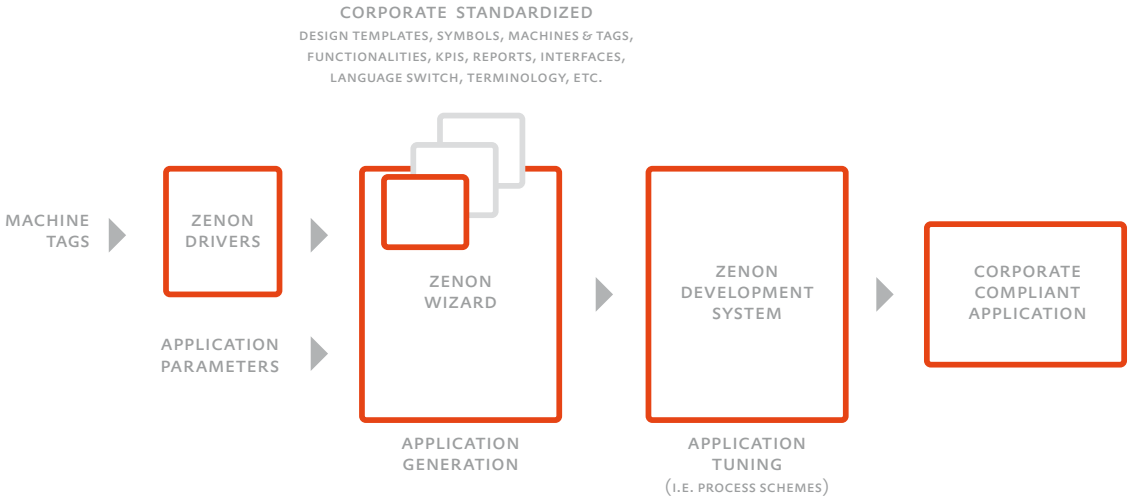


Figure 3: Corporate standardization & roll-out  
based on zenon Automatic Engineering

- ▶ zenon’s template approach to engineering delivers state-of-the-art tools and components, which facilitate application standardization; ensuring compliance with both internal norms and third party application standards like OMAC’s machine state visualization model.
- ▶ At a plant level, zenon’s openness ensures full network integration of all automation components, regardless of their stage in the development and innovation lifecycle – delivering the complete view of the entire Plant essential for meeting quality standards like ISO 22000 and HACCP.
- ▶ At a conceptual level, the adoption of performance philosophies like TPM, six sigma and OEE mean Production Management have come to recognize the automation system’s critical role in ensuring the right information is delivered to the right people at the right time. zenon’s reliability, enhanced reporting tools and flexible network architecture make this a reality. Out of the box and configurable zenon modules make it easy to use zenon as the key tool to implement and measure compliance with standard-based approaches for high quality, effectiveness and optimized consumption.
- ▶ Moreover, zenon’s built-in redundancy and flexible network architecture ensures users have the system reliability they need in order to drive performance improvements – whichever philosophy they subscribe to.
- ▶ At a corporate level, zenon’s simple standardization and customization of automation components, its Chameleon Technology, flexible multi-user engineering and numerous wizards mean a standardized, multi-site and multi-functional corporate automation system roll out can be truly cost effective.
- ▶ Through automatic engineering, zenon makes the corporate-wide roll out of standardized automation applications fast and reliable.

It is clear that zenon helps its users to implement and adhere to a wide variety of standards designed to improve performance, whilst leveraging tools that help drive down the cost of engineering and the TCO of the automation system. Perhaps it is more accurate to say: with the right tools, a regulated environment can drive process and performance

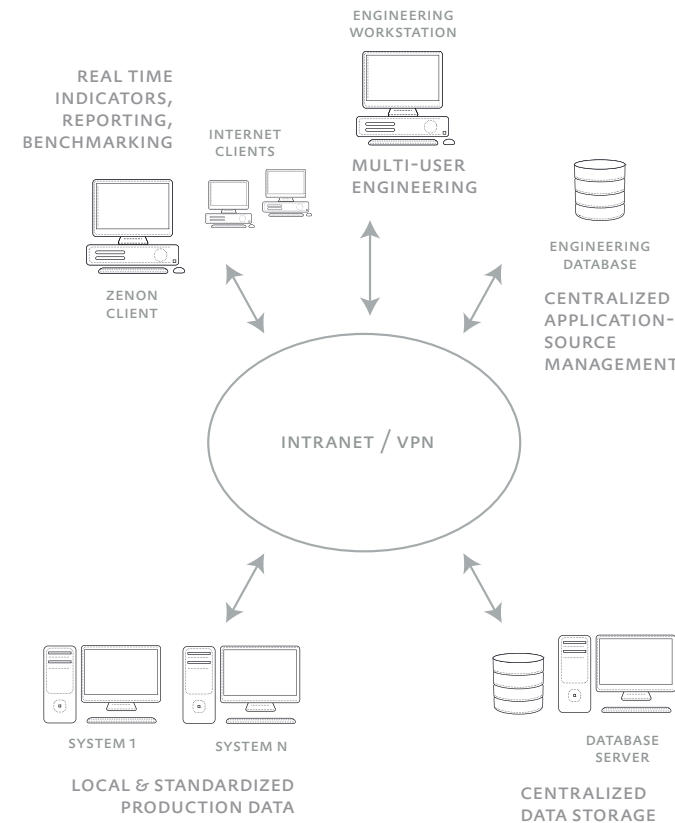


Figure 4: zenon supports corporate-wide benchmarking and application change management

improvements – especially in this dynamic sector, where creativity and flexibility are highly prized. With the right tools at hand, the difficult balancing act between standardization and flexibility turns out to be more like a rational and synergic pairing.

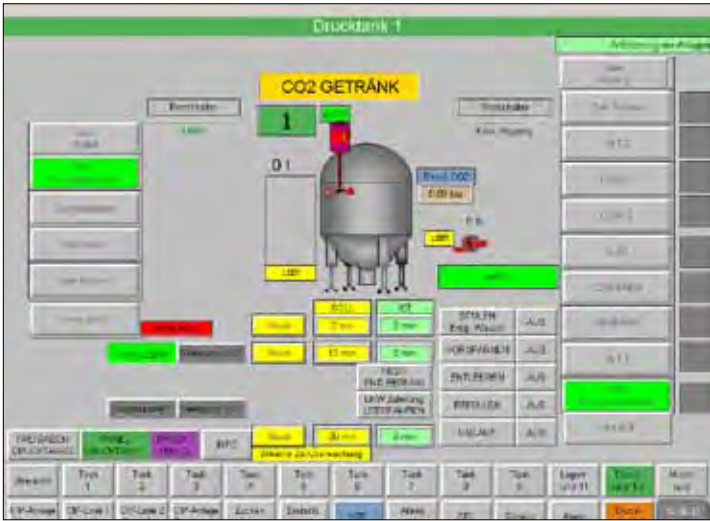
I’d love to hear your feedback. Send me your thoughts at: [EmilianA@copadata.com](mailto:EmilianA@copadata.com). *Emilian Axinia*

# Starzinger trusts in zenon for drinks filling

Starzinger GmbH based in Frankenmarkt, Upper Austria, is the third largest producer of alcohol-free drinks in Austria. In addition to filling its own products, the company fills approximately 250 products from around 100 other international companies. In order to maintain an overview with this amount of diversity, the drinks group uses the expertise of Preishuber GmbH and zenon from COPA-DATA.







The new pressure tanks at Starzinger GmbH make coordinated preliminary work possible, in order to be able to fill the large amounts of the diverse end products. In zenon, all important parameters such as fill level or pressure are traceable.

Since its formation in 1906, Starzinger GmbH has gradually made a name for itself on the Austrian and international drinks markets. Today the company has three sites, two private breweries and a total operating area of 65,000 m². In Austria, Starzinger GmbH is primarily associated with the company’s own brand names, Frankenmarkter mineral water, Frankenmarkter lemonades and “Schartner Bombe”. 230 employees at three sites ensure that the total of four PET, three glass and two can filling facilities work smoothly and the total output of 170,000 units per hour is achieved.

When you enter the equipment hall in the headquarters in Frankenmarkt, you immediately notice it’s all about rhythm, flexibility and activity. 110 employees and six facilities ensure that this remains the case. In addition to the ownbrands mentioned, additional mineral water brands, wellness drinks, soft drinks, sparkling wines, wines, black coffee and, particularly, energy drinks are filled, packed and dispatched. The facilities run in shifts almost 24 hours a day: two PET lines with a maximum output of 1 x 10,000 liters per hour, and 1 x 22,000 liters per hour, two can facilities with a maximum output of 20,000 or 40,000 can per hour, a glass line with a maximum output of 10,000 liters per hour and a container facility. A comprehensive process control system is a special challenge: the equipment consists of different machines from different manufacturers.

PRECISION IS THE MOTTO AT STARZINGER

The factory in Frankenmarkt was expanded during the period from 2001 to 2003. The complexity of production increased accordingly. Numerous data must be evaluated, analyzed and presented to the authorities at state, federal, EU and international level. There is additional pressure from the customers, who require high product quality and punctual delivery. To be able to continue to meet these expectations, Starzinger GmbH brought specialist support to Frankenmarkt. Together with Preishuber GmbH from Pöndorf, experts in electrical and automation technology, a process control system was to be implemented that would record all process-related data and visualize the equipment and its processes.

zenon came into play at this point. Georg Hager, Production and Quality Manager at Starzinger GmbH in Frankenmarkt says: “The increase in contract filling requires precision and efficiency whilst maintaining our high quality. In order to keep the production as flexible as possible and to be able to meet the increasing requirements from authorities and customers, we looked for a new solution. With zenon, we have found a system that can meet these requirements. With zenon we can utilize all resources optimally, record fewer losses and reduce costs as a result.”

FROM THE PRODUCTION LINE TO THE SUPERMARKET SHELF

There are a total of 18 tanks at Starzinger GmbH located throughout the factory. In them the different fluids are stored, before being processed into the end product in the correct mixing ration. In order for equipment downtimes to be kept to a minimum, the syrups are stored temporarily in their own syrup tanks and mixing tanks. Only in this way is it possible to prepare the diverse drink mixes for filling in time. Five additional pressure tanks will ensure that this preprocessing remains possible. Two of these are already in operation, three more are to follow.

At the start of each filling line, mixing equipment ensures that the individual contents are mixed at the proper ratio. Before filling, the bottles or cans run through various processes on a conveyor belt: first they are tested to see that they conform to standards, then they are disinfected and cleaned. In doing so, zenon records the respective status information and registers any deviations from standards in the alarm information list. The PET bottles must be heated and blown up before filling, which takes place at a pressure of 40 bar. The cans are generally already supplied pressed. These are also first checked for quality, cleaned and then filled according to a predefined recipe. After being sealed with an aluminum cover, they are pasteurized at 72 degrees Celsius and thus made non-perishable. While a pre-sorted amount of cans come out of the pasteurizer and are then cooled, the next cans are heated by means of energy recovery. In doing so, zenon monitors the parameter temperatures and provides the values in the event list. If a value is outside of the

predefined limits, there is an entry in the alarm information list. Thanks to precise archiving of data, the temperature values can be shown at any time. The cans are ultimately packaged according to the printed “best before” date on the bottom of the can, placed on palettes in the warehouses and dispatched.

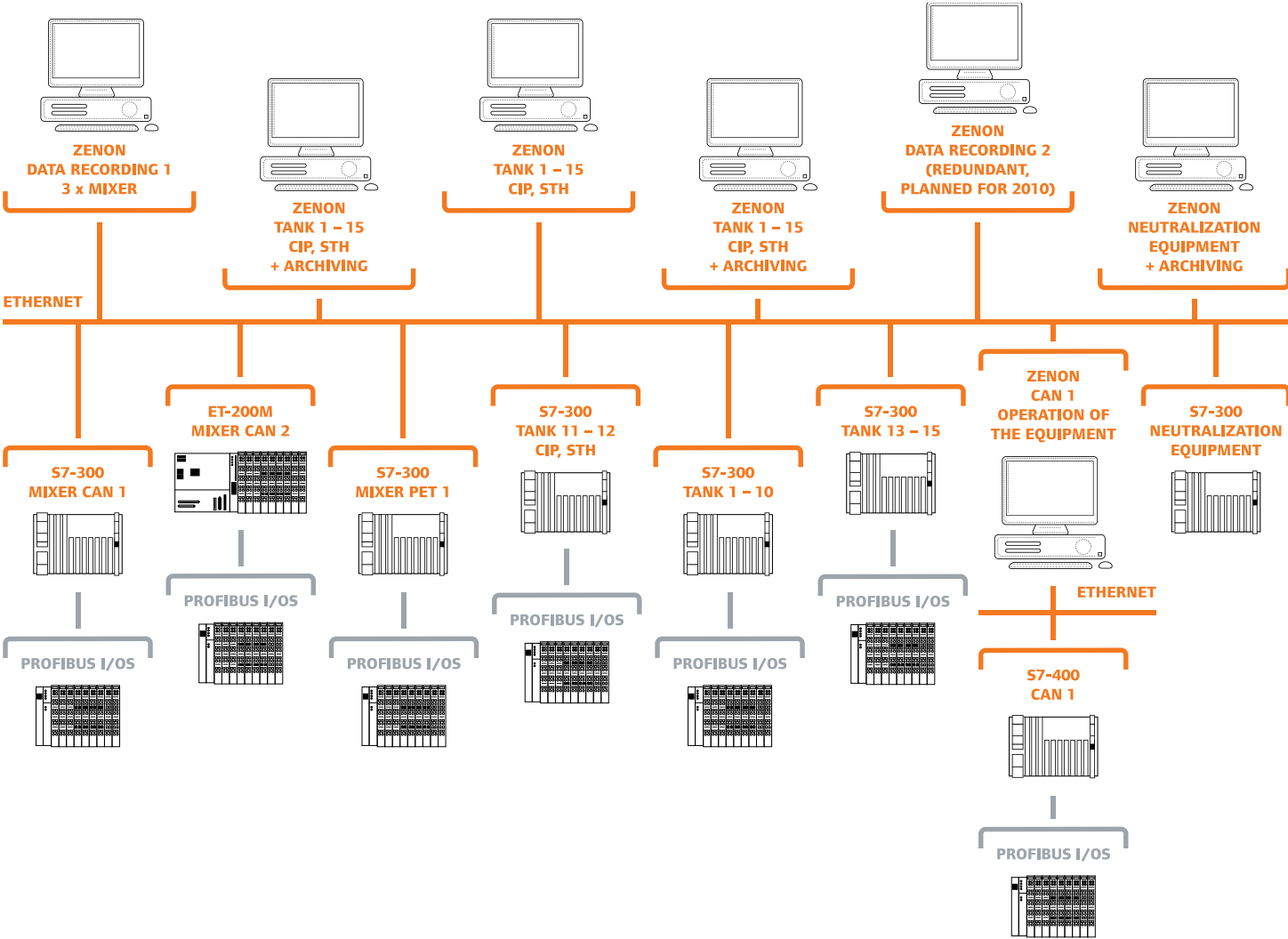
DATA VOUCH FOR QUALITY

These processes are visualized and operated by touch-PCs that serve as an interface for the users, directly connected to the equipment. Twelve of these are located throughout all facilities – zenon runs on more than half. They are controlled centrally by the control system, which runs in another room on another computer and checks all flows of data. As an additional module, Starzinger GmbH uses the archive server, extended trend and report generator. With the archive server, the drinks filler registers all process-related data, online and in real time. Extended trend makes it possible to look at individual data in a combined form as a trend, according to requirements and parameters set. The reports are especially important for the drinks filling company. Mr. Hager explains: “We create what is known as a batch protocol for each item of equipment for

our own process monitoring and for the authorities, which contains all process-related values such as pasteurizer temperature, Brix values or CO2 values. We print out this log at regular intervals and present it to authorities such as the health authorities. All data required can be seen at any time. Thus we can prove at any time that the values of a certain batch corresponded to the guidelines. This traceability is in line with our commitment to quality here at Starzinger.”

DIFFERENT SOURCES OF DATA – ONE ARCHIVING PROCESS

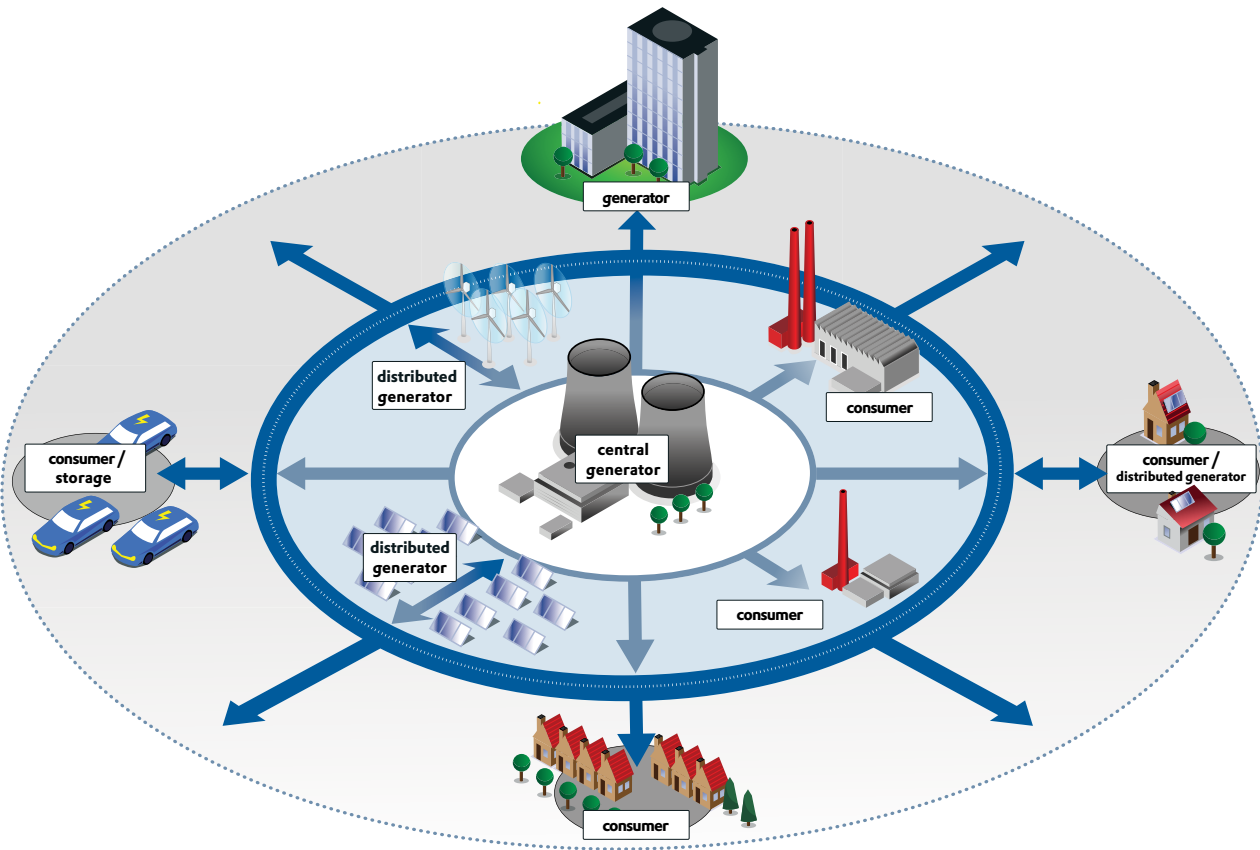
Filling facilities are not yet currently integrated into a superordinate network structure – everything is recorded locally. Stephan Preishuber, CEO of Preishuber GmbH says “The biggest challenge for implementation was the total archiving, because data from different equipment from different manufacturers had to be combined. However, there were no problems thanks to the openness of the zenon system. We were able to prepare all data accordingly, without limiting production or intervening during ongoing operation. A network, ideally also redundant, would be a sensible way of developing this project.”



Perfect cooperation thanks to reliable data flow: The equipment structure at Starzinger GmbH at a glance (CIP = Cleaning in Place, STH = short time heater).

# Smart Grid:

## Bright ideas for the demand-driven grid of the future



*There is no topic more intensively discussed in the energy sector right now than intelligent energy grids, known as 'smart grids'. However, the smart grid concept is quite nebulous. The focus of the discussions therefore depends greatly on the perspective people take on the topic; different advantages and disadvantages are perceived. So what are smart grids all about? How do they work? What is the core concept? We try to demystify the subject ...*

### SMART GRID IN INDUSTRY

Essentially, a smart grid is based on the idea of a decentralized and, thus, more efficient generation of electricity. The grid is termed “decentralized” because, as well as the many large suppliers that feed into the grid, many more “small” electricity providers feed into it as well. These “small” electricity providers can be private wind power facilities, small hydro-electric power plants (for example, “from the farmer in Upper Bavaria”), private biogas facilities or photovoltaic panels (solar cells) on the roof of a private dwelling or the like.

Following this principle, in accordance with a smart grid, energy will soon be available not only from major power generators (such as a thermal power station) via the electricity grid to individual consumers, but energy can also flow in the opposite direction, such as from a generator in a private biogas facility. This will, therefore, place greater demands on the electricity grid, which must be designed for a two-way flow of energy. Precautionary measures must be made, particularly for transformers and their protection relays.

### THE SITUATION IN EUROPE

It is important to keep both the frequency and the voltage stable in an electricity grid. In Europe, the frequency of the alternating current is 50 Hz. Electrical energy must be created at the time it is required. If there is too much energy in the network, because demand falls, the frequency increases. And vice versa: if more electricity is required than is available, the frequency falls. To achieve an optimum balance, the frequency in the network is continually measured and, if there is a deviation, a corresponding set value is sent to regulating power plants, such as hydro-electric power plants. Due to the emergence of small power stations (wind power plants, photovoltaic equipment etc.) it is becoming more and more difficult for the grid operator to balance out the frequency fluctuations. One method for achieving balance is to use ‘clusters’. Several small facilities are combined, form a group (or cluster) and are then treated as a single large power plant. It is therefore possible to also impose a set value on them, so they can also work as grid regulators. This grouping is known as a ‘virtual power plant’ (VPP).

### SMART GRID IN PRIVATE HOUSEHOLDS

Furthermore, a smart grid requires that energy meters – the black boxes used to calculate electricity consumption – are equipped for two-way operation. Industry talk is of the new ‘four quadrant’ meters. This intelligent counter makes it possible, for example, to automatically deduct the electricity surplus that the photovoltaic equipment in a family home

has produced from the total electricity consumption. This new type of electricity meter also offers the possibility of storing electricity in electric cars and reintroducing it to the grid if necessary.

Italy and France have already equipped their private households throughout the country. In Germany, there are some electricity providers that provide their customers with these new meters.

The four quadrant electricity meters have a further characteristic feature: they communicate with the electricity provider. The communication is effected directly over the electricity connection and is known as PLC – Power Line Communication. In this way, it is possible to display current electricity consumption and the resulting cost in real time. This means that customers can, using the internet, call up the data for their electricity meter at any time.

### SMART GRID AND ZENON ENERGY EDITION

So what does Smart Grid actually mean for COPA-DATA or for zenon Energy Edition? As already stated, the large electricity grids must be equipped to be able to handle two-way energy flows. In addition, it must be possible to display these two-way energy flows. This is where zenon Energy Edition comes into play. With the topological coloring (ALC module – Automatic Line Coloring module) zenon can display the energy flows as color changes. Even including transformers, it is possible to visualize an absolutely accurate display of the two-way electricity flow.

To implement a smart grid, many facilities (such as substations) must then be modified and fitted with the most up-to-date equipment. In addition to the protection relays being replaced, the complete process control is renewed. This control technology includes IEDs (IED = Intelligent Electronic Devices) and SCADA systems such as zenon Energy Edition. IEC 61850 is usually used as a communication protocol in these installations and this protocol has now also been specified as the standard for smart grids in the USA. For further data transfer within the equipment, zenon users can turn to zenon Process Gateway, which makes the use of an RTU (Remote Terminal Unit) unnecessary. The whole functionality equivalent to an RTU is already integrated within zenon, which ensures the software corresponds to the US smart grid standards.

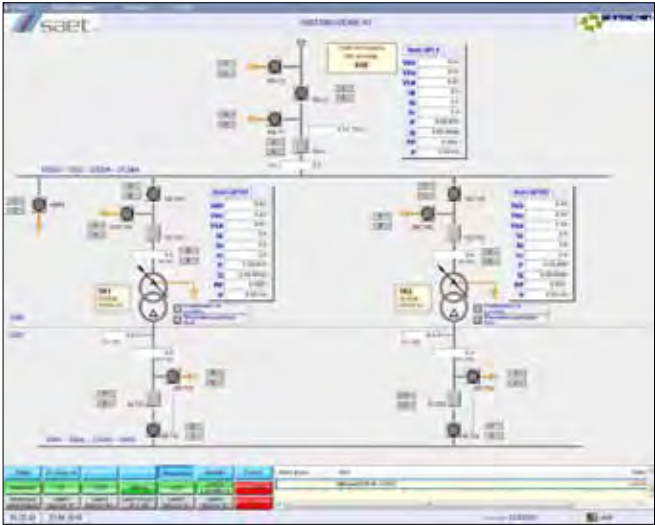
Due to the complexity of the smart grid concept, a number of different groups are affected by it – ranging from private households to large power stations. As manufacturers and suppliers of software, we too are looking at this topic in great detail, so that we – and, more specifically, zenon Energy Edition and its particular functionalities – can contribute to the implementation of smart grids throughout the worldwide energy market. *by Jürgen Resch*





# zenon and straton supervise the San Gregorio Magno wind farm

*At the new wind farm in San Gregorio Magno (SA), 17 turbines have been installed, each of which produces 2.5 MW, resulting in the supply of a total of 42.5 MW of electrical energy to the transmission grid.*



**In order to bring this project into being**, SAET was chosen; a firm that has been operating with success for over forty years in the Energy & Environment sector. Thanks to its consolidated experience, its constant technological development and its ability to integrate its specific know-how with the different expertise and disciplines that are needed in this field, SAET was able to successfully deliver a complete turnkey operational facility.


Because it specializes in electrical and automation systems for process systems (waste to energy plants, compost systems, biomass conversion, etc), SAET was able to supply a solution that included: a 30kV station and 30kV cables for the turbines, 150/30kV substation with 42.5 MW of power, ENEL Busbar extension, 150kV underground cable and a new geographic information system, 150kV GIS bay, with ENEL Primary. Thanks to this provision, the energy accumulated by the wind farm through a 30kV grid is taken to a switching station. From there, it is channeled through three tracts 15 km in length to reach the 150/30kV substation situated close to the ENEL 150kV substation at Buccino.

The installation comes complete with auxiliaries, IEC 61850 protection relays, a SCADA system and a power quality recorder. SAET decided to entrust the substation system supervision tasks to the COPA-DATA zenon and straton software. The integration of the SCADA with the national grid is completed by way of the gateway with the ICE 60870-104 protocol integrated into zenon and by way of the events recording in COMTRADE format.

The zenon server communicates by way of the IEC 61850 protocol and

the Modbus TCP with approximately 30 GE protection relays. Thanks to this installation, the supervision PC guarantees the following information: control of the electrical distribution with possibility of modifying the switch status; control of the medium voltage switch panel; single line overview; control of the general services; wind generator diagnostics; historical trends; and total Ethernet network diagnostics.

At the same time, straton has its own IEC 61850 driver which, using IEC 61131-3 soft-logic, manages the load disconnection logic. Therefore, in the event that the network configuration were to require it, it is possible to perform a disconnection of the farms using straton.

The zenon HMI/SCADA solution has shown itself to be particularly suited to the management of the electrical substation. Thanks to the flexibility and the adaptability of zenon, the client was provided with a custom solution able to guarantee specific functions. For example: by way of the native drivers such as the IEC 61850 or the Modbus TCP, communication with and among the different devices in the field has been made simple and effective. The IEC 60870-104 Slave gateway makes the process data drawn from the wind farm available to the remote control centers, which gain access by way of the IEC 60870-104 Master. The perfect integration of the straton soft-logic in zenon has enabled additional functions to be obtained – such as load disconnection, which may be programmed through the IEC 61131-3 logic – with extreme ease. In addition, the system allows remote control using the Remote Desktop integrated in zenon.  **COPA-DATA Italia**

Quality management as a success factor

# zenon DCMI ensures safe and efficient manufacturing processes

*In automobile production, manufacturers record, process and analyze extensive amounts of quality-related data. In order to ensure high quality and to archive long term optimization of production, COPA-DATA developed the zenon “Dynamic Car Manufacturing Interface”.*

The zenon Dynamic Car Manufacturing Interface (DCMI) offers comprehensive support for quality assurance in the automotive production process: zenon DCMI records, documents, archives and analyzes all quality-related data. The software supports shop floor workers and production managers to recognize faults immediately and introduce measures for subsequent refinishing. Thanks to the graphical user interface, the operator can indicate faults or issues easily, concisely and quickly; this is then reported back to the central systems. Management can then carry out analysis of the current situation efficiently and improve central production planning.

**THE OBJECTIVE: STABLE PRODUCTION, HIGH QUALITY, LOW COSTS**  
With the zenon DCMI, COPA-DATA sets the standard for error management systems in automotive production. zenon DCMI will help users to design production processes more efficiently and therefore reduce costs in the long term. Because automotive manufacturers can use and reuse the solution in many cases, they benefit from a reduction in the time spent on training and system administration and enjoy greater user familiarization with the system, all of which lead to a reduction in cost and improved efficiency.

**QUICK AND SIMPLE SELECTION OF VEHICLES**  
With the zenon DCMI, the shop floor worker can search for and select the corresponding vehicle in the current inventory of cars being manufactured. To do this, the solution provides an interface to the vehicle tracking system. To ensure the highest degree of reliability possible, the automotive manufacturer can set different authorization levels for employees. In addition, there is the option for the user to login manually or with a bar code scanner.

**ZENON DCMI FOR ERROR RECORDING**  
zenon DCMI makes it possible to record and process errors. To do this, the operator can select the corresponding vehicle component using the comprehensive graphical displays and indicate the type of error and its position with a mouse click. In doing so, it is possible to select from a list of pre-defined and most frequent errors. Errors which are immediately rectified by means of sanding or polishing can be recorded according to their location. For refinishing however, it is important to record the errors with their precise position and to provide any necessary additional comments.

**ZENON DCMI IN THE REFINISHING PROCESS**  
In the refinishing process, zenon DCMI offers various options to instigate the appropriate remedial process and obtain an overview of the current situation: the shop floor worker can log refinishing work, add comments, set times, change the error type and allocate the refinishing work to the appropriate cost center. The refinishing is documented using activity lists. Refinishing that has to be carried out frequently can be very easily and reliably recorded based on the refinishing macro. A quick and current overview of the quality status of the bodywork is provided using different color displays.

**EVALUATE QUALITY DATA**  
In an overview, the user can inspect all the required vehicle data, any problems recorded and all the refinishing work carried out. zenon DCMI also displays information on the route the vehicle previously took. The detail view provides information on the various vehicle parts available. In addition to pre-defined standard evaluations, the user can also set different time filters according to vehicle type, type of problem, logging station and vehicle color. HTML evaluations can be created automati-

The zenon DCMI makes it possible to consistently record, process and analyze all quality-related data from the manufacturing process that is necessary for efficient and reliable automobile production.




cally; jump functions within the HTML pages lead the user to the detail view. This display and the problems and refinishing evaluations indicate which components or processes may require measures to optimize production quality to be introduced.

**EASILY INTEGRATE NEW VEHICLE TYPES**  
The DCMI wizards support production employees to integrate new vehicle types. Users can define the part and exact location of problems for new vehicle types and define variable characteristics, as well as creating problem and activity lists.

**THE MOST UP-TO-DATE TECHNOLOGIES AND CONSISTENT INTEGRATION**  
For the development of the zenon DCMI, COPA DATA used the most up-to-date technology such as Microsoft SQL Server 2008 and .NET programming. In addition, COPA-DATA created interfaces to MES and QA systems in order to ensure consistency throughout the whole system.

**ZENON DCMI – TESTED IN USE**  
zenon DCMI already supports production processes and quality assurance in automotive manufacturing: it is already used in the paint technology area of a joint-venture between a German automotive group and a Chinese manufacturer and its use is already planned for the assembly area of this joint venture as well. A further nine factories of the automotive manufacturer also plan to use the zenon DCMI. Because COPA-DATA's approach when developing the DCMI, was to see it as a concept covering all areas of an Automotive Plant, the solution has a

wide application that can be used by – and be beneficial for – other car manufacturers.  **Bernd Wimmer**

## COPA-DATA receive assistance from the German Federal Ministry of Economics and Technology

With the slogan “Impulse for Growth”, the German Federal Ministry of Economics and Technology has created the “Central SME Innovation Program”. The Ministry is promoting innovative development and technology projects as a result of the resolution passed by the German Bundestag. COPA-DATA's project, the “Dynamic Car Manufacturing Interface”, was convincing and qualified for funding from the program. “We are very happy to be able to continue to drive high quality innovation forward in our industry. The Ministry is supporting us, our highly qualified engineers and our dedicated employees, to develop solutions that have a positive impact on the market and that we can use to compete effectively and to sustainably strengthen our reputation for innovation. This program makes a significant contribution to the growth of technology-oriented companies and increased employment”, stated Jürgen Schrödel, Managing Director of COPA-DATA GmbH in Germany.



» *Automation experts need imagination. How else could they discover, develop or implement new processes, cost-reducing technologies, and always come up with new developments? And they need rules: strict rules, standards. How else could a great idea work in many facilities? «*



Increased usability and  
better performance

# zenon 6.51

COPA-DATA CEO **Thomas Punzenberger** recently spoke again about an epiphany that he had over 20 years ago when founding the company, which he has kept in mind ever since: the knowledge that a software product is never fully developed. At least, not if you want to be successful in the long term. This is because there is always potential for expansions, improvements and optimization. Markets are dynamic – they change. And so do the demands and requirements of those active in the market. Only state-of-the-art technology that goes through a continuous cycle of innovation, that is responsive to feedback from both customers and the market, can meet expectations, exceed them and, thus, set trends in the market. It is not the COPA-DATA style to merely keep up or to stand still. We have been in a state of flux since 1987; just like zenon. zenon is not “finished”, in the sense of “concluded”, with the latest release. It is much more: it is “accomplished”. We present to you the next chapter in the history of zenon’s development: zenon 6.51.

**WHAT IS DIFFERENT OR NEW? YOUR BENEFITS:**

- 1. Unlimited and elegant coordination for perfect chains of events: connect from the process directly to the business world with the zenon SAP Interface for bi-directional communication.
- 2. Faster reaction times, more efficient work, increased power: experience for yourself the improved performance, for example, in the Extended Trend Module (ETM).
- 3. A trusted working environment, familiar processes, customizable settings, faster engineering: reduce the possibility of errors with the improved user-friendliness of the new look & feel of the zenon Editor.
- 4. Identify errors in the topologically colored grid instantaneously and easily thanks to plausibility tests in the Automatic Line Coloring (ALC) module.
- 5. zenon Energy Edition: increased operational safety is delivered by the new breaker tripping detection.
- 6. Greater freedom in communication with your plant with additional new zenon drivers (e.g. OPC UA client and OPC UA server).
- 7. Network your projects at the touch of a button and save time and effort with improved project integration options using the new straton Workbench 8.o.

**CURIOUS? INSPIRED? WANT TO KNOW MORE?  
HERE IS A SELECTION OF SOME DETAILS:**

**1. zenon SAP Interface**

Simple integration has been one of zenon’s USPs from the start. This is reflected not only in the more than 300 communication protocols that have been developed in-house and the support for relevant international industry standards, but also in the seamless connection to IT systems used alongside zenon – such as SAP ERP, for example. But how can you make a complex system such as SAP ERP accessible to an automation technician easily, without requiring additional tools and systems? Can you achieve a two-way exchange of data between the worlds of business and process? zenon 6.51 provides a straight-forward solution for this: simply connect to SAP ERP with the help of a wizard and Remote Function Control (RFC) interface, select the modules you want to communicate with from a list which corresponds to their description in the SAP system and link it to any process variable in zenon. Finally, you only need to define a zenon function which calls up the SAP module when triggered. This function can then be used as desired; for example, on a button in the time control or for a limit value. The SAP front end does not even need to be opened to achieve all this. The zenon Editor and its philosophy of “parameterizing instead of programming” provide the necessary engineering infrastructure.

**2. Extended Trend Module (ETM)**

Quick analyses, displayed clearly in graphical form, are essential for monitoring production processes in order to recognize disparities immediately and to intervene at the right time, if required. However, as analysis develops, the data that is required for analysis gets more and more complex. For this reason, in zenon 6.51, we have focused on optimizing the data display in the Extended Trend Module (ETM). This has delivered faster loading times for the trend display, to better support users in their decision making.

OPTIMIZED DATA HANDLING IN THE TREND MODULE  
To be able to display large amounts of data in the trend display faster,

particularly in a client display, we have undertaken improvements in data preparation. In addition, we’ve added a mechanism that calculates how long it will take to load the required data and then adapts the reloading of the ETM exactly to the time required. Anomalies in the trend can, therefore, be avoided, because the trend module does not start loading new data before older data has been loaded completely. This “logic” is now provided with zenon Runtime.

HEADER FOR SCANNING WINDOW  
The scanning window in the trend module previously did not have any column headings. As a result, it was not always clearly recognizable to the user what the data they had in front of them related to. In order to ensure complete user comprehension, there are now freely configurable columns in which the user can add the appropriate header caption, the language of which can, naturally, be switched if necessary.

**3. New user interface for increased user-friendliness**  
In each zenon version, we pay particular attention to user-friendliness. zenon 6.51 has a multitude of new features. Primarily, we have improved the ease of working in the Editor through the use of improved Microsoft technology. Moving, docking, fading out and changing the many existing windows and tool bars has become much easier. Each user can put together their own individual working platform and their own look & feel with these new details – depending on the functional requirements and their own preferences. These can then be administered in individual profiles and are therefore easily transferred to other platforms. The use of multiple monitors during application development is also supported.


THE NEW EDITOR USER INTERFACE  
UTILIZES THE LATEST MICROSOFT CONTROL ELEMENTS  
The new GUI brings zenon closer to well-established Microsoft operational style. For example, zenon 6.51 provides similar operation technology to that delivered by the Office products Word or Excel. As a result, there is a new, but trusted look & feel, improved handling of windows and the possibility to switch the visual design, e.g. the color schemes, of the Editor.

COPY & PASTE AND DRAG & DROP FUNCTIONS IN THE EDITOR MENU  
The ease of application development, especially when using zenon con-

text menus, has been improved considerably in zenon 6.51. For example, existing entries or complete menus can be copied, or existing entries can be moved, by dragging and dropping. Our objective was, primarily, to make engineering more efficient. But the appearance can now also be adapted more freely: for instance, the characteristics and colors of the separators between menu entries can be defined.

OPTIMIZED BATCH FILTER  
Using zenon 6.51, it is now possible to administer many batches more easily and more clearly. To do this, the selection dialog in zenon Runtime was expanded to include filter options that enable the user to find a desired batch faster. The need to scroll through long lists is now no longer necessary. The first step towards batch selection occurs when selecting the project, at which point the user can limit the batch selection. A second step enables any filters to be set according to name or time, to make the targeted selection of an individual batch possible.

ZOOMING IN THE “WORLD VIEW”  
In the zenon world view overview, you can now zoom in on displayed details using the mouse scroll wheel. This enables simpler and quicker navigation in the detail view from the world view. As a result, there is no need for complicated navigation using buttons.

We’ve looked at just a few of the new features in zenon 6.51. You can find the details, as always, in the revision text on the product DVD or directly from your sales contact or technical consultants.  
As usual, the new zenon version is compatible with previous versions of zenon. You can benefit from all these new features – even while you maintain older projects, giving you the freedom to update individual Runtime systems in a targeted manner, without having to make a whole-sale update to all your applications and equipment.  
We hope all zenon users will find much enjoyment in the improved usability and performance of zenon 6.51.  **Reinhard Mayr**







COPA-DATA learns from chameleons

# zenon Skins



Developed by designers and usability experts in order to meet different requirements – the four premade skins in zenon (besides the standard design): “Administrator Mode” and “Simulation Mode” ensure clarity of role and mode, “Eagle Eye” ensures high contrast and “Color Corrected” has been optimized for users with red-green visual impairments.

**Usability studies show** different colors, contrasts and fonts affect attentiveness and can make it easier or more difficult to operate devices. The productivity of automated equipment may depend on quick and correct action and reaction from the machine operators. Reflective displays, bad lighting conditions or a hereditary red-green visual impairment can affect this significantly. And anybody who first has to consider whether the plant is running in a simulation mode or live loses valuable time.

Individually designed user interfaces – skins – are already common for MP3 players, mobile phones and audio/video software. This technology, already used to individualize consumer technology, can also considerably increase user comfort and safety in professional automation.

**LEARNT FROM CHAMELEONS**

Our usability experts copied a trick from chameleons: flexible adaptation to the environment. In short, skins now make displays legible in difficult conditions. We speak of ‘zenon Chameleon Technology’ and ‘centrally switchable color palettes’. Once configured, you can make completely new color worlds available. How can that change your automation?


Imagine you can see at a glance that the equipment is running as a simulation and your colleague, Mr. Müller, is currently logged in as the administrator. The ability to recognize this is easily configured using Chameleon Technology. Or think of an HMI that is affected by the

sun every afternoon and, although it is set to maximum brightness, the contents can hardly be read. Instead of clumsy and provisional ways of shading the screen, click on a function and the screen is displayed to you in high-contrast colors.

And: Do you know how an employee with a red-green visual impairment sees the alarm message list and the KPIs? Probably brown-grey without distinctive signal colors. Make life easier for him and give him a screen that automatically adapts all colors to his vision automatically. It only takes a pair of mouse clicks.

**SIMPLER ENGINEERING**

With the zenon Chameleon Technology color palettes, you can significantly simplify and shorten engineering. Forget color codes; simply select them directly from the palettes! Once created, a design can be re-used at any time – or changed quickly and easily.

How much time do you think you would gain if all your suppliers designed their sub-projects with your skins? How quickly could you then compile an umbrella project from many individual projects, with an impressive look & feel and consistent use of corporate imagery? Try it out. You can find basic information on configuring with Chameleon Technology on our website at [www.copadata.com/skins](http://www.copadata.com/skins) – as well as a range of finished skins. 

[www.copadata.com/skins](http://www.copadata.com/skins)

COPA-DATA Research

# Automation of HMI project creation

Following a search for a system for the automated generation of HMI projects as part of a research project, the team at the Department of Machine Tools and Business Administration (iwb) at Munich Technical University has decided to use zenon. The IVU editorial staff wanted to know more and asked about the context in which zenon was actually being used there. Without further ado, the research team said that they would be prepared to write a guest feature in our magazine, which we are pleased to share with you now.

The cost of configuring visualization software has greatly increased over recent years. Independent divisions have been established in software departments for development. In this article, we will show you how the increasing cost of visualization project development can be offset by innovative procedures and tools. In addition to reviewing the standardization of user-orientated solutions, we will look at automated project development by means of generator mechanisms.

At the Department of Machine Tools and Business Administration (iwb) at Munich Technical University, researchers are engaged in developing easy to apply solutions in the field of automated HMI project development. In the forefront of their research is a study that was carried out with 20 representatives from different industries. The study was subdivided into the following branches:

- System engineering
- Software development
- Test, verification and validation, and
- Future trends.

Extracts from the results show that, when developing the system, the involvement of the customer is essential for developing the product and for analyzing their requirements (figure 1). However, in this early stage, the focus is generally not on the Human Machine Interface (HMI), but on the functionality of the equipment. Since the HMI is the user's only option for interaction with the technical system, a procedure is required to ensure it is in the customer's considerations at this point.

What significance does the involvement of the customer have when developing the system?

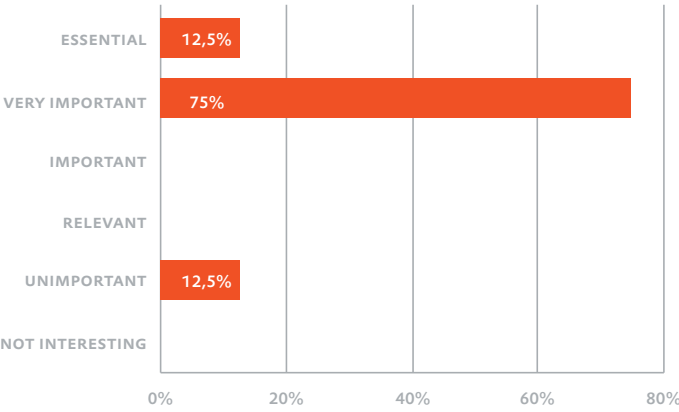


Figure 1: Extract from the results of the study into development processes in machine and equipment construction by the department of Machine Tools and Business Administration

INITIAL CONSIDERATIONS FOR THE DEVELOPMENT AND STANDARDIZATION OF HMI PROJECTS

The results from the study and the iwbs research looking at the experience of numerous industrial projects threw up several related questions.

In addition to the evaluation of the software tools available on the market, where the focus of the analysis was mainly on the data structure, the interfaces, the use of library elements and the design freedom when developing the project, the creation process itself was reviewed. As part of this, the original creation of reusable elements such as screen pages and symbols, as well as functions and variables, played a considerable role. It also laid emphasis on the following points:

- Uniform structure of the visualization project
- Composition of screens made up of standard units and specific components
- Symbols with an integrated function
- Uniform standard variables

THE RESEARCH OBJECTIVES AND THE IMPLEMENTATION OF THE SOLUTION

The objective was, starting with standard libraries, to create a hierarchically constructed HMI project in an automated manner. The development process was validated using a draft tool developed in the research environment, which is used for the functional description of the equipment, amongst other things. zenon, from COPA-DATA, was used as the core system for automated generation. The basic structure for generation forms a hierarchical description of the data required, which is exported from existing information systems. The incremental detailing of the human machine interface to a complete solution is carried out using a self-developed tool that provides an understandable view of all project elements and makes automated generation possible by networking the elements. Access to the system was implemented via a COM interface. In addition, functions to test the consistency of data were integrated. Using this approach, HMIs can be created easily and quickly with a minimum amount of work for the user.

The application project is based on a typical 'pick and place' task, where several stations, one after the other, must move material. Each station should have the ability to proceed by means of both manual operation and automatic operation. Furthermore, the positions of the individual axles must be displayed and the axles themselves should be moved according to preset position specifications. Primarily, the structure must provide for a combination of individual station views. The system should also give the operator the capability to switch between the current real-time visualization, the start screen and the fault diagnosis screen. Reusable and version-flexible standard elements can be created in zenon and stored in a library. The requirements for these elements result from their reusability and different user criteria. Typical examples of such elements include the superordinate main menu bar or the elements for operating the conveyor belt.



Figure 2: HMI screen example

The results from numerous industrial projects, solutions from commercial tools and scientific studies illustrate that, in the area of visualization projects, there is still a considerable requirement for user-orientation, standardization and automated configuration. This article has looked at approaches for dealing with these challenges. Taking into account the requirements of all system users will, in the coming years, develop from being a unique selling point to become a basic property of machines and equipment. Standardization and the automated generation of automation projects are common in very few industries today; one example of which is the automotive industry. In other areas, this way of working is not yet widespread and so the approach offers great potential for efficiency improvements and cost savings to manufacturers operating in other industry sectors.

We thank the authors for this insightful article:  
Prof. Dr. Gunther Reinhart is the Head of the Department of Machine Tools and Business Administration (iwb) at Munich Technical University.  
BSc(Eng) Thomas Hensel is a research employee at the Department of Machine Tools and Business Administration (iwb) in the field of automation and robotics, specializing in control unit configuration and equipment simulation.  
BSc(Eng) Fabian Meling is a research employee at the Department of Machine Tools and Business Administration (iwb) in the field of automation and robotics, specializing in the standardized development of automotive equipment.

COPA-DATA Research

# Ontology-Based Reflective World Model for Autonomous Agents

*Since its very beginning, COPA-DATA has always been keen to support apprenticeships and research through a variety of different ways. Our collaborations range from basic sponsorship through the membership of national and international associations and organizations to specific and product-oriented research projects and engagement with Technical Institutes and Universities specializing in applied sciences.*

**One such example**, which reflects COPA-DATA's active involvement in and commitment to research issues, is a project called OntoReA (Ontology-based Reflective World Model for Autonomous Agents).

The research partners involved in this project are the Automation and Control Institute (ACIN) and the Institute of Computer Technology (ICT) of Vienna's University of Technology as well as the companies Rockwell Automation s.r.o. and COPA-DATA.

The aim of this project is to demonstrate a method of dealing with the increasing complexity and the need to rapidly adapt to changing environments in manufacturing and logistics. Applying decentralized control paradigms based on software agents with autonomous behavior is regarded as a promising approach to cope with such challenges. This approach can be used in distributed physical systems by assigning each software agent to a distinct physical component (e.g. pallets). Hence, such a component can be viewed as an embodiment of its assigned software agent. Viewed from the other side, the software agent serves as an artificial "intelligence" for the physical component. The assigned software agent is supposed to guide the physical component to perform useful local behaviors and to cooperate with the other components of the system to achieve the desired global behavior.

The software agents are based on the typical architecture for manufacturing agents consisting of a high level control (HLC) and a low level control (LLC). Organizational and supervisory functions including higher level diagnostic tasks are performed by the HLC. On the other hand, the LLC directly controls the physical component using a limited set of reactive behaviors.

As an extension to the usual approaches to software agents, the research project incorporates the integration of a reflective symbolic

"world" model, based on ontology, into the agents. Hence, each software agent should be "conscious about itself and the surrounding world". Providing such ontology, the agent has a real-time representation of its environment created from sensor data and communication with the other agents. In addition, this model integrates all the information that represents the associated physical component. This information includes a symbolic representation of the "self" of this component and its relations to the surrounding environment or "world". In this new sense, the model becomes reflective.

The demonstration of the research results will take place in the Odo Struger Laboratory at the Automation and Control Institute (ACIN) of the Vienna University of Technology. Odo Struger (1931 – 1998) was born in Unterloibl, a town in the municipality of Ferlach in Carinthia, Austria. He moved to the United States in the 1950s and lived in the Cleveland area for most of his life. Struger was involved in the invention of the Allen-Bradley programmable logic controller (PLC) during 1958 to 1960. Struger is regarded as the father of Allen-Bradley's PLC and credited with creating that acronym. Rockwell (Allen-Bradley) became the programmable logic controller device leader in the United States during the tenure of Struger.

The testbed in the Odo Struger Laboratory is a conveyor system consisting of 32 switches and junctions as well as six index stations for holding pallets at workstations. This pallet transfer system is controlled by 38 FESTO CPX-CEC controllers and 80 RFID readers are employed for identifying the pallets. Each FESTO controller hosts an instance of the FORTE, an IEC 61499 Runtime. The' LLCs of the agents are based on this standard. Basic diagnostic tasks, such as the verification of a component's state by using sensor data, can be performed locally by the LLC.

Complex diagnostic tasks and behaviors that require, for instance, information from more than one component are generally performed by the agents' HLC. The task of the test-bed is to route pallets from one index station to another by dealing with the current situation. This current situation can encompass, for example, occupied conveyers, conveyers out of service or a stuck switch. In these cases, the agents have to deal with the situation automatically without any action by a human operator reprogramming the controllers.

In order to monitor the behavior and reactions of both the LLC and HLC, a zenon application collects data and displays it in an appropriate way. Therefore, a new driver has been developed: the so-called IEC 61499 driver which is able to communicate with each agent's LLC. The communication with the HLC is still part of the research work. Another issue under review as part of the research work is how to determine a useful way to present the data from the HLC. The key question is: how can we monitor decisions and decision influencing information in a SCADA system like zenon? This is a really fascinating question.

There are several industrial uses for which the research results of this project may have interesting repercussions – such as the conveyance in car manufacturing plants, the bottling lines of beverage producers or in logistics. The results of this research project will be announced in January 2011.

COPA-DATA thanks Mr. BSc(Eng) Wilfried Lepuschitz, ACIN/Vienna University of Technology, for his excellent support in writing this article. ☺

***Autors: Jürgen Resch, Industry Manager Energy, COPA-DATA Headquarter and BSc(Eng) Wilfried Lepuschitz, ACIN/Vienna University of Technology.***

*“The aim of this project is to demonstrate a method of dealing with the increasing complexity and the need to rapidly adapt to changing environments in manufacturing and logistics.”*

*Jürgen Resch, COPA-DATA*



# Heartbeat

## The pulsating power of COPA-DATA

*“COPA-DATA as the largest independent SCADA supplier” – this vision, created in 1987, was also written in my 2008 PowerPoint slide which gave a quick portrait of where we wanted the company to be. What had just been a vision for many years later became a target and now – click – we’ve arrived!*



**Experience has taught us** that independence is very important. Independence in both product design and in the development process; in thinking and decision making in the whole company. Only in this way can we give our customers the necessary freedom to make their own decisions. Thanks to zenon’s success, COPA-DATA has developed into the largest independent SCADA supplier. And now? Where does our journey take us, if a dream has become reality? Standing still was never a strong point of ours. An objective achieved must be the starting point for our next adventure.

It was clear: we needed a new direction – something groundbreaking, towards which we can work again, in a targeted manner. A mission firmly anchored in our independence, as our original vision was. Naturally, our thoughts turned to the competition: What is driving others in our market? Where is their journey taking them? And most of all: how can we differentiate ourselves from them? What is special about our product?

We quickly made up our mind to ask some customers from our core industries. We asked the largest car manufacturers and the largest filling equipment manufacturers operating in the drinks sector. We asked customers from the energy and pharmaceutical sectors. We wanted to know one answer above of all: “What is really important for you in a comprehensive HMI/SCADA system?” The answer was clear: “independence”. Independence from pre-defined structures and independence from the manufacturer.

We could therefore confidently remain committed to our strategy of independence. But where should that strategy lead to now, since the vision from 1987 has become a reality? That question started an exciting journey into our future which promised many new things – growth, new subsidiaries, larger teams, new company structures – and a new vision. Formulating a new vision required us to identify the driving forces, the vivid images, the dreams and beliefs of many people, then distill these into a few suitable and compelling words.

So, many workshops, meetings, brainstorming, mind maps and a lot of paper ensued. But also: laughter, passionate discussion and getting rather obsessed with the little things. Flipcharts, illustrations and the occasional flash of brilliance. We went on a journey and imagined what COPA-DATA would look like in twenty years’ time – if our new vision came true, what portrait of us would the New York Times reporter paint in their COPA-DATA cover feature?

Some answers quickly came to mind. We want to be the number one for industrial automation software. And we want to lead the industry in terms of innovation. But, of course, every company is striving for that position. So we wanted our vision to explain more about us than that. After a lot of thinking, we suddenly had it. First just a small idea, then agreement and then a good feeling – the COPA-DATA vision:

### **“COPA-DATA – the heartbeat of the automation industry”**

What does this metaphor mean to us? Where do we need to get to in order to achieve it? It is the people who work towards achieving this vision. They have different motivations and different strengths, but now they are united by a common idea:

### **COPA-DATA – THE HEARTBEAT OF THE AUTOMATION INDUSTRY**

*We will transform COPA-DATA into an international technology center, a center of innovation, which will provide the heartbeat to the automation industry. The COPA-DATA team, based in competence centers all over the world, will inspire customers with leading edge solutions. zenon will make automation a hands-on and enjoyable experience. This will lead to zenon becoming the de facto standard in the world of automation. The COPA-DATA spirit will lead us to the top of our market.*

Our vision and the corporate strategy are living processes that are always under scrutiny from an operative and strategic point of view. In the process, we try to be close to our customers, to understand what inspires them and to help them to be or become the best in their industry.

Whilst growing, we have learnt that internal company processes and structures must always be rethought, adapted and improved. Therefore, we asked ourselves what we needed to do in order to ensure we continue to be perceived as a reliable and competent partner in our core industries. The answer led us to a strategic reorganization of the business, which is already bearing fruit – four new subsidiaries and continuous growth in revenues are the result of a dynamic yet sustainable business and an organization in which a welcoming atmosphere and independence are of great importance. ☞ *Mirjam Riesemann*



A PERFECT DREAM:  
10 YEARS OF COPA-DATA ITALIA







# 10 ANNI COPA-DATA ITALIA

**June 11, 2010** – It was the kind of day that dreams are made of: golden sunshine, a clear blue sky, the breathtaking backdrop of the Villa Pellegri Cipolla surrounded by luscious gardens, happy faces, a good atmosphere and plenty of enthusiasm. It was the day of our corporate anniversary: 10 years of COPA-DATA Italia. We didn't want to let this day go by unnoticed or spend it alone. No – we wanted to celebrate this day adequately: with all those who have supported us so much in the last few years. People in whom COPA-DATA Italia has placed its trust. People who share our philosophy and our understanding of innovation and quality. People who let us participate in their requirements, challenges, expectations and wishes and, thus, make it possible for us to continually improve our products and services. People who are part of the success story of COPA-DATA Italia, who have helped us from the start and who will, hopefully, continue to make history with us. And it certainly was a day which we will always look back on with great happiness.

We would like to thank our customers and all our guests for celebrating this day with us. We would especially like to thank our colleagues from the headquarters in Austria, who have supported us in the last ten years to make COPA-DATA so successful in the Italian market.

🔗 **Team COPA-DATA Italia**

Klaus Rebecchi, Managing Director of COPA-DATA Italia, is looking forward to the continuation of this success story: “With our clearly defined strategy and our commitment we can also expect further growth in the future. An important step for the implementation of our strategy is the move to a new office building, which will take place this year. As part of this, we intend to create appropriate further structures for the business areas of consulting, marketing and training.” 🔗 **IU**



# Who’s who?

## NOEMI TORCASIO

**Role at COPA-DATA:** Marketing Consultant, COPA-DATA Italy. **Responsibilities:** Public relations, advertising, web management, newsletter, lead-generation, event management, technical writing (such as zenon success stories). **Background:** After graduating from high school, I moved to Milan, where I attended the “Facoltà di scienze della comunicazione” (communication science faculty) majoring in Public Relations and Advertising. I finished my studies with a diploma thesis in the field of marketing. During my time in Milan, I worked in Event Management, organizing events and trade fairs. This gave me the opportunity to come into contact with different firms and to improve my problem solving skills. After my studies, I was offered a position as a copywriter in a communication agency. This job gave me the opportunity to travel a lot in Italy and to create advertising and corporate communication for companies in different industries. My first contact with COPA-DATA was via the internet. I had wanted to return to Bolzano, my city of birth, for a long time – but without wanting to forgo a job that draws on my education and professional experience. I read the advert on the internet and applied straight away. After a couple of interviews, I then received the good news that I had got the job. **Hobbies and interests:** I like to travel a lot. I like to spend the weekend at the seaside or spend time with friends on a farm as often as I can. I love hiking in the mountains and riding. I also like to read and write. My job as a copywriter has aroused my passion for writing. **Motto:** It is better to live with a little remorse than to live with regrets. **Myself in three words:** Optimistic, curious, loyal.

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## FREDRIK VELIN

**Role at COPA-DATA:** Technical Manager, COPA-DATA Scandinavia AB. **Responsibilities:** Support, training and advice about all the technical issues and questions that arise in the sales process. **Background:** I worked with UNIX-servers and databases for 13 years before changing tack and working as an integrator with PLC and SCADA systems. I saw zenon for the first time at a Trade Fair and I fell in love with it at first sight! When I was asked to join the team the decision was easy. **Hobbies and interests:** I spend a lot of time with my kids building Lego and tree-houses. Late nights I spend with all my old analogue synthesizers making music that was already outmoded twenty years ago. When it comes to TV, I like old school action like Mad Max and Blade Runner. **My greatest challenge:** I would really like to go to Mars just to see something rustier than my car! **Myself in three words:** creative, unusual, complex.

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## MARTYN WILLIAMS

**Role at COPA-DATA:** Business Development and Sales, COPA-DATA UK. **Responsibilities:** Generate successful and strategic partnerships with clients that lead to their (and our) long-term success; ensuring that clients receive maximum value from their investments – and that those investments deliver business benefit. I am helping our business grow and become successful in the UK Market. My primary role is to develop strategic relationships within the Southern half of the UK. My ultimate responsibility is to make our clients successful and help them to deliver successful projects that continually meet the demands of the manufacturing challenges that they face, whilst ensuring that any investment meets with their financial needs and returns a business benefit to them. **Background:** Degree in Electronic Engineering, followed by a career in sales which has led to me helping customers in every conceivable industry (including some strange ones!). I have a varied knowledge base from Test and Measurement through to Industrial Automation, Control (SCADA), Business KPI Reporting (MES/EMI/OEE) and strategic business challenges. My roles have afforded me the opportunity to meet some extraordinary people (some of whom I am lucky enough to now call friends). After completing my Degree in Electronic Engineering I moved into a technical support role and although adept at supporting customers I quickly moved into a career in sales. From that business I moved to one of our competitors, where I was charged with helping turn around an underperforming region. I then worked through various



secondments for them, turning around loss making business units. **How it all started at COPA-DATA:** Duncan Fletcher (Managing Director of COPA-DATA UK) and I have worked together in the past. When a mutual business acquaintance found out that I was seeking a new adventure they suggested that we had a chat. When I met Duncan and had a chance to discover zenon I knew I had to be involved in making this ground breaking technology a success. **Hobbies and interests:** I have a very active two year old; what is free time? Weekends are usually spent as a family doing things to open our (and his) eyes to new experiences. When I do have some free time, you will usually find me running and listening to some electronic music. I like far too much music to mention but the more the better! If it’s not a business book, you would probably catch me reading something by Hunter S. Thompson, Philip K. Dick or Michael Marshall. As for movies, I enjoy anything that puts a smile on your face or challenges you to think about something differently. Of course I’m a fan of all those movies that I grew up with in the 80’s: Star Wars, Top Gun, Ferris Bueller’s Day Off, The Goonies and Beverly Hills Cop. **In ten years time I see myself ...:** in a role within a Senior Management Team helping direct a business, maybe an MD or running my own business. **My greatest challenge:** My greatest challenge is to be a great father, husband, son and brother. **My greatest dream:** My greatest dream is to see all my family healthy and happy and to see my son be successful and happy at whatever he chooses to do and become. **Myself in three words:** persistent, ambitious, helpful.

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Mirjam Riesemann,  
Head of Global Marketing

## New head of global marketing

Mirjam Riesemann has been with the COPA-DATA team since March 2008 and took charge of international marketing management on May 1, 2010. **My responsibilities at COPA-DATA:** Prior to my role as Head of Global Marketing, I was responsible for Business Development (corporate strategy, corporate structure, opening up new markets). I coordinated projects including corporate reorganization and the development of a new strategic direction, as well as supporting the establishment of three new subsidiaries. I am now very happy to be coordinating international marketing activities and further growth of the marketing team, as well as developing market-

ing strategies and concepts. **Background:** Before joining COPA-DATA I completed my education in business studies in Weiden (Germany) and Madrid (Spain). I worked in various projects in the fields of marketing, management and corporate organization at Siemens in Princeton (USA), Regensburg (Germany) and Shanghai (China). I was looking for a new challenge when I found COPA-DATA. **Hobbies and interests:** I like ... exciting challenges in life and my job; spending time with my friends and family; great cities as well as the fascinating appeal of nature and mountains; regular sports such as jogging, skating, skiing, ski tours and mountain biking; shopping; personal and professional development, such as my dissertation. **Myself in three words:** ambitious, fair, positive.

# Who's who?

## DAVID WILKINSON

**Role at COPA-DATA:** Consultant, COPA-DATA UK. **Responsibilities:** Consultation and technical support queries for the UK. **Background:** Seven years working in the Oil and Gas industry with Honeywell DCS systems; three as an apprentice with Honeywell working in instrumentation and process control, and four working offshore on DCS systems around the world. I then transferred to Allen Bradley for three years where I provided technical support and field service before moving to Siemens to work in application and technical support. I started life as an instrumentation engineer for Honeywell whilst I did my degree in industrial control and electronics at the University of Central England. I then moved to their DCS support division and worked offshore doing several major gas platform upgrades and at the same time I opted to do a second degree in software engineering and management via the Open University. The arrival of my loving wife Jane prompted a move to more sociable working hours and conditions and, since then, I have worked for two of the largest Automation & Control companies in the world before joining COPA-DATA early this year. I currently look after all UK support tickets and Consulting. **Hobbies and interests:** When it comes to books and films genres, I like science fiction and fantasy – as well as Warner Brother cartoons – the most. When not in work, you will find me near the sea - either on it or under it! As an avid SCUBA diver I dive most weekends around the UK coast and, when I am not diving, I also like to sail or take my daughter out for the day. My biggest challenge was becoming a dad to my two-year-old daughter Jessica. **In ten years time I see myself ....:** Hopefully still with COPA-DATA. I have found a second home here and will do my best to help make zenon the premier SCADA product on the market. **Myself in three words:** friendly, straight talking, enthusiastic.

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Heidie



Emma



Marco

### COPA-DATA FLIGHT OF THE STORK

We have a couple of special reasons to celebrate, not just here in the COPA-DATA headquarters, but also at our French subsidiary, COPALP and at our Romanian distributor Kreatron Automation. Robert Harrison, who is the Pharmaceutical Industry Manager at the COPA-DATA headquarters, announced the news that he is now the proud father of a daughter, Emma Angela Harrison, who was born on June 13, 2010, at Salzburg hospital. We would like to give a warm welcome to the 48 cm tall Emma, who weighs 2650 grams, and wish her parents much happiness with their new arrival. Sébastien Roberto, who works in Marketing and Sales at COPALP in France, has also told us of a new rose in his life. On May 28, 2010, his daughter Heidie – 47.5 cm tall and weighing 2900 grams – saw the light of day. We would like to heartily congratulate the parents and wish them many unforgettable moments with their baby. The stork also paid a visit to the Bîlc family. On September 3, 2010, their son Marco arrived in Cluj-Napoca, Romania. Both parents are over the moon with their new baby, who is 57 cm in size and weighs 4 kg. We congratulate the parents, Andrea and Adrian Bîlc and wish Marco a great deal of pleasure as he gets to know the world.



Two proud “young graduates” with their diplomas: Tobias Buchner and Moritz Wieser (from left to right) represented the category “company founder and software manufacturer” with a presentation about COPA-DATA.

## A playful approach to study, learning and research

# COPA-DATA at the children's university 2010

From September 6 through September 10, the Schloss Seeburg private university in Seekirchen organized a schoolchildren's university and thus made the Seeburg into a learning and research center for around 30 young people between the ages of nine and fourteen. The aim of the initiative was to introduce the children to important aspects of everyday student life and a variety of different occupations and industries. COPA-DATA Founder and CEO, Thomas Punzenberger, exclusively represented one of the eight Industry categories, “company founder and software manufacturer”.

It had already become evident in the preparation for the presentation that the event would involve a special learning process for us, too. How do you convey such an abstract and complex topic as software to young people, let alone industrial software, without using the usual amount of complicated words and the English loan words that have been adopted into German? In the B2B field, a certain minimum amount of expertise is always expected within the key stakeholder groups. Technical terms, abbreviations and English expressions are a characteristic of the software industry. However, we couldn't rely on them for the schoolchildren's university – here, loan words needed to be avoided and abstract concepts needed to be made accessible with stories and practical examples.

Supported by a pictorial presentation and some short films, Thomas Punzenberger took the children who were thirsty for knowledge into the world of industrial automation on the fourth day of the schoolchildren's university: from automotive production, through drinks filling, to a hydro-electric power station. It was primarily the young boys who were

interested in the technology and gave their curiosity free reign – what exactly does the software control? What does such software cost? Where can you buy it? What is a dongle? The props that had been brought along were also puzzling – from the “bubble bath” container through to the “test tube glass” that ultimately turned out to be a PET bottle blank. In addition to the tasks of a CEO and a software developer, the students were interested in many unexpected things. For example, they wanted to know how old Mr. Punzenberger is, what computer he has and where we purchased the camera that we had brought along.

On the fifth and last day of the schoolchildren's university, the young students were challenged to make group presentations about what they had learned to a larger audience. Supported by two actors, the children conveyed, in a playful and creative manner, the knowledge they had gained from the company presentations that had taken place. The achievements were rewarded at the end of the week with a diploma confirming the successful conclusion of their studies.

Thomas Punzenberger sums up: “We are happy to be able to support the schoolchildren's university as an economic partner and as a representative of the whole industry. It was important to me to put across to children that it is important to set goals and invest time and commitment in education. It is primarily the learning of foreign languages that plays a decisive role in this globally-connected world. Tasks such as making decisions, working independently and in groups and giving presentations in front of an audience prepare the kids not just for their continuing education, but also support them in their personal development and subsequent professional life.” *Julia Angerer*



ZENON AS THE HEADLINE ACT AT HMI/SCADA ROAD SHOW THROUGHOUT AUSTRIA

# zenon Experience Tour


COPA-DATA GmbH Central Eastern Europe decided to get a little closer to its customers this year – on site – and, to this end, the subsidiary organized an HMI/SCADA road show called ‘the zenon Experience Tour’. Also in their luggage were the latest technology and this year’s motto “Automate flexibly – reduce costs”.

Divided into two stages, the CEE team started in the middle of June with two stops in Vorarlberg and Carinthia. A further two dates were at the end of September in Upper Austria and in the Vienna area. The numerous guests at all four stops were impressed by the power of our automation software.

The team presented useful features on site, such as automated optimization of consumption, forecasting features for energy consumption or graphics that make panels intuitive. And let’s not forget – proven properties such as meaningful reports and easy inclusion of any desired control unit, machines or software. There was additional support from product management and the industry managers for the energy and food & beverage industries from the COPA-DATA headquarters. Customers also reported on their experiences with zenon in practice, as guest speakers.

With an excellent atmosphere and significant interest, the participants stayed and not just for the evening meal! Many also used the opportunity to discuss their individual requirements for up-coming projects in detail.

The visitors did not only gain new experiences for modern automation. At each stop of the zenon Experience Tour, a one-day automation workshop at the winner’s premises was offered in a prize draw. These workshops could be used for configuration, checking existing projects or to expand the company’s internal zenon expertise.

The next zenon Experience Tour is planned to take place again in 2012. However, you can also meet us “on tour” this coming year – for example, at the COPA-DATA stand at the SMART Automation trade fair in Linz. We look forward to seeing you there.  **Gerd Klier**

POWERGRID EUROPE 2010

# European energy technology – Quo Vadis?


From June 8 – 10, the RAI in Amsterdam opened its doors to the European energy industry at the 18th Power-GEN Europe Conference and Exhibition. With over 13,000 visitors, the combination of four trade fairs – Power-GEN Europe, Renewable Energy World Europe, PowerGRID Europe and Nuclear Power Europe – achieved a record number of visitors. In the middle of the action: COPA DATA and zenon Energy Edition.

As part of the PowerGRID trade fair, we took the opportunity to present our software edition developed especially for the energy market: zenon Energy Edition. The fair offered an ideal infrastructure to make new contacts in the European energy market and to increase our expertise by attending some of the interesting presentations as part of the conference. The focus was on:

- ▶ Reliable exchange of data using international transfer standards IEC 61850, IEC 60870 and DNP3
- ▶ Systems for substation automation
- ▶ SCADA projects for applications in power stations
- ▶ Topological models and
- ▶ The booming renewable energies and smart grid

Jürgen Resch, Industry Manager Energy at COPA-DATA, sums up: “The trade fair had a very international flair and provided good conditions for making contact with some big-name companies. The presentations that were held as part of the conference were of particularly high standard and very informative. The trade fair impressively demonstrated that the energy market is currently in a state of flux; primarily in terms of new concepts, resources and a new conscience. The market is demanding technologies that are safer, more reliable, more efficient and more flexible than ever. We are well equipped for this in Europe.”  **Jürgen Resch**

ment and networked with other partners. The event was characterized by two key messages: On the one hand, we want to re-engineer our sales approaches to allow for an even greater focus on customer wishes in the future and to move from a philosophy of ‘solutions require problems’ to one where ‘problems require solutions’. On the other hand, the objective of increasing the awareness of the company at an international level was pursued, which included adaptations to international public relations work that is to be achieved: “1:n or n:n instead of 1:1”. In addition to exchanges of expertise and experiences between colleagues and partners, the event was characterized by a motivating, hearty atmosphere and a varied social program in the picturesque landscape of Lake Garda.

We would like to thank all participants and look forward to the meeting next year!  **II**


SALZBURG BUSINESS RUN 2010

# Teams in the race for new record times

At 6.30 p.m. sharp, the starting pistol sounded for the fourth Salzburg Business Run on September 16 at the Salzburg-Rif University and Regional Sports Center. This was the call to start the 6 km route for the competitors; among them, three teams of three from COPA-DATA.

With around 2,500 participants and 800 corporate teams, the fourth Salzburg Business Run was also the most successful. Hardly any companies from the Salzburg area missed the chance to celebrate the pleasure of exercise, team spirit and the sense of community that this event involves. After the fantastic performances of our three teams last year, this year’s COPA-DATA participants faced another big challenge. Plus, there were some returning runners who wanted to beat their time from last year. Donning the new COPA-DATA branded running gear, the teams started to prepare.

First it was time for an energy boost: bars of chocolate, dextrose etc. After this, the initial stretches for warming up. Then, getting an idea of the terrain and visualizing the run past the finish line. Collecting one’s thoughts, withdrawing into one’s own head: full concentration on mind and body. Sensing each muscle consciously. In the middle of this preparation, there was a photo shoot. And then it continued: knee bending, stretching, controlling adrenalin. One last sip of water. And it’s off to the start line. The countdown is running, the band is heralding the start. One last check of our gear, a look at our watch, the pulse is beating fast. BOOM – the first starting pistol sounds – and off we go ...

All nine COPA-DATA runners arrived at the finish line safely – and before the onset of darkness! We congratulate the teams on their excellent performances and look forward to a new COPA-DATA “Pole Position” in 2011.  **II**

## Questions about the day: how was it?

Bernhard Ebert: “Challenging and gripping.”  
Reinhard Mayr: “Optimally paced, many hold-ups and slower than last year. But the main thing is that we arrived at the finish line safely. And it was fun.”  
Christoph Dorigatti: “On the limit.”  
Mirjam Riesemann: “Looking back it was great, but during the run it was a battle between will and body.”  
Inge Steger: “The nicest part of the race for me was the last part on the dirt track, because I was so close to the finish line and my colleagues cheered me on so much that I could have run the same stretch again. Thank you!”  
Stefanie Töglhofer: “A super event – with a super team! It made me sweat but it was a lot of fun.”  
Martin Lutz: “Without training: exhausting!”  
Josef Mitterbauer: “I am happy with my performance. I substituted for somebody at the last minute and only knew for certain a week before the race that I would be running in it. The training was therefore brief.”  
Gerhard Roider: “Real. Hard.”





Immersion into a new world

# Three months at COPA-DATA USA in New Jersey

On March 30, 2010, I was sent to the United States for three months in order to set up COPA-DATA's consulting department at its subsidiary there, which was set up in August 2009 in Princeton.

After arriving in Newark, one of the three airports in New York, I initially had to wait at one of the more than 30 counters to complete the entry formalities – providing fingerprints, a photo and answering questions – in order to be allowed into the USA. I was already very excited about finally getting to know Mr. Rainer Michelis, Managing Director of the COPA-DATA USA Corporation. Mr. Michelis was already waiting for me at 'Arrivals' and we drove to the new office in Princeton together. Princeton is in New Jersey, the Garden State; an approximate one hour drive from New York. After the first formalities, I was given the car keys for the rental car which would be mine for the duration of my stay and I moved into my hotel room, which was nearby.

The COPA-DATA USA Corp. is located in the "Forrestal Village" complex, near Princeton. I immediately experienced my first feeling of culture shock – there is no way to open the windows in the office rooms! Temperature and humidity are controlled solely by the air conditioning, as is the case in all the hotels, too. On the one hand, these air conditioned office rooms are beneficial in a warm, humid climate like New Jersey's. On the other hand, it takes a little getting used to because we central Europeans really like to breathe deeply with the window open. No wonder that it took me a few days to get used to the different climate! After I had orientated myself to my new environment and "settled in" somewhat, I was able to concentrate fully on my new role:

- ▶ Contact partner for technical issues that arise from customer queries
- ▶ Product presentations for new customers
- ▶ Setting up the CRM (Customer Relationship Management) ticket system
- ▶ Optimization of the IT infrastructure (VPN, intranet, server etc.)
- ▶ Advertizing for new employees to join the consulting team at COPA-DATA USA Corp.

In the USA, customer contact is in many ways not comparable to that in Austria or Germany. The preliminary talks are always carried out in a

personal and unforced atmosphere; at 'small talk' level. You could almost get the impression that you were already a good friend of the prospect after the initial chat. The Americans value – and expect – that their business partners are available at any time – and that means around the clock (24/7). Thanks to this American convention, I spent many hours at weekends and on holidays at the service of customers. I even had one customer who called saying "I'm just at the wedding of my ... and ... just occurred to me, could we talk about that sometime?" It was quite normal for a customer to discover a problem that they could not solve internally over the weekend and then for them to expect an answer immediately. It doesn't matter where you are at the time. It is vital to react to customer queries immediately, especially when entering a new market.

Approximately 70 applicants responded to our advert looking for a junior consultant on the website [www.craigslist.com](http://www.craigslist.com), which is very well known and widely used in the USA. We then had to study all applications thoroughly, which was a real challenge for me due to the unformatted and, thus, very difficult to read style of applications from the Americans. Another culture shock for a Central European: in the USA, it is not permitted to attach a passport photo to your application, or to state your date of birth. After thorough inspection, ten of the 70 applications were selected for closer inspection. After a telephone interview, which is common practice in the USA, we shortlisted four applicants for a personal meeting. From the final four, we appointed Louis Paglaiccetti because he had all the prerequisites we were looking for. As a result of pending customer visits, Louis had to start immediately studying zenon intensively. Once he had gained the most essential subject knowledge he was able to take on his first consulting tasks. At the time of writing this article, Louis is now on an intensive training course at the COPA-DATA headquarters in Salzburg. I wish him all the best and every success: "Louis, you will rock it!"

On-site support (and not just remote diagnosis) is essential for any order placed in the United States. One of the first questions to always be asked at presentations was: "Who currently uses our product in the USA?" Because COPA-DATA USA Corp. is still currently in a "startup phase", unfortunately, we could not refer to any global players in the USA who have standardized on zenon. However, this changed abruptly

during the last month of my stay following our visit to one of the largest American technology companies in Dallas, Texas. After two days of meetings we were able to convince the company of the benefits of our product. After a month of concentrated work, we beat four competitors in an official tender bid put out by the technology group and were selected for the job.

An American energy technology company from Wisconsin was also looking for a suitable product. After a three-day product presentation at the offices of COPA-DATA USA, I was given a signal that there was significant interest in introducing the product.

Working together with Rainer Michelis was very productive. Mr. Michelis is an extremely experienced Managing Director, from whom I learnt much. All in all my stay was very successful, which is confirmed by the positive customer feedback I received. I had completed all the jobs that had been tasked to me in this time. I also gained an insight of how difficult it is to gain customers and get the business rolling in a start-up phase, especially when entering a market in a different country for the first time.

I wish Rainer Michelis and COPA-DATA USA Corp. all the best for the future and continued success. "You'll see: we will conquer the United States with zenon!"

During my stay in the USA, despite having little free time, I did get the opportunity to see the 'American way of life' at close range. For a fistful of dollars, I upgraded my rental car for a suitable American truck, in which the largest potholes could be endured. This enabled me to really get a feel for the country, which impressed me greatly, in particular:

- ▶ The unending vastness
- ▶ The roads that continue to the horizon
- ▶ The friendliness and helpfulness of the Americans
- ▶ The Big Apple with its skyscrapers and narrow urban canyons, Central Park and much more
- ▶ The pleasant, but warm and humid, weather at that time of year (March)

My personal summary: this three month stay in the USA expanded both my professional and personal horizon considerably. ☺

**Bernhard Korten**



New York City



The Forrestal Village office complex, near Princeton

FAQs

Where do I find log information about communication problems with my control system? How can I optimize communication in zenon? And how can I evaluate the connection status of an IEC 61850 connection? Answers to these and other questions are provided in the next 10 issues by the Data Acquisition and Processing (DAP) Team from COPA-DATA Consulting. Learn how zenon uses its ‘senses’ – the drivers and protocols – to explore the outside world and how zenon creates important interfaces with other systems. You can find further information and post your own questions on our Online Forum.

[PART 1]

DIAGNOSE VIEWER  
DRIVER ANALYSIS

URSULA PIELA  
MARKUS WINTERSTELLER  
BERNHARD SCHUIKI

I’m experiencing problems in communication with my PLC, is there any log information which could help me find out what is going wrong?

Yes, zenon drivers log error information in common log files for all zenon modules/tasks (provided you haven't changed the default settings). You can find the generated log files in the program data directory, e.g. for zenon version 6.50 SPo they are in %CD.PROGRAMDATA6500%\LOG\ (under Windows Vista C:\ProgramData\COPA-DATA\zenon650\LOG\).

The log files are text files with a specific structure, so we recommend the use of Diagnosis Viewer (the application DiagViewer.exe is installed as one of the standard zenon tools) to view stored files. In Diagnosis Viewer you can also follow currently generated entries live and change the log settings, if needed. And you can also change the directory where log files are stored.

Note: Using default settings, a driver logs only error information but, for most drivers, using Diagnosis Viewer you can extend the level of logging up to the ‘Debug’ and ‘Deep Debug’ level – which logs all significant, “normal” tasks the driver undertakes. Please don't forget to set the logging level back on ‘Error’ logging from a higher level after you have finished testing your project, otherwise the driver will continue to store large amounts of log data on your hard disk even if you have closed the Diagnosis Viewer. Under the default settings for Windows CE in order to save resources even ‘Error’ level logging is turned off.

I've checked the logs in Diagnosis Viewer. There are some error entries but they have been logged at wrong time and without any text explaining the reason for the problem. How can I find out more?

Please take into consideration that in the Diagnosis Viewer all entries show time in Coordinated Universal Time (UTC), not in your local time zone.

After opening a log file, the Diagnosis Viewer does not show all the columns of logged data. But you can easily reveal more using the context menu. Right-click on the column header line and select ‘Add all columns with entry’. Using ‘Error’ logging, text messages describing the problem are in the ‘Error text’ column. When you are using other logging levels, you need to look at the ‘General text’ column.

Many drivers experiencing communication problems will also log error numbers received from the PLC directly in ‘Error text’ and/or in ‘Error code’ and/or ‘Driver error parameter 1/2’. To interpret the meaning of a logged error code you should look at the driver documentation and in the protocol/PLC description.

My project runs on many computers: zenon Server, Standby and a few Clients (CE and PC). How can I configure my zenon network to store all log data on a single PC?

It is possible to create a single common log file for the whole of your zenon network by creating a log server to which all log data will be transferred. The other computers on the network will be logging clients.

You can create the log server using any PC in your TCP/IP network. The ZenSysSrv.exe has to run on this PC but you don't need to start either zenon Editor or Runtime on it (although you can, of course).

To pass log data from one computer to another you have to edit the zenon6.ini file on your logging client PC/CE device:

- ▶ in section [NETZ] set LOG=1 (only if you still haven't updated to zenon 6.50);
- ▶ in section [SYS.REMOTE] you have to (re)write entry:  
LOG\_CONFIG = DEVICE=TCP/IP; HOST=**Remotehost**; PORT=1101;  
TIMEOUT=10; where **Remotehost** = name of the computer (a PC) you want to use as the LOG server.

Using such a configuration, when you start Diagnosis Viewer on the log server you should see all the zenon tasks currently running on the log clients in ‘Settings’ – ‘Client configuration’.



*» Standards often create the basis for creativity. And these new creations in turn need a structured framework and maintenance to grow.  
Thus, standards. «*

# SERIES: EFFICIENT ENGINEERING WITH ZENON

## Part 3: Efficient symbol handling

*In this edition of IU, we will look at the topic of “efficient symbol handling” in more detail. I will show you how, with a few mouse clicks, you can create symbols universally, so that their handling saves a great deal of work. We will look at such key ideas as embedded symbols, linked symbols, symbol in symbol and “linking rule” versus “replace link”.*

**I would like** to begin by repeating the most important messages from the last two articles in this series. Our starting point, as always, is the zenon philosophy: “engineering instead of programming” (Information Unlimited, edition no. 15). The reason for this is easily explained: projects are created more quickly, are easier to roll out and last, but not least, service and maintenance remain simple, even after many years of operation. The advantages are clear. We are totally convinced that our philosophy is the best way to help our customers to be efficient and successful – wherever their products are within the product lifecycle. The practical part of my first article looked at the topic “global/central instead of local” – global settings that apply throughout the project and central settings make it possible for you to change things very quickly. Using them, you are in a position to change the design and behavior of entire projects with just a few mouse clicks and without resorting to a laborious “find and replace”. We will also use this central approach in the course of this article and you will find the approach has been improved upon still further.

The second article of the series looked at “object-orientated parameterization” (Information Unlimited, edition no. 17). Here, we saw how structure variables, arrays and the auxiliary aids of legacy and overwriting can lead to a very flexible and efficient variable set.

Now we come to the topic of this article: symbols. What is a symbol in zenon exactly? A symbol can be expressed in many ways. It can be a graphical element – for example, a right angle or a line – a numerical value or a universal regulator that has been transformed into a symbol with the help of the context menu or the “sort” tool bar. To create a symbol, the most sensible approach is to add several elements to each other. Using this approach, a symbol is a group

of elements combined into a single unit which are then characterized by common properties.

Therefore, a symbol is simply a group of elements that are treated as a single entity when, for example, they are moved or have their size changed. In principle, there are two types of symbols: embedded symbols and linked symbols. Embedded symbols are created directly in the screen. They are one-offs and are not related to the symbol library in any way. Linked symbols are different; they are not saved in the screen but in the symbol library. Only a reference to the symbol is saved in the screen. The advantage of using a linked symbol is that it can be used as often as desired: in one screen, in several screens or even in several projects.

### SYMBOL LIBRARIES

The symbol library is no more than a save location for symbols. Users already familiar with zenon will know that there are two symbol libraries in the product: the global symbol library and the project symbol library.

The global library (Figure 1) provides symbols that can be used across multiple projects. There, the symbols are administered in groups. Each group is effectively a file that is stored in the data directory of the respective zenon Editors as a .SYM file. There are certain limitations implied – each zenon version comes with a new data directory, which means that the symbol files must be copied manually. Furthermore, the symbols are not considered a part of the project and are therefore not included when the project is backed up.

The project symbol library is different: the symbols saved in it are treated as a component of the project and are therefore saved when the project is backed up. However, in return they cannot be used throughout several projects. It is not possible to “group” the symbols saved in



Figure 1: Symbol administration based on groups: the global symbol library in zenon



Figure 2: The symbol shows its source in the symbol library; this can be jumped to directly via the “linked symbol” menu item

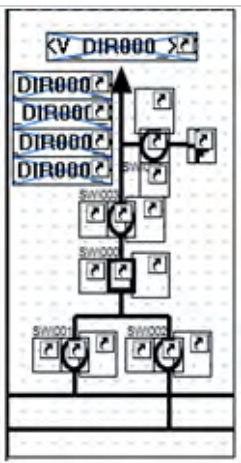


Figure 3: Branch with many linked symbols, which can be changed from a central location

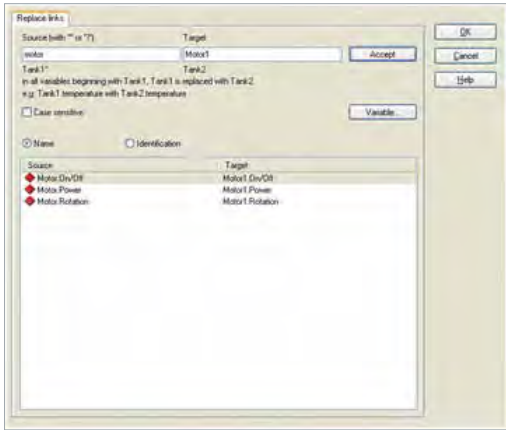


Figure 4: Links for embedded symbols can be replaced via the corresponding context menu

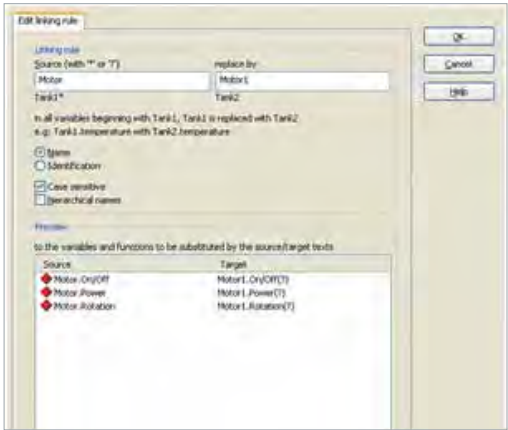


Figure 5: You can define one or more rules for linked symbols via the “Edit linking rule” context menu

the project symbol library in the same way as you are able to with the symbols saved in the global symbol library. However, the project symbol library does allow you to assign the properties “category” and “description” to the symbols saved within it, which can be effectively used to sort the symbols into groups. To do this, simply right click on the category or description columns and select the function “Group according to this column”.

### EFFICIENT HANDLING

At the start of the text, I explained how a symbol was created: simply select one or more screen elements and execute the “create symbol” command. But what if you later want to expand the symbol by an element? This presents no problem for the zenon user. There is a function for precisely this purpose: “Insert into existing embedded symbol”. Using this function, the selected elements are added to the symbol. It is important to note that the arrangement of the elements is retained. If the new elements are outside the previous symbol limits, the symbol is correspondingly larger.

A further very important function in relation to symbol handling is the “symbol/element individual editing mode” function. You use this to switch all embedded symbols in the screen to the individual editing mode. In this mode, you can select each of the elements in the symbol and change the properties of the individual elements: for example, adjusting a color or changing the position of an element in the symbol. The good thing about it: the symbol itself is not

deleted, but remains with all its properties. If you deactivate the individual editing mode, you can edit the symbol as a whole again.

Another tip for editing: it is often the case that several elements are overlayed upon each other, so that only the uppermost is visible for editing. However, using zenon, you do not have to drag the other elements to one side in order to reach obscured elements. Simply click on the uppermost element whilst holding down the ALT key to select the element beneath it. In this way, it is possible to click through all elements that are overlayed upon each other and change their properties, using the property windows or key operation.

### WORKING WITH THE SYMBOL LIBRARY

Assuming we want to use the symbol that was created, not just once but several times, what do we do? First, the symbol must be inserted into one of the two symbol libraries. You do this by using the context menu, right clicking on the symbol you wish to reuse and selecting the option “Insert into symbol library”. By default, the embedded symbol remains on the screen. If it is no longer needed, it can be deleted. The symbol is now in the library and can also be edited there. The symbol is opened in the symbol editor by double clicking on it, and it can be changed or expanded there. The symbol editor offers the same functionally as the screen editor. However, the symbol size can also be changed via the properties. The symbol can be dragged from the library to the screen using a simple ‘drag and

drop’ mechanism so that a copy of that symbol is inserted there as a linked symbol. The advantage of this is that, if the symbol is changed in the library, it is changed at all locations at the same time. Tip: it is possible to open a linked symbol for immediate editing in the symbol editor using the context menu or to jump directly to the symbol in the library via “linked elements” on the menu.

zenon v. 6.50 brought a further improvement to this symbol handling. Since this version it is possible to insert symbols not only into a screen, but also into another symbol.

Let’s use the example of a symbol that displays a pipeline cable. This cable contains five valves. You could now draw each valve separately. However, it would be considerably more efficient to work as follows: you draw the valve once and save it as a valve in the symbol library. Now, draw your pipeline cable and insert it wherever you require the “valve” symbol by dragging and dropping it. If you would like to change the valve – for example, its size, color or behavior – now you only need to do this in one place.

Naturally, you can also create several levels: a symbol can contain a symbol, which in turn can contain another symbol and so on. To move between each level more easily, you can jump one level at a time using the “linked elements” command.

### SYMBOLS AND VARIABLES/FUNCTIONS

Elements can naturally contain variables within the symbol. The symbol can also be linked

to variables, for example, to make the symbol visible/invisible or to rotate it. In addition, operating elements such as a button or a combined element with a linked function can be contained in the symbol. These variables/functions can be changed very easily.

First, for the embedded symbol: by right-clicking on the symbol, the context menu with the “replace links” command opens. This then makes all the variables/functions of the selected symbol available to be changed. With the help of wildcards, you can carry out multiple replacements. Individual changes are also possible. By clicking on OK, these settings are saved to the symbol.

### REPLACING VARIABLES IN LINKED SYMBOLS

It is somewhat different with linked symbols. The symbol isn’t saved in the screen itself; there is only a reference to the symbol. Thus, no variables/functions can be edited directly. However, there are two certain options that still allow for the editing or replacing of variables: either with the help of a linking rule or with the help of automatic naming (hierarchical names).

I will explain these two different methods using examples.

First, we need a variable. A structure variable is best suited for the purposes of our example, e.g. the structure ‘motor’. This contains the structure element ‘power’ and a second element; ‘speed’. From this, we form a structure variable ‘Motor1’. This consists of the variables

Motor1.Power and Motor1.Speed. We now connect these two variables with, for example, a bar graph and a numerical value for the symbol stored in the library. We then create the structure variables Motor2, Motor3 etc. Naturally, this could also be set up as an array.

### 1. Linking rule

If we now insert the symbol into the screen, the “edit linking rule” dialog box (see Figure 5) appears, which is very similar to the “replace link” dialog box (see Figure 4). Using the “edit linking rule” dialog box, you can change one or more linking rules via variable assignment. In our example, we want to replace Motor1 with Motor2. To do this, we enter Motor1\* at source and Motor2 (without an asterisk) at target. Tip: multiple rules are separated from each other with a semi-colon. For example, Source: Motor1\*; Pump1\* Target: Motor2; Pump2

The variables Motor2.Power and Motor2.Speed are then shown in zenon Runtime. The rule can subsequently be edited using the properties window.

### 2. Hierarchical names

The variable name in the symbol consists of the variable name in the element and the symbol name combined. In order for the name compound to work, the variable names must be edited in the element first. To do this, the bar graph and the numerical value must be selected and the variable name must be changed manually by entering the text. In our example, the label Motor1 must be removed: Motor1.



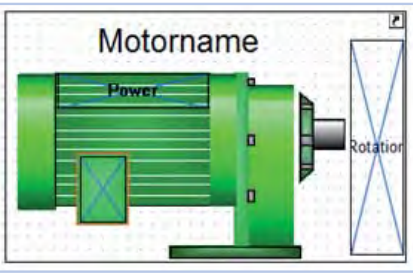


Figure 6: Symbol on the screen, without allocation of variables



Figure 7: The names are automatically linked if “Hierarchical names” has been activated

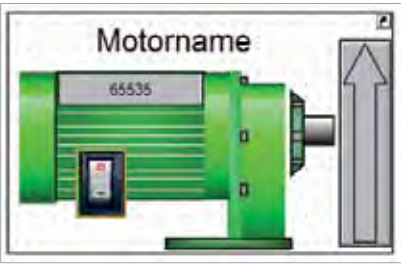


Figure 8: Symbol on the screen, with allocation of variables

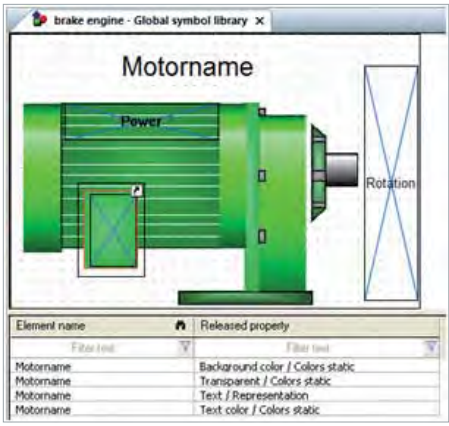


Figure 9: Symbol in the global symbol library with approved (released) properties

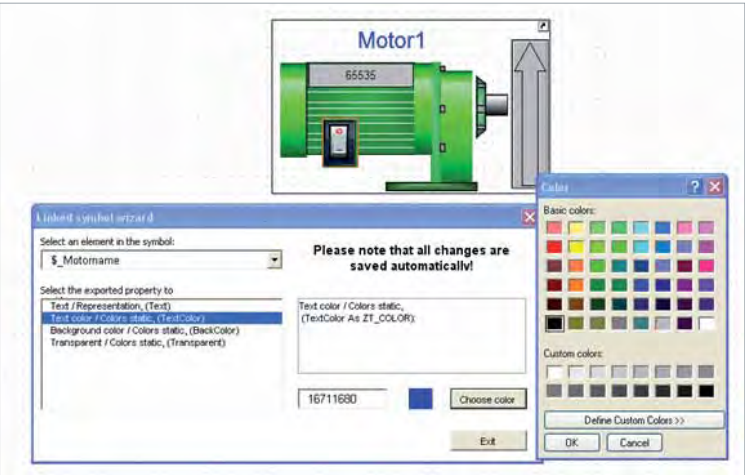


Figure 10: With the help of the assistant, any desired symbol property – for example the color (as shown in the picture) – can be changed

Power becomes .Power and Motor1.Speed becomes .Speed. When inserting the symbol into the screen, the “edit linking rule” dialog box should be ignored. You then activate the “hierarchical names” property in the properties. If you now change the name of the symbol in Motor1, Motor2 etc., the variables are automatically allocated correctly. Symbol name Motor1 + variable name .Power automatically results in: Motor1.Power.

Ultimately, the two variants deliver similar results. However, with the linking rule, you have the advantage that you can replace several variables/functions at once.

### EXPANSIONS ARE PLAYFULLY EASY

The topic really becomes exciting when you need to expand the symbol. Assume that another variable needs to be added in addition to speed and power; let’s say ‘current consumption’. An efficient project planner would relish such a challenge; now he can play all his trump cards. This is how it works:

1. Expand the structure data type by adding the ‘current consumption’ structure element.

2. Activate all new variables with one mouse click (they are inactive as default).
3. Edit the symbol and add a new numerical value to represent the current consumption.
4. Save the symbol.

Finished – that’s it! It doesn’t matter if you display two or 1,000 motors – all motors now have a numerical value representing their current consumption. As a result of the fact that only one linking rule is saved with the symbol, this rule also applies for the new variable, Motor1.CurrentConsumption. Consequently, this variable is also replaced in the Runtime. You can also apply this technique when working with hierarchical names.

### SEVERAL SCREENS

zenon also offers a solution if you do not have space to display all of your motors on a single screen. Obviously, you do not need to draw a separate screen for each motor. A single screen is sufficient. When switching screens, you can again use the “replace link” dialog.

Example: If you have Motor1 and Motor2 displayed on your screen, simply replace Motor1 with Motor3 and Motor2 with Motor4 when switching screens.

### LAST BUT NOT LEAST: APPROVING PROPERTIES

The highlight of zenon’s improved symbol handling is the option of individually adapting the properties of a linked symbol on the screen. This works in a similar way to overwriting the properties of variables that are derived from the data type (see part 2 of this series, Information Unlimited, edition no. 17).

If we continue to work with our example detailed above, imagine we would like to give our motor symbol a caption, so that the user immediately recognizes which motor it is. Therefore, we create a static text and enter ‘Motor’ as the text. All motors on the screen now feature the heading of ‘Motor’. The symbol is linked to the library. Therefore, we cannot change the text individually for each motor symbol. To edit the text of an individual symbol, we must first approve the text property. This is also achieved

by a ‘drag and drop’ mechanism. Simply select the property and drag it to the area below the symbol where all approved properties are administered. If we now drag the symbol into the screen, or double click on a symbol on the screen, an assistant appears that lets us change the property dynamically. Therefore, it is easy to rename the motors as Motor1, Motor2 etc. These approved properties can naturally also be changed by means of the properties window. There, they appear specifically marked as additional symbol properties.

### CONCLUSION

Symbol administration in zenon is a powerful tool, designed to help you create graphical objects efficiently – and then to administer them. The advantages of the mechanisms outlined in this article are particularly evident if something has been changed or needs to be adjusted. Yet again, zenon proves that its philosophy of “engineering instead of programming” pays dividends for the canny developer and enables its users to freely implement their ideas very quickly and easily. Have fun configuring! ☺

Markus Helbok







do it your way





## INFORMATION UNLIMITED – WHAT'S NEXT

IU 20

In the next issue read more about ...

- **Regulations and standards** in the **Pharmaceutical Industry**
- **FAQS** [PART 2]: **performance/simulation**
- **Improve zenon Runtime Performance:** VSTA program code storing
- **.NET Windows Form Controls** in zenon [PART 3]
- Interview with **Mr. Bruno Ganner: mobile shiatsu** at COPA-DATA