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25 YEARS OF COPA-DATA

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IMPRINT

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25 YEARS OF COPA-DATA

Dear readers,

Welcome to the new IU issue and to 25 years of COPA-DATA!

2012 is a very special year for us: we are celebrating our 25 year company anniversary and we are bringing new products and industry solutions to the market with zenon 7. Together with you, we have been attaining top performances in automation for the last 25 years, bringing in new ideas, whilst developing standards and pushing ahead with new developments. As early as 1987, when the company was founded, we aspired to change the everyday routine of automation – using technology that puts you, the user, at the center of attention; creating freedom, offering individuality and optimally supporting you in your tasks. The principle of "setting parameters instead of programming" dates from right back then and still applies today. Entirely in line with the COPA-DATA motto *do it your way*.

A 25th anniversary is also a time when many find it fitting to ask me about the future. What will it hold? Where will COPA-DATA's journey take us? Will we "carve out a career"? What does "carving out a career" actually mean for COPA-DATA?

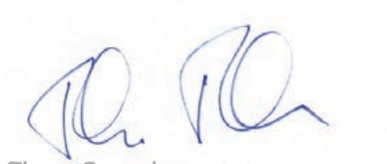
What the future holds… unfortunately I can't answer that one. What is clear, however, is that COPA-DATA has grown-up, but is still full of enthusiasm and hungry for the new. We have incorporated a new concept in our zenon 7 communication: ergonomics. In this magazine issue you will come across several articles where you will find out about how we interpret ergonomics in the industrial environment and how you can profit from this.

It is our goal to help offer the user greater ergonomics and, with that, not only reduce the individual strain of everyday working life, but also greatly increase efficiency in the company. In my view, ergonomics is the topic that will shape the future for many companies.

In the midst of elaborating and implementing our ideas we are also taking the time to celebrate the last exciting 25 years with our customers and partners. Hopefully you will be celebrating our anniversary with us too!

Wishing you enjoyable reading and a pleasant, relaxing summer.

Yours,



Thomas Punzenberger, CEO

CONTRIBUTORS

JÜRGEN RESCH
follows the triumphant rise of renewable energies and describes how wind parks and photovoltaic farms can be efficiently and ergonomically managed with zenon.

EMILIAN AXINIA
not only makes the hearts of beer lovers beat faster with his contribution, but also shows how Batch Control in zenon can optimally stand up to the requirements of a batch based production.

PHILLIP WERR
spoke to Friedrich Schneeberger, TPM coordinator for the Austrian premium fruit juice producer, Pago, regarding challenges and visions for Pago's production processes.

LISETTE LILLO FAGERSTEDT
knows what a functioning network needs in order to be profitable for all involved. Allow yourself to be inspired by partners and experts from the COPA-DATA Partner Community.

SUSANNE ELZE
lets us participate in two successful events from last year and shows us how the subject of usability can be even more exciting when a partner company has the same requirements for designing HMI/SCADA solutions.

MARKUS HELBOK
describes, in the fourth part of his series "Efficient Engineering", how screen types, templates and the new project wizard can make working with zenon even easier.

Craig Adams, Emilian Axinia, Susanne Bernhardt, Gernot Bugram, Susanne Elze, Lisette Lillo Fagerstedt, Susanne Garhammer, Gero Gruber, Florian Harbeck, Robert Harrison, Markus Helbok, Kathleen Kuhn, Reinhard Mayr, Wolfgang Moser, George Paul, Steve Poynter, Stephan Raats, Jürgen Resch, Nicola Kaye Richter, Mirjam Riesemann, Esther Rutter, Bernhard Schuiki, Martin Seitlinger, Inge Steger, Gerhard Sumereder, Phillip Werr, Bernd Wimmer, Isabel Zambrano

THANK YOU

HIGHLIGHTS

MIRJAM RIESEMANN
AND REINHARD MAYR
accompany the new zenon 7 on a trip through the virtual factory and demonstrate how the zenon Product Family acts as a bridge from the sensor through to ERP systems.

INGE STEGER
traces back through the 25 years of COPA-DATA and provides a review of the company and product history. Find out how a visionary's ideas inspired the automation industry.

ROBERT HARRISON
reveals how much manpower and money is behind validation processes in pharmaceutical production and how the new zenon Pharma Edition can support you in taming the "validation monster".

GERO GRUBER
carries you off into the world of usability and shows you how intuitive, simple, modern, and at the same time safe, machine operation with Multitouch at the HMI can be.

THE FUTURE IS ERGONOMICS

If you entered "ergonomics" as a search term into Google in February 2012 you would have been referred to around 23 million results. And even the German search for "Ergonomie" provided over 16 Million hits. Ergonomics seems to be "of the moment". But is there something of the Emperor's new clothes about the trend towards ergonomics? Or is there more to it? Aside from the hype, is there a way of sustainably ensuring the positive development of a company – and ensuring this in advance?

Thinking and acting ergonomically enables existing structures to become more dynamic and optimally synchronized, thereby creating freedom which, in turn, helps companies remain agile – and ultimately become more successful. Ergonomics simplifies complexity, creates an overview and clearly indicates improvement opportunities. Those who have to work and produce on a continuous optimum level, even in difficult times, can not only give themselves more breathing space, they can also lay the fundamentals for a successful future with ergonomically thought-out steps.

"ERGONOMICALLY NETWORKED" ALSO MEANS LOOKING BEYOND STAND-ALONE PROCESSES, COMMUNICATING WITH OTHER AREAS, INTEGRATING AND, IDEALLY, COORDINATING THEM.

ERGONOMICS

Ergonomics is derived from the ancient Greek "ergon" for work and "nomos" for law – and is a branch of science dedicated to exploring the rules of human working behavior and conditions. It is no surprise that the German Institute for Standardization (DIN) already has a standards committee working on ergonomics (www.naerg.din.de). They have adopted or assessed 30 completed standards so far. They range from machine security and keyboards to measurements and freedom of movement.

For us, ergonomics means optimally adapting machinery and working processes to the person. In every Human Machine Interface (HMI) we emphasize the "human". That means the user at the machine, as well as the project engineer and the employer. That is why we have been working together with experts in ergonomics and usability for years. Here, it is not about the developer's office chairs, but about zenon: that is, the user interface, the working steps, the touch gestures, the optimal networking of all automation levels and components. So, for us, ergonomic is: easy, reliable, productive, user-friendly, intuitive, integrated and much more. Ergonomic thinking and software design greatly increases the chances of designing a business future successfully: improved products with higher acceptance – both on the market and by the users. Users are more motivated and productive in their work. Projects are more rapidly and accurately ready for use. In automation, ergonomics is geared to several aspects. Today we are focusing on networking, individualization and simplicity.

HOLISTIC THOUGHTS AND ACTIONS

Anyone who only considers isolated parts of a system can't see the effect the changes have on the whole. Networking enables an overview and offers a continuous, error-free process and data flow without barriers. Open communication ensures that mistakes are avoided. In the control room, for example: well networked equipment only requires one control room in order to visualize and control divided plants. Instead of going from one control room to the next, the user can see the status of all machinery and processes at a glance, can immediately react to alarms, and thereby always keep an eye on the entire system.

"Ergonomically networked" also means looking beyond stand-alone processes, communicating with other areas, integrating and, ideally, coordinating them. In automation this can mean, for example, the active data exchange between the process level and Enterprise Resource Planning (ERP). If the ERP system receives data directly from the process and, in the reverse situation, is able to make a controlled intervention, then production processes become more efficient, more effortless and more accurate.

INDIVIDUAL AND FLEXIBLE

Ergonomics shapes the practices of the users. Tablet PCs and Smartphones have not only spawned new operating habits but have simultaneously established them. Actions like swipe, tap with fingers or zooming into pictures have become commonplace for many people. For us, then, ergonomics also means bringing these practices to the work place. If users are accustomed to multi-touch gestures then it makes sense to implement multi-touch in the HMI as well. It eases users' working and corresponds to their practices. They gain an overview and a new user comfort, becoming more focused and able to react more quickly. Because, instead of having to adapt to machinery guidelines, they use everyday, familiar and already ingrained gestures. The more individual preferences are integrated into the workflow, the more intuitive, productive and reliable working processes become. Individualization is, therefore, an important aspect for ergonomic working conditions.

INDIVIDUALIZATION IS, THEREFORE, AN IMPORTANT ASPECT FOR ERGONOMIC WORKING CONDITIONS. PEOPLE HAVE INDIVIDUAL PREFERENCES WHICH DEVELOP AND CHANGE.

People have individual preferences which develop and change. Encouraging job satisfaction and improving motivation requires adaptation to personal preferences and individual requirements. This is not a problem with flexible user-oriented concepts. For this reason we have, for example, developed zenon Chameleon Technology. It makes it very easy to adapt color palettes (skins) of displays to various conditions, either by a mouse click or automatically. For example, changing colors and contrasts to cope with direct sunlight or switching to night mode.

The same applies to the filtering of lists such as alarms or events. Individually-configurable filters enable an overview in the Runtime. Adapting an individual workstation to suit individual needs ensures users are able to find their way around the system so they can react unerringly and remain calm, even in stressful situations.

SIMPLY USER-FRIENDLY

When zenon is talked about, the principle of "setting parameters instead of programming" is often mentioned. This is a result of ergonomic thinking. Anyone who configures parameters instead of writing scripts or programming endless lines of code is not just faster, they also have less chances to make mistakes. Most of all, they gain an overview. They can work at their own speed and according to their usual methods but, at the same time, it makes it easier for several people to work on one project simultaneously. Teams can split their projects into modules more easily, are not in each others' way and can reach their goals more quickly.

What ergonomics achieves in engineering, and for the Runtime, is further enhanced when it comes to maintenance work. Language change and zenon Chameleon Technology allow, for example, a German maintenance engineer to easily service equipment in China which has been configured in English. And, if a project needs to be further extended or a different maintenance engineer takes over, nobody needs to grapple with unknown code. The necessary parameters need only be reset and the changes are transferred into the running equipment using zenon's "Hot-Reload".

THE FUTURE IS ERGONOMICS

Ergonomics doesn't just increase productivity. It simplifies work, reduces stress and enables not only more rapid and improved decision-making, but also healthier and more committed employees. Ergonomics isn't an end in itself, but a perspective from which all those involved can profit. How would you like to equip your HMIs? What could make your automation really smart? What wishes do you have for the future? We look forward to your ideas and interesting contributions to our discussion about ergonomics. The future starts now... *IU*

COPA-DATA TIMELINE

25 YEARS OF COPA-DATA

1987

HOW A VISIONARY'S IDEA OF AUTOMATION GOT OFF THE GROUND

Ing. Thomas Punzenberger COPA-DATA GmbH is founded by Ing. Punzenberger in Salzburg, Austria

1991

A STAR IS BORN.

zenon 1.0 is released and revolutionizes the world of automation

1993

SET PARAMETERS INSTEAD OF PROGRAMMING IS OUR PRINCIPLE AND OUR FAN BASE IS GROWING.

Two major customers (KRONES AG and VA TECH SAT) are acquired

1996

AUTOMATION WITHOUT LIMITS. ANYTIME. ANYWHERE. WITHOUT BARRIERS.

Internationalization, together with distributors is begun

1999

THE GROUNDWORK HAS BEEN LAID – NOW, LET'S START SOWING THE SEEDS.

The first foreign branch is founded in Germany (Ottobrunn, Munich)

2000

0% MARKET SHARE – SO WHAT? WE LOVE ITALY – BENVENUTI!

COPA-DATA Italy is founded in Appiano, Bolzano

JUNE 1 2012

CELEBRATE WITH US!
Corporate anniversary – 25 Years of COPA-DATA

2012

THE FUTURE IS ERGONOMICS. THE FUTURE STARTS NOW – WITH NEW COMPANIONS AND NEW PRODUCTS – BECAUSE WE WANT TO GROW TOGETHER
The worldwide multiplier network COPA-DATA Partner Community is established
The product range is differentiated into the zenon Product Family: zenon Analyzer, zenon Supervisor, zenon Operator and zenon Logic

2011

ASIA, WEB AND CONSTRUCTION SITE – THREE OF OUR KEY TERMS FOR THE YEAR 2011. – MISSION COMPLETED.
Two new COPA-DATA subsidiaries are founded: COPA-DATA Korea (located in Seoul, South Korea) and COPA-DATA Poland (located in Krakow)
New COPA-DATA website
COPA-DATA headquarters in Salzburg expands

2009

MAKING IT THROUGH THE ECONOMIC CRISIS WITH COMMITMENT, OPTIMISM AND A LITTLE BIT OF BRAVERY. COPA-DATA IS ON COURSE TO EXPAND!
Three new subsidiaries are founded: Central and Eastern Europe/Middle East (located in Salzburg, Austria), Iberia (located in Lisbon, Portugal), and Scandinavia (located in Stockholm, Sweden)
US subsidiary (located in Princeton, New Jersey) is newly founded

2007

SATURATED SCADA MARKET? – WE'LL TAKE ON THE CHALLENGE
A UK subsidiary is founded in Sandbach, Cheshire

2002

THE PERFECT SYMBIOSIS: ZENON IS LOOKING FOR STRATON. ET VOILÀ!
COPA-DATA acquires 55% stake in French start-up COPALP, developer of the soft-PLC straton

25 YEARS OF COPA-DATA

"That Must Work Better…"

How an idea inspired automation

Let's cast our minds back to the early 1980s: a young engineer working for a large automobile manufacturer noticed that instead of doing his job he repeatedly needed to help improve the functionality and operability of company-developed solutions for process control. The software wasn't fit for purpose and his work was left unfinished. Not a satisfactory situation for Engineer Thomas Punzenberger. Why not develop an easily configurable tool, with which users are actually in a position to make changes? Well, why not indeed?

Let's jump to the Spring of 2012. Over 80,000 installations of just such software, by the name of zenon, have been implemented in more than 50 countries worldwide. In the Salzburg Headquarters of the COPA-DATA company the newest version of the platform-independent reporting tool, zenon Analyzer, is just being completed. zenon, which has meanwhile reached version number 7.0 and has developed into a product family, is ported at 64 bit. Around the world, 150 people are developing new features, working in conjunction with research facilities and advising and supporting customers. All because a young engineer wasn't satisfied with an average solution. It's been quite a journey…

TWO ROOMS, ONE KITCHEN, AND ZENON…

Full of ideas about how a really helpful automation system should work, Thomas Punzenberger transformed a one bedroom apartment into his future workshop. Even when the everyday routine of a fledgling business life caught up with him and threatened his enthusiasm with mundane tasks such as earning money by selling PC systems, the strong idea still prevailed. From 1989, supported by his brother, Alexander Punzenberger, and several developers, the new product began to take shape. And after two and a half years, at the end of 1991, the time had come: version 1 was released. But under what name? The words of Gödel, Escher and Bach awakened their interest in a certain zenon of Elea, a Greek philosopher and clever debater, who particularly concentrated on the relationship between space, movement and time. He became the godfather of our HMI/SCADA software, zenon.

Even the bankruptcy of the most important customer could not hinder zenon's success at this time, although the desire to travel in a not-yet-united Europe put it to a tough test. Transporting hardware from Austria to Germany was a real adventure in 1992! Yet the zenon concept brought more engineers onboard, for example, Werner Kropf, who still today, with his company Prozesstechnik Kropf, is a special and treasured fan of zenon.

Even though many functions were missing compared to today, the product philosophy was clear from the start: open architecture, simple interfaces, wide-ranging communication protocols, a high level of ergonomics in engineering and Runtime and easy to handle. The machine builder, KRONES, was so impressed by zenon that it implemented the system for its filling lines. These were already equipped with a 21 inch plasma display, for which a native touch driver for Windows was developed.

OPERATING AT THE CUTTING EDGE

The young company started its ambitious advancement under the name of COPA-DATA, which legend has it, owed its inspiration to a relaxed holiday mood. Not only had a new, interesting customer been found in SAT GmbH, but also an exciting task: to bring zenon up to par for use in the energy industry.

At the same time, a small pool of regular customers was developing, of which BMW quickly became a member. While zenon came to the market in a Windows NT-suitable 32-bit version, COPA-DATA began to make its first tentative steps into the big wide world. Together with carefully chosen distributors, first steps were taken for internationalization.

During a project for SAT in the late 1990s, which had to manage many geographically distributed stations, the COPA-DATA team demonstrated that although complete client/server functionality and redundancy may be complex, they don't have to be complicated. Those features which many users later became familiar with, and which required surprisingly minimal developing effort, were already developed and implemented as essential features back then: the brilliant solution of zenon multi-project administration, the multi-server solution and all the automatic comparison tools, which are still unique features today.

The basic approach of the young team was to think ahead, to integrate functions in good time so that they already exist when customers need them. So Windows CE was already being supported by zenon while it was still not a big topic in Europe. The first handhelds with CE were still being imported under COPA-DATA's own initiative from the USA. By version 5, zenon was the first HMI/SCADA system on the market which could be implemented universally from

Windows CE right through to the control room. This continuity – all in one product, using one Editor – is a signature feature of zenon to this day.

HELLO! CIAO!
SALUT! HOLA! SERVUS...

zenon's success made it clear that COPA-DATA needed structures which could be internationally sustainable. In 1999, the first subsidiary, COPA-DATA Germany, was founded. Just a year later, Italy followed. While the groundwork was already well set up in Germany, in Italy, we kicked off with precisely 0% market share. But our love of language, culture and Italian cuisine contributed enough energy and motivation to dare to take the first step! Time has taught us that some daring adventures can turn into really great success stories.

In 2002 zenon received a completely integrated soft PLC named straton. This – today known as the zenon Logic IEC 61131-3-based programming environment – has a French accent. Its origin stems from the French Alps, where the subsidiary team of COPALP continues to develop it today. This cooperation also had its effects on the next zenon version. zenon 6 scored with integrated data storage between PLC systems and zenon. Furthermore, automatic project generation with wizards and important features such as object-oriented parameterization, intelligent networking and complete Unicode support were added.

In 2006, all external investment in COPA-DATA was bought back. Since then the company has been entirely owned by the Punzenberger family. The opportunity to make decisions and react quickly and independently helps to maintain the zenon Product Family at the forefront of innovative, reliable products. The family philosophy, unaffected by the vagaries of the stock market, and with its firm positioning in many industries, enabled COPA-DATA's continued growth, even during the 2008 and 2009 crisis years. Meanwhile, further subsidiaries in Great Britain, USA, Austria (for Central and Eastern Europe/ Middle East), Portugal, Spain, Sweden, South Korea and Poland, as well as many committed partners, ensure close customer contact around the world.

THE BASIC APPROACH OF THE YOUNG TEAM WAS TO THINK AHEAD, TO INTEGRATE FUNCTIONS IN GOOD TIME SO THAT THEY ALREADY EXIST WHEN CUSTOMERS NEED THEM.

The innovative, ergonomic and user-oriented thinking has remained the same throughout these 25 years. It is not without good reason that a quarter of COPA-DATA's turnover flows back into research and development. No wonder that zenon 7 is the first automation software that allows for multi-touch operation. And that the new zenon Analyzer, as the first reporting system independent of data sources, platforms and applied software, brings an unparalleled overview of equipment and demonstrates the optimization potential in production operations.

Celebrating 25 years of COPA-DATA gave us a great opportunity to take a short look back at our history. But now we look to the future, with many new ideas for you...

THE FUTURE IS ERGONOMICS.
do it your way –
with zenon from COPA-DATA.

Inge Steger

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* The company name COPA-DATA refers to a combination of an abbreviation for "**CO**mputer-aided **P**rocess **A**utomation" and the connotation to any kind of digital data (**DATA**).

The family philosophy, unaffected by the vagaries of the stock market, and with its firm positioning in many industries, enabled COPA-DATA's continued growth, even during the 2008 and 2009 crisis years.

20
20

B 61
A 62
C 60
B 60

Who's who?

DIANA ISABEL ZAMBRANO

Role at COPA-DATA: Process Industry Consultant at COPA-DATA Germany. **Responsibilities:** Technical consulting for customers in the southwest region; consulting and supporting projects from conceptualization to implementation phases; contact person for zenon Analyzer, our dynamic production reporting tool. **Background:** After finishing my studies in Electronical Engineering, I worked for one year in project management. I was responsible for the public tendering process of integrated IT solutions, including analyzing requests for proposals, elaborating on proposals, and contracting with national and international solution providers. During my post-graduate MBA studies, I worked in the engine plant of an automotive company, supporting the accounting management area in the production and maintenance department. For my master thesis, I developed a planning tool to plan manpower resources in the maintenance sector. I worked as an MES/ERP consultant in an IT and automation company after my MBA program. One of the projects in which I was involved there aimed to implement a track-and-trace pilot for a pharmaceutical company. **Hobbies and interests:** Most of my free time is spent on sports like cycling, running and boxing. I like to listen to Latin music, get to know new people, and travel to interesting places and countries. **Me in "three" words:** Hard-working, multicultural, full of life.

isabel.zambrano@copadata.de

FLORIAN HARBECK

Role at COPA-DATA: Sales Engineer at COPA-DATA Germany. **Responsibilities:** Customer care, activities related to pre and post-sales for sales in Germany. **Before COPA-DATA:** I started my career by training in merchant and foreign trade. I specialized in wholesale at Ingram Micro Distribution GmbH, a large German broadline distributor for IT, telecommunications, and consumer electronics. There, I was a Sales Consultant responsible for IBM server software solutions in the SMB sector. In 2009 and 2010, I also studied part-time alongside my job to earn a Bachelor of Trade and Commerce, specializing in marketing and sales. Before my time at COPA-DATA, I worked as a Business Development Manager for sales and training in relation to AppleCare at Apple Central Europe. **Hobbies and interests:** For over ten years I have been a voluntary youth leader with the scouts in Munich and in this role I try to impart some values and experience to children and young people that may be helpful to them in later life. I like to balance this out with sports – namely, mountain biking, for which the area around Munich is excellently suited. **Me in three words:** Communicative, optimistic, flexible.

florian.harbeck@copadata.de

BERNHARD SCHUIKI

Role at COPA-DATA: After five years in technical support at COPA-DATA, I moved to Energy Industry Management in September 2011. **Responsibilities:** My tasks include looking after key account customers in the energy sector, creating requirement specifications, and support of our subsidiaries in pre-sales-activities related to zenon Energy. **Hobbies and interests:** Billiards, sailing, and anything related to flying. **Me in "three" words:** Punctual, reliable, and willing to help.

bernhards@copadata.com

CRAIG ADAMS

Role at COPA-DATA: Area Manager at COPA-DATA UK. **Responsibilities:** COPA-DATA Sales Management, customer service in the UK. **Experience:** I'm a target oriented and solution focused sales professional who is able to balance long-term relationship building alongside short-term action taking in order to deliver results. Technically sound, I clearly strive to fully understand potential clients' goals and problems before delivering commercially and technically viable proposals. **Education:**

- The Open University. MSc, Technology Management. 2011 – 2017
- Bond University MBA certificate, Business Development. 1996 – 2002
- Damelin. Information Systems Degree, Information Systems and Databases. 1993 – 1997
- Damelin. Diploma, Production and Operations Management. 1983 – 1986

also completed: Customer Centric selling diploma, Dale Carnegie diploma, Diploma in photography

Hobbies and interests: Walks, scuba diving, photography, days out and golf. **Me in "three" words**: Ambitious and driven to succeed.

craig.adams@copadata.co.uk

COPA-DATA CONSULTING TEAM RESTRUCTURED

Senior Consultants take on Responsibility for Modules

It is necessary to constantly change in order to meet the requirements of the future. This is a given for our products. However, the internal structures of a company also need to grow and be equipped to meet the requirements of the future if it is to progress and leave old burdens behind. This requires dynamism, flexibility and the will to accept challenges. Our employees are passionate and are eager to collaborate on continuous, future-orientated changes. Our Senior Consultants in the newly-created role of Technical Module Manager are taking on a special responsibility for the future of zenon and COPA-DATA. Excellent expertise, special skills, much experience and a passion for technical excellence are the basis on which Mark Clemens, Markus Wintersteller and Ursula Piela are taking on responsibility for the further development of our products.

Our Product Management Team will thus be expanded with experienced experts and can provide more focus in creating tailor-made solutions for our customers, down to the finest detail. The Module Managers accompany the whole technical lifecycle of their assigned modules from the idea through to the finished product. You can have important details taken into account at any time during development. At the same time, we ensure optimum sustainability of information about the product and have an active flow of information. Internally, the Module Managers are available to provide advice and practical help to all COPA-DATA teams – from quality assurance through training, consulting and support to the Technology Services Team and the Industry Managers for our four key industries. This ensures, over several stages of development, that both excellent technical expertise and customer's requirements are taken into account with regards to the further development of zenon. The customers' point of view is a particularly decisive success factor for the ongoing optimization of our products. In their new roles as Module Managers, our experts can bring external points of view, ideas and requirements directly into product developments, filter and qualify these demands in accordance with their experience and knowledge, and thus contribute to making zenon even more customer-friendly. *Wolfgang Moser*

GERO GRUBER

Role at COPA-DATA: Screen-, & Interaction-design, Technology Services, COPA-DATA Headquarters. **Responsibilities:** Design und usability of zenon and zenon projects, pre-sales support within Technology Services. **Before COPA-DATA:** After many years of working in photography, graphics and web, I decided to advance myself further in the media technology field. I pursued a degree in Media Technology and Design, and after a longer period in New Zealand, this lead to a position in the electronic and event technology field. In this position, I was responsible for the project management as well as, amongst other things, the automation of seminar rooms. The technical and interactive aspects of projects requiring specification, adjustment and implementation tailored to customer needs were particularly interesting and exciting parts of this work. This later inspired me to begin a master's degree in Interactive Media where I increased my knowledge in usability, ergonomics and smart homes. **Hobbies and interests:** My hobbies are mostly of a sporty nature, such as biking, diving and climbing. In addition, I'm very interested in photography. **My Motto:** There are no problems, just challenges!

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OUR SENIOR CONSULTANTS

AND THE ZENON «MODULES» FOR WHICH THEY ARE RESPONSIBLE

MARK CLEMENS	MARKUS WINTERSTELLER	URSULA PIELA
Batch Control	zenon Drivers	IEC 60870
Recipe Group Manager (RGM)	Process Gateway	IEC 61850
DNP3	zenon Logic	Command Processing
zenon Security		Automatic Line Coloring
WPF		

The zenon Product Family

2012
a year full of trailblazing events:
COPA-DATA is 25 years old and the new zenon version 7
will revolutionize the automation market.

We can look back on a success story that lights up our eyes. However, if you already know us a little, you will know that we prefer to look to the future and not the past. We are happily on the pulse of the moment, at the forefront of trends and understand what customers need to optimize their automation in the future.

After 25 years of success in the field of HMI and SCADA, characterized by reliable customer-orientation, innovative solutions and continuous further development, it was time to scrutinize and check our product portfolio. We asked ourselves how we could better address the individual target groups in the automation field and beyond. The focus was on the user requirements from the different levels of the automation hierarchy.

Together with the dynamic production reporting software, zenon Analyzer, introduced to the market in 2011, the independent SCADA system zenon Supervisor, the embedded HMI system zenon Operator and the integrated PLC system zenon Logic, form the zenon Product Family.

zenon 7 not only has around 230 new and expanded functions on board, it also heralds zenon's introduction as a new, integrated product family that offers you a consistent solution from the sensor through to ERP, adapted for the respective automation level. Our product portfolio thus includes a new strategic direction, provides a clearer overview for users and offers everybody precisely the package they need, regardless of what it is used for. Customers can freely select the functions necessary for their projects and use them, optimized for their respective embedded or SCADA platform.

Top tip: zenon Operator and zenon Supervisor share the same technology. You can upgrade zenon Operator to zenon Supervisor easily and seamlessly continue to use projects that have already been created. It is flexible, powerful, and naturally platform-independent.

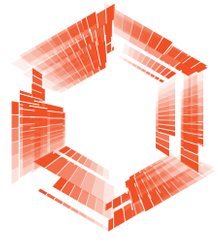
When expanding zenon to the zenon Product Family, we have simply repositioned the product set to address specific sets of user needs without affecting zenon's proven advantages in any way. With intuitive operating concepts, an ability to be integrated into existing structures easily and a high degree of equipment safety, zenon helps you to reduce complexity in a world of pressure, allowing you to increase efficiency. The system is unchanged in that it is based on one platform, provides a central engineering tool and can be integrated into any existing infrastructure thanks to more than 300 native communication protocols and open interfaces.

ACCOMPANY ZENON ON A JOURNEY THROUGH A VIRTUAL FACTORY

ZENON LOGIC
INTEGRATED PLC SYSTEM

We start our journey at the lowest level of automation: the field level. zenon Logic is a soft-PLC that is fully integrated into the visualization package and IEC 61131-3 compatible. Common data point administration between the PLC and the visualization, five compatible IEC programming languages and direct communication via Profinet are just some of the highlights that appeal to zenon Logic users. The nice thing about it: our customers can even benefit at field level from the wide-ranging possibilities for use. It does not matter if zenon Logic carries out visualization or is used as a "genuine" soft-PLC on open hardware platforms such as those from Siemens, Mitsubishi, Brodersen or Wago – users always work with one tool and a common basis of data for control and visualization.

ZENON OPERATOR
EMBEDDED HMI SYSTEM



What would the best control logic be without corresponding visualization of the data? If we leave the level of bus systems, bits and bytes, every modern automation system needs a visualization system. Granted, the requirements can be very different. They range from pure measuring point visualization with alarm administration through to central, redundant data logging with evaluation. However, we will stay with the machine first. zenon Operator provides everything that the user needs from the machine – even using different generations of machines. The most up-to-date operator interfaces with multi-touch, for example, attractive and intuitive designs due to integrated DirectX11 support, reliable data logging, alarm management or even a seamless operating diary are some of the possibilities

that that are available to the application developer using zenon. As you certainly know, these systems were usually tied to Windows CE platforms in the past. However, there is a clear trend towards "open" embedded platforms. Regardless of the Windows version, zenon Operator caters to the trend of embedded platforms and provides the user with the freedom to design control terminals according to their wishes.

ZENON SUPERVISOR

INDEPENDENT SCADA SYSTEM

Let's go a step further up in the automation hierarchy of our virtual factory. The whole production process usually has different automation systems – from production, through the infrastructure, to logistics or warehouse administration. Purely operational systems can very quickly become a central SCADA system with new requirements. Not a problem for zenon: zenon Supervisor provides optimum support and ensures reliable configuration, traceability of the process and data, and it works perfectly under all conditions. Note: it still uses the same development tool as zenon Operator and zenon Logic. You can integrate all previous projects from the control terminals by dragging and dropping into a central project at the click of a mouse. You can create central data archiving or central alarm management in a few minutes.

zenon Supervisor offers you even more advantages: with pre-defined templates and simple configuration, you can safeguard the productivity of your equipment and then think about other expansions worth consideration. You may ask yourself: How can I best coordinate my maintenance tasks and maintenance staff? How can I increase the efficiency of my equipment? You will probably welcome reliable reporting and would like to design your equipment as intelligently as possible. But how?

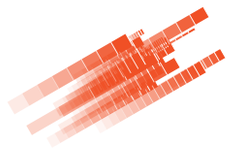
zenon Supervisor provides a suitable answer to all these questions. The integrated Message Control supplies your staff with all necessary information via SMS or email; the Report Viewer supports documentation with production-related data displayed with a clear overview, which can be exported or archived in PDF format and can thus aid the evaluation of batches, for example.

Do you face any other challenges from day to day? For example, how you handle fail-safe operation, or the availability of your systems? These concerns are addressed for you by zenon redundancy. By setting a few parameters, you can create a fully redundant system, ensure that no data gets lost and that your control terminals can be used reliably 24 hours a day, 7 days a week. Naturally, there is simple web integration and access via smartphone using the zenon app. In doing so, all data is transferred and stored in encrypted form, so that unauthorized access of critical production data is not possible.

We haven't reached the end of our journey yet ...

ZENON ANALYZER

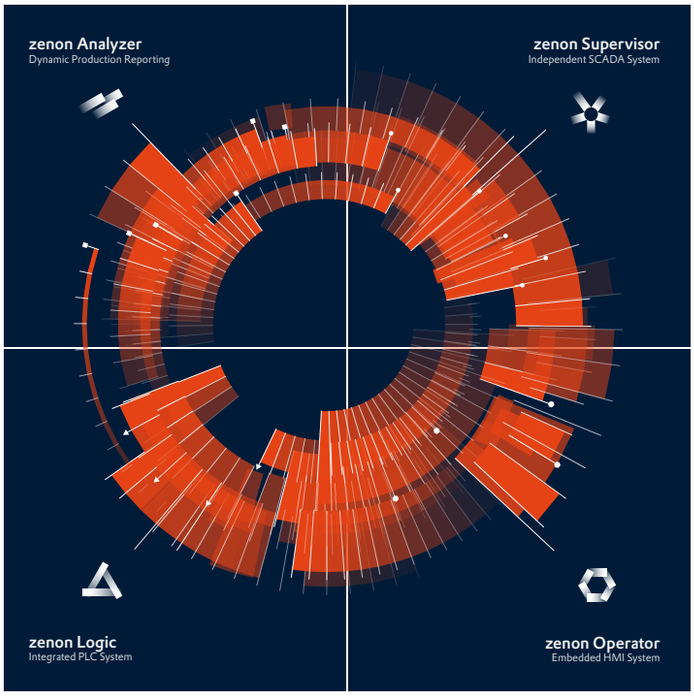
DYNAMIC PRODUCTION REPORTING

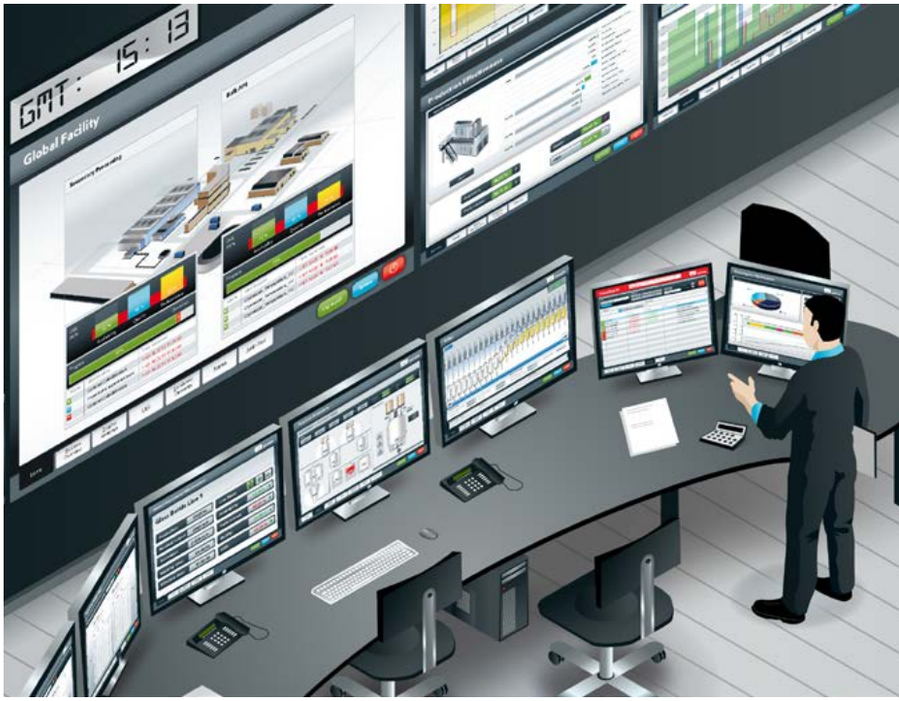


In these times of economic fluctuations and recession, optimization of production equipment is of the highest priority. And, of course, you are not only interested in particular sections of your equipment, but in the whole – regardless of which system and which hardware is being used. Why should you have to wait to evaluate your production data? Precise information and knowledge of how your equipment can really perform allows you to act at the right point in time. Do you want data from the whole system in real time? Ideally in a visually-appealing report that shows you the most important data clearly so it can form the basis for further management decisions? Then leave this task to the zenon Analyzer with peace of mind.

zenon Analyzer can be implemented particularly easily and connected to different sources of data, such as to zenon HMI/SCADA systems or direct to PLCs. It can be integrated into any existing automation and IT environment – with no changes or only minimal necessary changes to the existing structure.

Reports can be tailored individually to the requirements of each employee in a production team. For example, operational staff and maintenance teams receive relevant operational and maintenance data, and management receives tailor-made reports with current key figures and much more. You can set filters as desired and thus receive different types of information. For example, reports on efficiency (OEE or other KPIs), on consumption (consumption history, cost distribution and





correlation with production, etc.) or on alarms or equipment failures. zenon Analyzer includes ready-made templates that can be used straight away. Naturally, you can also create individual reports at any time, with content that you have defined yourself and your own graphics, such as your own CI requirements.

But what use is an attractive report if the data is not available in the necessary granularity or, most of all, not in the correct time window? zenon Analyzer is the only tool on the market to offer data access to automation systems in real time. zenon Analyzer works with both centralized databases such as Microsoft SQL as well as on a decentralized basis, working directly with data obtained from the equipment and thus collects online and offline data. In the latter case, no additional database is required; both the data structure and interfaces are documented comprehensively.

SOMETHING FOR EVERYBODY: THE ZENON PRODUCT FAMILY

The zenon Product Family offers a suitable solution for every user, every application, every structure and every hardware environment. In doing so, all information remains available and transparent in the overall structure. Any work carried out at any level can be reused at any time or integrated into further tasks. Risk and work are minimized and regardless of whether a bottom-up or top-down approach is used, the zenon Product Family can be integrated throughout and will support you in implementing an ergonomic working environment for your operations.

Mirjam Riesemann, Reinhard Mayr

Further information at
www.copadata.com/zenon7

STRATON PLAY WELL COMPETITION

zenon Science Package went to Italy

This is what a winner looks like! Christian Paller (right) from Interel GmbH receiving the automation toolset prize from COPA-DATA. It was presented by Klaus Rebecchi (left), Managing Director of COPA-DATA Italy.

As part of the "straton play well" competition, we offered a zenon Science Package, including a LEGO MINDSTORMS NXT 2.0 kit, as a prize in the last Information Unlimited Magazine (issue no. 21.). The winner was chosen from all the entries at the start of February. The coveted prize went to Interel GmbH in Italy.

The high number of entries received from around the world proves that playful learning is not just popular with children and that the urge to build things is a basic instinct throughout the world. We would like to thank all participants for playing and congratulate Mr. Christian Paller from Interel GmbH (www.interel.it) on his win!

ZENON SCIENCE PACKAGE: YOUR AUTOMATION TOOLSET FOR LEGO

The zenon Science Package for LEGO includes, with straton, both a Soft-PLC as well as a complete HMI/SCADA tool – zenon. Instead of purchasing a separate PLC, sensors and actuators, you receive a complete automation laboratory with the LEGO MINDSTORMS NXT 2.0. It is provided as a package, is cost-effective and can be put into use immediately. In this way, you and your team can prepare for future requirements optimally and in a playful manner.

SUPPORT FOR THE MOST IMPORTANT IEC PROGRAMMING LANGUAGES

The soft-PLC straton supports all five IEC 61131-3 programming languages and straton Workbench allows programming in any desired programming language thanks to an integrated conversion program. As soon as your LEGO MINDSTORMS NXT 2.0 is programmed, you can get started immediately and log data from your LEGO MINDSTORMS NXT 2.0. straton communicates perfectly with our HMI/SCADA software zenon, allowing visual feedback and many possibilities for analysis. In addition, you can check the logic that you have created in advance using straton and zenon.

JUST GET STARTED

It is easy to start using the zenon Science Package for LEGO MINDSTORMS NXT 2.0. Everything you need, with the exception of the LEGO MINDSTORMS kit, is available on a DVD that also includes the COPA-DATA firmware for LEGO MINDSTORMS. After just a few steps to install it, the learning, playing and working processes can begin. You can get the free zenon Science Package DVD for your LEGO MINDSTORMS 2.0 kit from your nearest COPA-DATA branch. *iu*

"Automation with zenon Science Package and LEGO MINDSTORMS NXT 2.0, without limits and so easy a child could do it – many thanks COPA-DATA!"

Christian Paller, Interel GmbH

Further information at
www.copadata.com/LEGO

ZENON ANALYZER AT PAGO

High Performance Production for Premium Fruit Juice

"Only the best is good enough" is the quality claim from the premium fruit juice manufacturer Pago Austria. This claim applies to all areas of the company and relates to both Pago fruit juices and the processes and technology used in manufacturing. Friedrich Schneeberger, TPM Coordinator at Pago, is convinced that only the best technology is sufficient to obtain the best results. He uses zenon.

FROM LOCAL HERO TO GLOBAL PLAYER

The Austrian premium fruit juice manufacturer Pago has been a member of the Heineken Group since 2003. Founded in 1888 in Klagenfurt, Pago can look back over a long and successful company history. Continuous product and production innovation have been central to the corporate philosophy from the outset. Pago was recognized as the premium fruit juice in Austria as early as the 1950s and the charming green bottle with the characteristic yellow cap started its worldwide success story over 20 years ago. Today, customers in more than 35 countries enjoy Pago fruit juices.

Pago's quality claim – only the best is good enough – is practiced in all areas of the company. From the selection of raw materials through to production and filling, excellent quality and excellent performance are the daily benchmarks for all employees at Pago.

We spoke with Friedrich Schneeberger, TPM Coordinator at Pago, who is responsible for the continuous improvement of production at the company. Mr. Schneeberger has worked at Pago for more than 12 years and is, as a certified TPM Auditor within the Heineken Group, a real expert in achieving top performance in the field of drinks filling. He gave us some interesting insights into the challenges and vision in production at Pago, which we would like to share with you.

HIGH PERFORMANCE FILLING

More than 200 million bottles are filled at Pago each year. This is carried out by two filling facilities for glass containers and a brand-new Krones NitroHotfill PET production line. With this new PET production line, Pago is employing state-of-the-art technology and intends to strengthen its claim to be the innovation leader.

The selection of the software solutions for line management and production reporting, zenon Supervisor and zenon Analyzer, fits in perfectly with this strategy. This is because, in terms of process optimization in automated production, zenon has been setting the trends in the market for more than two decades. Pago has already optimized the equipment in its factories to a very high standard. However, the better the equipment is running, the greater the motivation to identify further potential for optimization.

"We count on zenon to get the best out of our equipment and thereby aim to become a pioneer of innovative technologies within the Heineken Group."

Friedrich Schneeberger, TPM Koordinator bei PAGO Fruchtsäfte Ges.m.b.H.

CONTINUOUS FLOW OF INFORMATION FROM OPERATOR THROUGH TO MANAGER

With zenon Analyzer, Pago is using fully automated data logging and sophisticated reporting in the areas of consumption management, OEE key figures and alarm evaluation. This is, therefore, an ideal supplement to the line management applications implemented with zenon Supervisor.

At Pago, the aim is to give production employees the tools they need to free them from the routine tasks that can be automated as far as possible. zenon Analyzer is an important step in this direction. Thousands of data items are logged daily, summarized, calculated and presented in zenon Analyzer reports. The OEE reports are of particular note here: their calculation by COPA-DATA was adapted to the calculation principles of the Heineken model. This allows for their smooth integration into the Heineken Group's standard reporting.

With the zenon Supervisor line management application and the zenon Analyzer reports, Pago creates a consistent information system that will, in the future, contribute to the optimization of equipment from the machine operator level through to management.

A FRUIT JUICE MANUFACTURER AS A "GREEN BREWER"?

Even though Pago is not brewed, the Heineken "Green Brewer" program is applied in order to produce with the fewest resources possible. The knowledge that what is good for the environment also contributes to economic objectives underpins the adoption of this program.

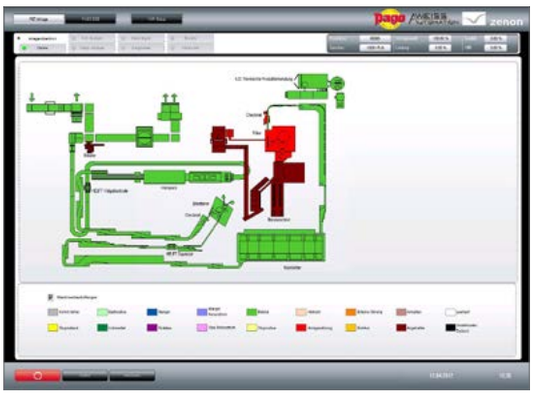
In the consumption reports generated by zenon Analyzer, all consumption data is evaluated in relation to the production amounts, in order to identify even the smallest potential for improvement when consuming electricity, gas, water or pressurized air. The objectives of the "Green Brewer" program are ambitious. However, Pago is already well equipped to consistently pursue this route towards environmentally-friendly production.

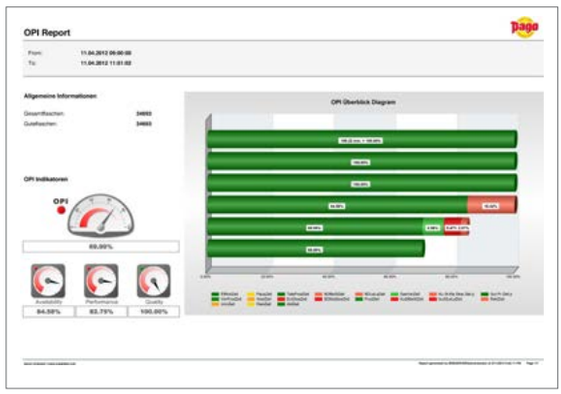
MASTERING COMPLEXITY

Pago is known throughout the world for its variety of innovative new fruit juices. The range now includes over 40 varieties. In conjunction with the different packaging variants, this means 340 variations are filled – a real challenge for the production team. zenon makes a significant contribution to mastering this complexity while retaining an overview of the numerous batches and production variants with its flexibility and the various options for use. Both the ability to communicate with a heterogeneous set of equipment and the mastering of the Weihenstephan standards, which are common in the drinks industry, are decisive factors. Another indication of our particular expertise in the Food & Beverage industry for Pago was the fact that COPA-DATA was, as a member of the working group for the Weihenstephan standards, actively involved in the creation of them. We are involved in strong partnerships in order to provide optimal support to customers. Weiss Automation GmbH from Graz (Austria) is responsible for the automation system integration at Pago. The internationally-active system integrator is a member of the COPA-DATA Partner Community and has many years of experience and great expertise. COPA-DATA and Weiss Automation have been working together for many years and can be proud of excellent teamwork when creating the zenon applications at Pago. Mr. Schneeberger is convinced that they are prepared for new challenges with this combination of leading technology, industry expertise and strong partnerships.

PAGO AND COPA-DATA

A spirit of innovation and commitment to premium quality are common to Pago and COPA-DATA. The drive to be a pioneer of new technologies is an important motivating factor in the constant improvement of daily work. We are happy to be able to contribute to making Pago's corporate vision – to be "the global market leader in the premium fruit juice segment" – become reality. ***Phillip Werr***





Source: Deutscher Brauer-Bund e.V.

COST-EFFECTIVE FLEXIBILITY
FOR FOOD & BEVERAGE PRODUCTION

The new Batch Control in zenon

What is batch manufacturing? Those of you active within the Food and Beverage industry will find the answer very simple, because batch manufacturing is your bread and butter: it is how most products are created – be they chocolate, cheese, beer or juice.

However, if you are not that familiar with batch manufacturing, let's take a brief look into what this kind of production involves. Similarly to cooking a meal at home, a finite quantity of a final product is produced once. So, what do we need in order to end up with a delicious meal, a tasty chocolate bar or a distinctive soft drink? We need one or several pieces of equipment, specific quantities of ingredients and a recipe – meaning a well-defined description of how to combine and process the ingredients step-by-step. At an industrial scale, the requirements for controlling the process are very strict and therefore the automation, in general, and the industrial software, in particular, play an essential role. To understand what we mean by this, we will take a closer look at an example.

HOW BEER IS PRODUCED...

The main ingredients for beer are: water, malt (malted grains), hops and yeast. The malt is stored in a silo and from there it is crushed in a grinder and mixed with hot water in a unit of equipment called a mash kettle. The sugar-rich liquid which results from this process is then transferred to the next unit, the lauter tun. It is supplemented with additional water, with the goal of separating it from the malt´s grains. All the resulting liquid, named wort – which is in fact, our production batch – arrives in a vessel called a wort kettle. The next process consists mainly of boiling the wort. At this point a new ingredient, the hop, is added, so that the wort gains beer-characteristic taste and aroma. The journey of our batch continues to the "whirlpool" where the wort is clarified. After cooling, the wort is ready for fermentation – following the addition of yeast. The result of this lengthy process, which takes place in the fermentation tank, can already be called "beer" and will be transferred to storage tanks. Before being packed in kegs or bottles, the beer is filtered. When we think about these production steps in such detail, it is very likely that some of our readers – the true beer fans – can already smell and taste the beer. But there's much more to the process, so read on...

... WITH ZENON'S BATCH CONTROL TECHNOLOGY

Our brief description of the beer brewing process, taken from the "Deutscher Brauer-Bund" (German Brewing Federation; www.brauer-bund.de), illustrates the steps of a batch recipe taking place in different units of equipment. In each step, there are various important parameters which influence the final result, from the quality and quantity of the ingredients used, to the processing temperature and process duration.

Different recipe parameters enable different types of beer to be produced using the same equipment. If the same kind of beer has to be produced again and again, it is expected that each batch of beer will be identical. This is not only important because of strict legal industry-specific regulations, but also because true beer fans would notice any change in taste or smell to their favorite beer brand.

COST-EFFECTIVE FLEXIBILITY THANKS TO SEPARATION OF EQUIPMENT AND PROCEDURAL CONTROL

What does the new Batch Control in zenon bring to these industry and customer requirements? zenon follows the ISA-88 principle of separating the equipment and the procedural control. In other words, every equipment module – for example, the mash kettle, lauter tun, wort kettle etc. – have their own defined capabilities implemented in the first layer of automation (basic control). This might include transfer, mixing, heating, adding ingredients and so forth. These specific capabilities are used when the brewing procedure is exactly described within a recipe created in zenon as recipe phases (or operations).

This approach brings a high degree of cost-effective flexibility to production operations. Production teams can use the same production infrastructure for producing different sorts of beer without the need to change anything in the automation environment. How is this possible?

BENEFIT FROM TEMPLATES FOR REPEATABLE BEER BATCHES

Working with zenon, every member of the production team usually assumes a certain role, each with his or her specific competence and responsibilities. During system integration, the automation specialists establish the connection with the equipment, benefiting from zenon's exceptional connectivity. For the brewmaster, zenon provides the necessary software tools for creating master recipes which serve as templates for repeatable beer batches. The brewmaster creates a master recipe for every beer type. The brewmaster doesn´t need any specific automation knowledge to do this. The production steps are drawn graphically and the critical parameters are defined in order to be strictly followed later on. The production planning consists of creating the control recipes, based on the pre-defined master recipes. When the operator starts a batch in zenon, he uniquely executes a control recipe which already contains all the process parameters.

The Batch Control technology is fully integrated in zenon. This means that the brewing teams profit from all the components of a zenon-based solution, during or after the beer brewing process, such as:

- Process visualization
- Alarm & event management
- Trend curves analysis
- Batch reporting
- Communication with other production systems
- and much more

For the brewing teams, all of these functionalities will provide more accurate and easy control, cost-effective flexibility, reduced time-to-market and support for continuous and highly dynamic process optimization. System Integrators, on the other hand, benefit most from the following Batch Control functions within zenon:

- Engineering efficiency based on compliance with ISA-88 standards
- Open integration with new/existing infrastructure
- System reliability supported due to Recipe Execution Engine and exception handling
- Simple extensibility by using zenon´s network technology
- "Parameterizing instead of programming" for easy integration, commissioning and maintenance

Batch Control in zenon extends zenon's philosophy at the core of Food and Beverage manufacturing. Be a part of our success and our continuous open innovation process by sharing your feedback on product development and batch manufacturing using zenon's Batch Control with us! I am looking forward to hearing from you – e-mail me at *EmilianA@copadata.com*. ***Emilian Axinia***

"Batch Control in zenon extends zenon's philosophy at the core of Food and Beverage manufacturing"

Emilian Axinia, Industry Manager Food & Beverage

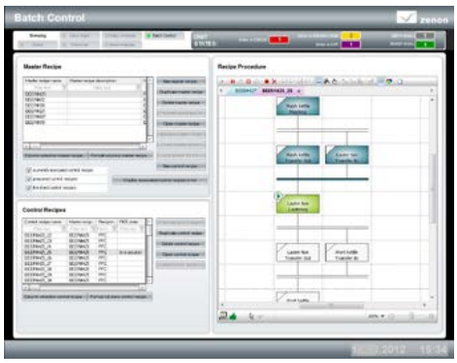
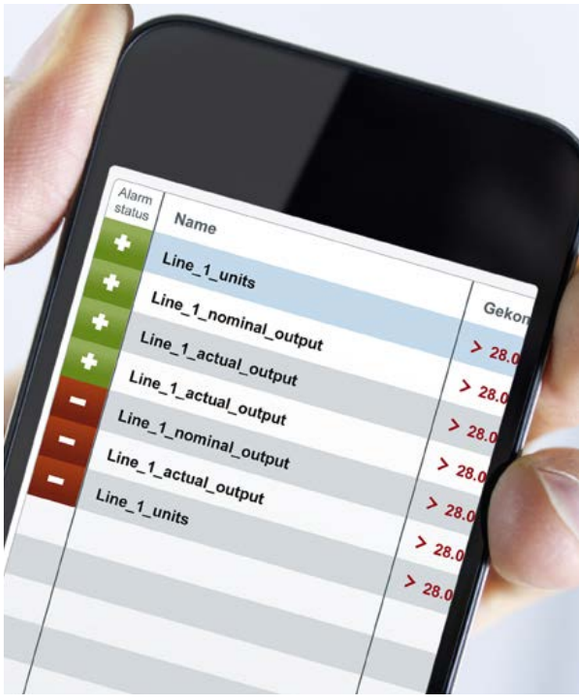


Figure 1: Batch recipes management in zenon.

Figure 2: Beer brewing process visualization and control in zenon.

AUTOMOTIVE PRODUCTION UNDER CONTROL

Stay in the Driving Seat with the zenon Smartphone App and Message Control



In production processes with a lengthy cycle time and continuous manufacturing, equipment downtime or malfunction could lead to reduced output or impaired quality. Effective monitoring requires any problems to be reported immediately to production supervisors via mobile phone.

Thanks to its integrated communication protocols and its powerful network functions, zenon offers access to current equipment status, key production figures, or alarm and status messages via its clients or web clients. In order to ensure that things run smoothly, it is necessary to be able to react quickly in the event of an alarm or unscheduled production downtime. Mobile access to alarm messages and reports is therefore essential.

MONITOR EQUIPMENT WITH A SMARTPHONE

The new zenon smartphone app allows operators or service technicians to have an overview of current production figures at any time. The user logs in to the zenon production server with their password and then selects the values to be displayed. Using the zenon equipment model, they can then navigate through the list of variables. To increase legibility on smartphone screens, which are generally small, COPA-DATA decided not to use a full graphical display. The zenon smartphone app displays the selected key figures or states in a list form on the display. It also offers the option to display any alarms that may be pending. The service technician gets mobile access to current weak points in the equipment and is able to react quickly and flexibly.

MESSAGE CONTROL – AN EASY-TO-USE TOOL FOR ALARM MANAGEMENT

Maintenance technicians can also use the "Message Control" module in zenon concurrently, or as an alternative to the zenon smartphone app. This module makes it possible to send SMS messages, emails or voice messages. The messages sent using Message Control can contain a predefined text, as well as dynamic figures. An example of this would be: "Alarm! The servo drive ABC has a fault! Error code 1234." In this message text, the name of the servo drive ("ABC") and the current error code ("1234") can be given along with the current data from production. Users thus receive very detailed and easy-to-understand messages and benefit directly from a high degree of information. If an employee also wants to receive the alarms in the form of voice messages, they can decide to use either pre-defined audio files or to have the texts read out by the zenon Text-to-Speech interface. If an operator uses messaging by email, they can also receive an attachment in addition to the actual message text. It is thus possible to provide the recipient with further information, such as a current screenshot of an equipment screen. These attachments support the service technician when analyzing the cause of the alarm and serve as a basis for making decisions in relation to further action. If, for example, maintenance or revision work is being carried out, the production employee can manually switch off the automatic sending of messages. Messages that are related to alarm classes, alarm groups, alarm areas or equipment from the zenon equipment model can thus be deactivated.

The confirmation codes in Message Control provide additional safety: if the designated recipient doesn't confirm the message that zenon has sent or even rejects it, the software forwards it to another employee, or employees, from the distribution list (escalation management).

In the new version, zenon 7, COPA-DATA has expanded the functionality of this module and further increased the user-friendliness. The new capabilities include, for example, integration into the zenon user administration and the zenon network, a free choice in use of email services and online access to all of the module's functions.

ZENON CREATES MAXIMUM MOBILITY AND FLEXIBILITY

Both the zenon smartphone app and automatic messaging with the Message Control module make it possible for technicians to work on the move and flexibly. In the event of production problems or downtime, they can be informed directly and can react immediately. You remain informed – regardless of how far you are from your equipment.

Bernd Wimmer

Multi-touch. From the Smartphone to HMI

In addition to the general use of multi-touch technologies on smartphones and tablets, a look at Windows 8 (Desktop and Embedded) shows that multi-touch is also increasingly becoming a focus for desktop applications. Multitouch is excellently suited to the industrial environment, as has been shown in our projects. In the last edition of the IU Magazine, we looked at why and how we developed zenon multi-touch. In this edition, we show you what it means for you in practice.

It is precisely in the industrial environment, where dirt and heat affects input devices such as keyboards and mouses, that the use of a touch screen is appropriate. The advantage here is not just that there are no peripherals such as the mouse, or the unification of display and touch input on the same device, but the great flexibility that a multi-touch interface offers the user.

FROM HMI TO THE NATURAL USER INTERFACE

Multi-touch delivers a more intuitive, more natural interaction with machine interfaces, but also demands the rethinking of traditional concepts relating to the design of the user-interface for HMIs. Only a holistic consideration of hardware and software paired with the productive application of the new possibilities that multi-touch enables bring a decisive advantage: enabling evolution from HMI to the NUI (natural user interface).

A mouse-based application can already be made to work with single-touch by simply enlarging controls. In contrast, a multi-touch application requires adaptation of the behavior of the application itself and is characterized by a correspondingly different look and feel. This needs, for example, a certain size of elements in order to also allow operation with gloves and – because of the tactile operation, to directly "touch" a screen element – a certain natural behavior, such a slight sluggishness when a window is moved.

Due to the recognition of complete gestures instead of individual "clicks", there are completely new possibilities for the operation of elements. This is evident from the first time the user makes contact with the HMI – the user authentication. Direct input of text on a touch screen, which can be difficult and prone to errors, can be replaced by an easy-to-learn gesture, when authenticating a user for example, and this can be set up individually for each user.

The natural interaction also requires the user interfaces to become dynamic. If these have previously been fixed and unchangeable by the integrator, the operator now has the option to individually compile the user interface with their personal preferences and optimized for the current task to be carried out. This is not limited to one screen; several workspaces for different tasks can be arranged on several pages. Naturally there is also a mix of fixed elements here, such as OEE key figures, the approval area for two-handed operation and the individually-configurable working area. This leads to a better overview, because the screen is not necessarily overloaded with elements that are not relevant to the current task.

EVERYTHING IN VIEW: MULTI-TOUCH PROVIDES BETTER OVERVIEW

You can therefore do without the nested project structures with numerous submenus, which often characterize classic projects, where users can often quickly become disorientated. It is also very easy for users to quickly view another part of the machine line, for example, to get an overview of whether a problem in the line could also affect their machine. The machine is operated directly at the element and available data and actions, for example, can be displayed on the visualization of the corresponding part of the machine. "Circular menus" are particularly suited to this; these are operated with the user's finger and the desired action can be selected rapidly with a quick gesture.

The particular advantage of this direct interaction with individual screen elements is the use of the whole display area, such as an alarm list that can be scrolled with the help of a natural gesture. In contrast, for a classic single-touch application, it is still necessary to configure wide scroll bars and individual scroll buttons. This always means a compromise between usability, the screen space used and achieving a clear overview.

SAFETY WITH MULTI-TOUCH

Multi-touch also has advantages in the area of safety. Safety-critical actions can easily be protected by means of two-handed operation. Another use is tapping when setting up the machine. A direct acknowledgement to the user that the desired action requires explicit approval is another feature of integration.

The multi-touch control of the worldview, seamlessly integrated into zenon, provides the user with orientation and allows effortless navigation in large equipment screens, to then navigate to the desired section with a full detail-level view from a simple "two-touch" gesture. This function is also effortless for the integrator to configure – a mouse click for activation is sufficient.

zenon allows internal editing of individual touch points or recognized gestures in VSTA and thus allows the integrator the freedom to individually assign the individual elements in the projects in order to implement customer wishes.

Theoretically, any desired number of gestures with any desired complexity can be implemented in a project, but in practice this is generally limited to gestures already familiar to users from using smartphones, such as swiping, zooming, etc. This makes it quicker for the user to become familiar with operation, increases the usability and thus also ensures more accurate operation.

ZENON WITH MULTI-TOUCH: READY FOR USE

With the integration of multi-touch in zenon, COPA-DATA is offering the system integrator the possibility to flexibly accommodate the requirements of its customers and to implement optimized multi-touch projects. The first customer machines with zenon and a multi-touch HMI were supplied at the end of 2011.

Gero Gruber

Due to the recognition of complete gestures instead of individual "clicks", there are completely new possibilities for the operation of elements.

Further information at
www.copadata.com/de/multitouch

The Validation Monster

How to tame it using zenon Pharma Edition

Whether you are involved with the pharmaceutical industry or not, you can appreciate the strictly regulated operations that characterize the production of drugs. After all, these are very toxic substances and it is critical that each tablet contains the exact recipe. How do we ensure production operates within the strict regulatory policies? The answer is validation of the processes, procedures and equipment. zenon has a successful history in pharmaceutical production. In operation, it goes beyond the direct needs of the FDA regulations and helps users to identify opportunities to better the process. In this article, I would like to look at the validation process: the path from design concept to the turning of the key which begins production.

WHY DO WE NEED TO VALIDATE?

Just because somebody says they can do something, it doesn't mean they can do it to a satisfactory standard. The validation process balances the user requirements of the equipment or process with the appropriate testing and proof. At the heart of validation is the requirement to prove that a process fulfils its intended purpose – and to demonstrate that the product is produced each time within the limits of variation stated.

WHAT IS THE DIFFERENCE BETWEEN QUALIFICATION AND VALIDATION?

We qualify equipment and validate processes. This means equipment operation is compared against requirement specifications: does it work as intended? Does it fulfil the required purpose? Validation looks at the whole process: SOPs (Standard Operating Procedures), cleaning, calibration, maintenance, and training. Qualification is, therefore, part of validation. Of course, HMI/SCADA applications control the machine, so they are involved in the machine qualification. But user interfaces are at the heart of validation: SOPs run via the operator through the visualization system so the validation of a process also directly involves the HMI/SCADA.

WHAT DOES VALIDATION COST?

We are very familiar with the design aspect of a project. The decisions and detail attacked at this stage determine the success at the commissioning stage. This is no different with validation: having a clear focus on qualification at each stage of the project significantly improves validation results and reduces its cost by reducing the time required.

Project design needs at least one person. Validation needs at least two people: one person carrying out the qualification and the other checking this work. Now we start to see where the costs escalate; we have a situation where the cost of validation is at least twice that of the design stage.

This fact makes the validation effort a key factor in decision-making concerning change in the pharmaceutical industry. Business risk is assessed with each change to an element on the concept drawing board: what does it cost? What are its benefits? What cause and effect prognosis can be determined? Didn't life just get difficult!

As difficult as it may be, validation is not going away. Nor should it; as well as underwriting consumer safety, as a result of it better philosophies, mechanisms and processes have been developed over the years which have shaped the industry. Every process has its life-cycle and in the early 1990s the current approach to learning and the implementation of validation in an automated world started to unfold. Back then, the need to apply qualification to automated equipment that fulfils the FDA paper-based processes on pharmaceutical production regulation increased. This has developed into a "validate all" culture, which has made innovation difficult and halted progress. But the world keeps turning, and now we are witnessing a new phase in this life-cycle.

Validation to achieve regulatory compliance is not the only element of the equation which has halted innovation in pharmaceutical production. The drug patent has generated substantial revenue to support significant growth in the industry. The patent guarantees sole proprietary of revenue from each patented drug for its originator, which means increased profits to recover Research and Development expenditure. This patent protection has given the pharmaceutical industry security to produce at a high cost and funded a $700 billion distribution market.

"By the early 2000s, automation projects were being implemented with only 10% of the effort on design and coding, but 90% of the effort on testing and producing documentation*," says Dave Adler, Process Control Engineer and Certified Automation Professional at Brillig Systems Inc.

From Adler's observation, we can see that the money involved in the industry has itself

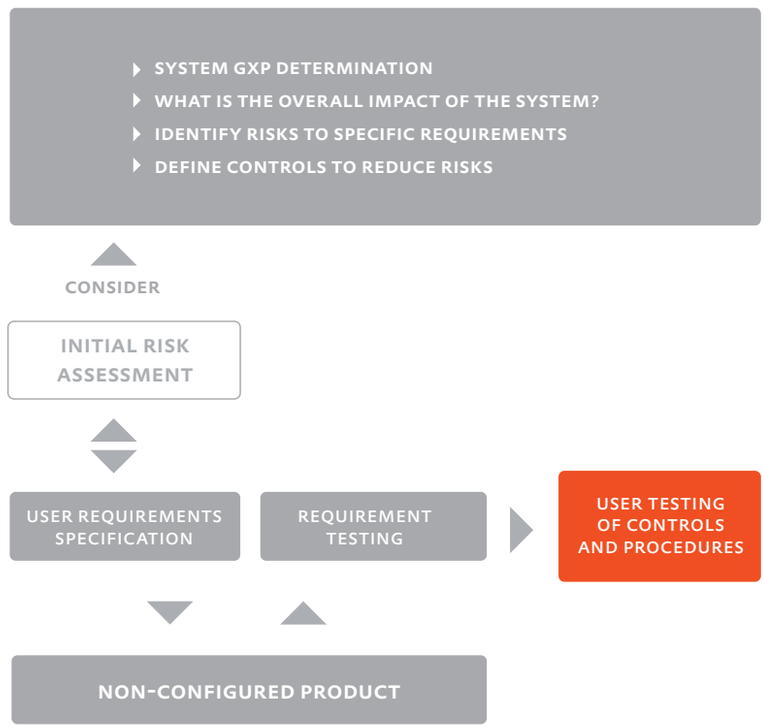


Figure 1

* Source: http://www.isa.org/InTechTemplate.cfm?template=/ContentManagement/ContentDisplay.cfm&ContentID=81660

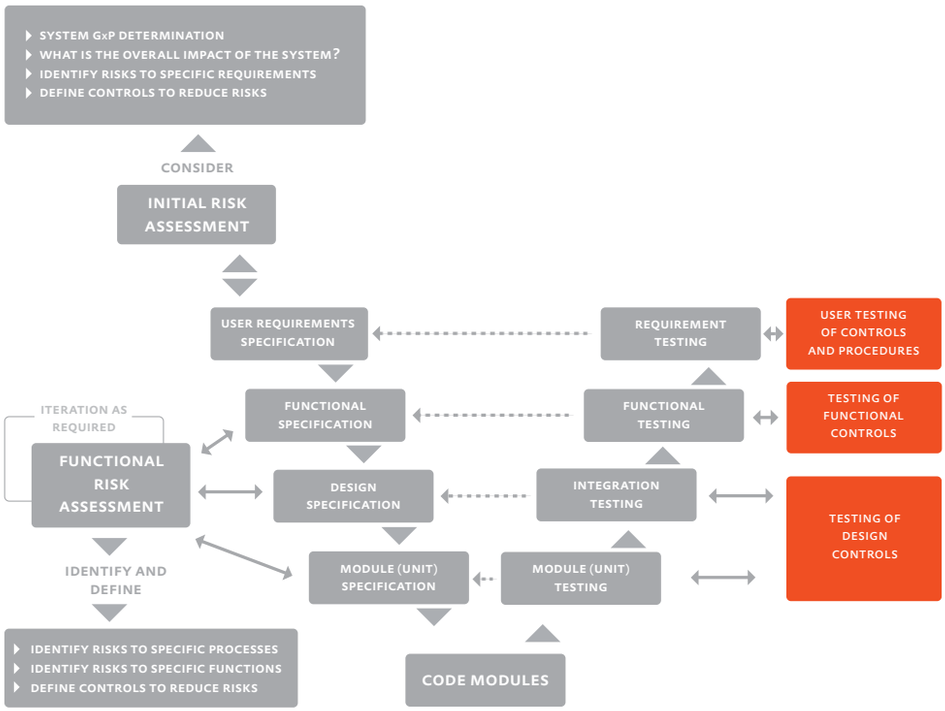


Figure 2

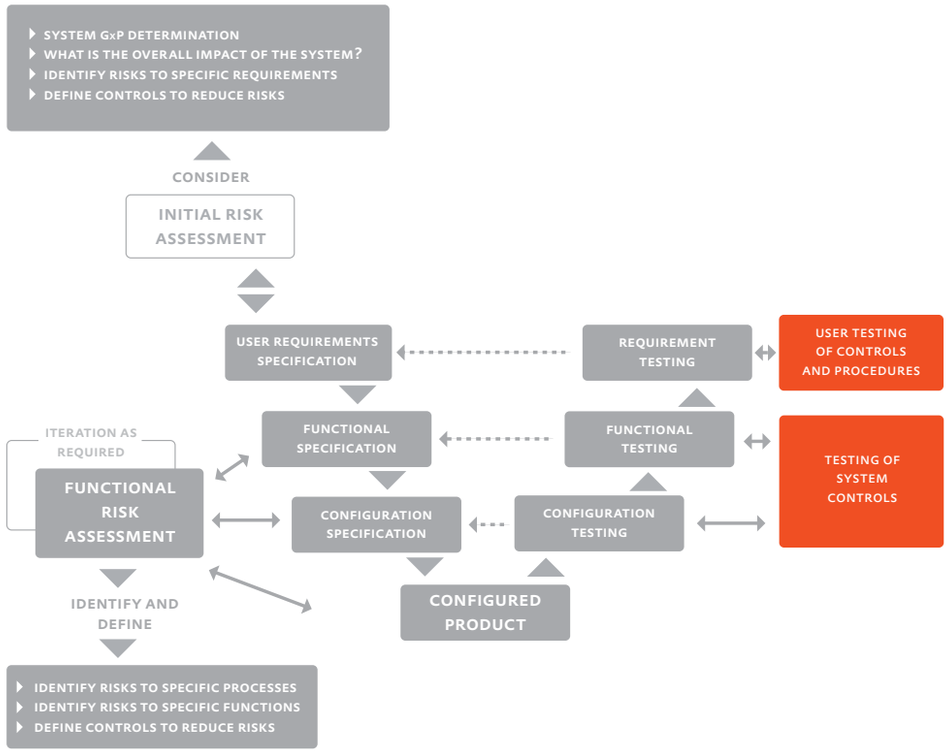


Figure 3

funded the FDA, which in turn has helped to increase quality and safety to patients, which is good. The validation path is a long one, and many lessons have been learnt along the way, with positive outcomes to regulation. With elapsing patents, the potential cost recuperation is not guaranteed and the cost of manufacturing and manufacturing efficiencies become important parameters in the equation. The FMCG industry has excelled in innovation, with very enviable OEE figures; in contrast, pharmaceuticals see diminished OEE figures due to a lack of innovation. Now, the focus for pharmaceutical production is changing from new drug introduction with patent protection, to greater efficiencies. The industry is learning how to adapt and the validation process will play a big part in this picture.

THE VALIDATION PROCESS

COPA-DATA addresses these issues in zenon: parameterization instead of programming, with integral functionality makes any project a GMP project. Creating automation simply by enabling parameters goes beyond merely applying the FDA Part 11 – zenon removes the additional effort required when using other systems.

Let us take a look at the types of control processes and the effect on validation. The ISPE (International Society for Pharmaceutical Engineers) is a global organization for professionals focusing on automation and innovation in the pharmaceutical industry. ISPE documents industry best practices. It publishes the GAMP (Good Automated Manufacturing Practice) guidelines on approaching compliance using automation: The following describes how different levels of software are validated.

GAMP SOFTWARE CATEGORY 3

Our first example looks at a software category 3 application – a non-configured system, such as a standalone PID controller.

Our scenario involves a temperature controller which reads from a certain temperature probe, the output of which is connected to a heating element or valve. The output is controlled around a specified temperature point. The controller only has one function and cannot be used for another task. Its function can be well-defined, with ranges and behaviour tested.

The risk to a process with this type of control is low, because only one control path can be taken. The complexity is low and the novelty is low; it is well-defined and testing produces documentary evidence.

Figure 1: This validation model shows the stages of design and the type of validated evidence they require to prove their operation meets the intended purpose. Here, only the user requirement level is tested within its defined limits.

GAMP SOFTWARE CATEGORY 5

The opposite end of the scale to the standalone PID controller example is programmed code. There are a thousand and one ways to code a certain function. Each programmer has his or her style and the range of operation and width of output can be very large. The outcome of each line of code has effects on the operation and variation. Couple this with the complexity and unpredictability of unique and novel programmed code functionality and the risk to the process is high.

Figure 2: This validation model illustrates how much greater effort is required for the achievement of validation when programmed code is involved.

GAMP SOFTWARE CATEGORY 4

Modern facilities cannot be a collection of PID controllers. We appreciate better intelligence and communication is needed to facilitate leading-edge solutions in pharmaceutical production. COPA-DATA has long since advocated parameterization in zenon's automation functionality. Parameterization eases the design burden in a project. By creating a library of functions which cover most of the engineering challenges in the automation business, we reduce the complicated protocol of these functions to simple parameter-setting. Whole projects can be administered without a single line of code. Configuration has one unique benefit in terms of validation: it sets a well-defined path with limitations on risks. The designer builds these pre-defined blocks together to produce the desired result, each block is proven, and the individual parameters

are clearly visible and can be verified easily.

Figure 3: This validation model shows the reduced number of levels needed to create the same level of control that the programmed code achieved. The complexity and novelty is reduced and less bespoke documentation is needed so the effort required for validation is far less.

PROVEN FUNCTIONALITY HELPS PREDICT RISK

Figure 4 shows how the risk of a certain function is determined. The severity is balanced against the probability of occurrence. Therefore, if the chance of this event happening is very low, the effect on the system can be great before this needs attention. On the other hand, when an occurrence is very likely, only a slight effect can have significant consequences. This eventuality is then balanced against whether an event can be detected and the affected product removed or quarantined.

Figure 4: All of this process needs to be proven and documented. This is where proven functionality, which has been tested and verified, significantly reduces the total project costs.

ZENON PHARMA EDITION

zenon is perfectly placed in pharmaceutical production automation. The zenon Pharma Edition builds on this expertise and provides a framework for regulation. The software specifically addresses the regulatory aspects of a project, creates a central placement of regulation parameters, and provides proof of how and where security is enabled. This design knowledge is stored in a configuration file, which can then be validated once and transferred across all and any projects. The backend of the project is also addressed with automated project documentation and project comparison. These two features create and record information on project content and evolution, which focus on specific elements under the validation inspection. These can be used to prove the content of a project, to accurately display changes and additions in a project, and compare it against a benchmark. This helps users to manage the regulatory aspects of projects from conceptualization to implementation.

Each configuration file holds the parameter knowledge for user administration, alarm and audit trail activity, network and redundancy. The profile combines these parameters with proven templates for screens, data types, reaction matrix, colour schemes, symbols and reports. An entire project behaviour is defined, where only the specific automation control needs to be added. Each project can begin with this profile installed, or it can be applied during project development, or during machine use. Thus, the zenon Pharma Edition helps users maintain a secure compliance culture across a production facility, across third party machine builders and system integrators, thereby covering the entire corporation. Regulated customers have the ability to use the same process model, created and stabilized in

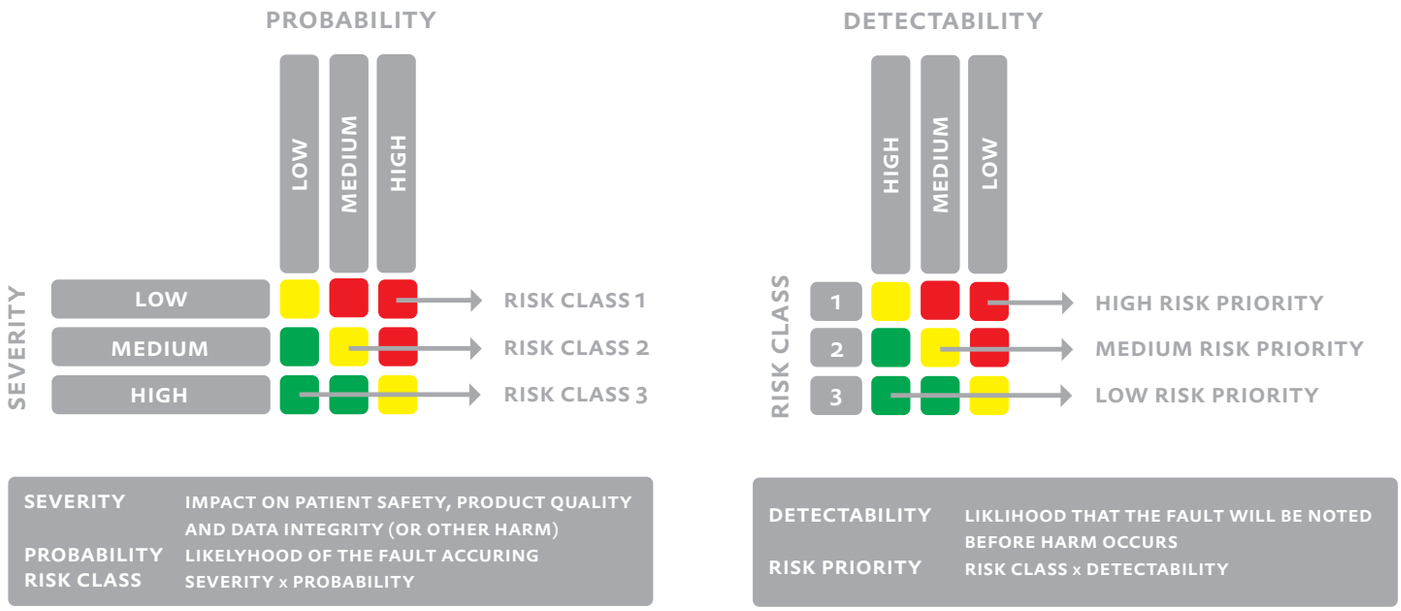


Figure 4

the laboratory, then applied directly into the commercial operation under the same basis for regulation, security and validation control. As a result, zenon users retain the regulatory knowledge, to be applied time and time again – not reinvented each time.

CONCLUSION

In the pharmaceutical industry it is necessary to define and fix your requirements before development: it is significantly more difficult to iron out bugs and errors during start-up than at the conceptualization.

In light of the validation process each project element must complete successfully, using a proven profile to form the foundation and backbone of a project and documenting the detailed contents and behaviour of the project and its evolution aids the project at all stages of its life-cycle.

Let the technology be the facilitator of the work and detail, so you can direct your energies into improving efficiency and innovation in your project design. With the zenon Pharma Edition you can easily deliver GMP projects and, step-by-step, remove the hoops you need to jump through before you achieve project sign off. *Robert Harrison*

THE TOPIC OF RENEWABLE ENERGIES

Managing Wind Farms and Photovoltaics Farms with zenon

After our three-part themed series on "smart grids" in recent editions of IU-Magazine, we will now look at renewable energies, in particular wind power and photovoltaics. This article is intended to provide ideas for a farm management system that benefits from the whole zenon Product Family. In doing so, we include all areas – from the energy generation device through to a supra-regional evaluation system.

THE ROLE OF WIND ENERGY AND PHOTOVOLTAICS IN THE CONTEXT OF RENEWABLE ENERGIES

With renewable energies, we generally think of wind energy, photovoltaic equipment, hydro-electric power stations and biomass power stations.

As a result of history and the structures that have been developed, hydro-electric power stations have been integrated very well into operators' control systems and the potential for optimizing use has largely been exhausted.The situation is similar for biomass power stations, which are less likely to be operated in a network and are usually operated privately. In addition, the installed electrical output of biomass power stations is less than that of other types of renewable energy sources.

For this reason, this article concentrates on farms and the combination of farms for wind and photovoltaics, although only wind power equipment components are mentioned below. These are to be considered to be equivalent to photovoltaic equipment components in this context however. A wind turbine can be considered equivalent to one or more photovoltaic strings that are connected to a power inverter. A complete wind farm is equivalent to a photovoltaic farm. Let's find out more about the units that generate energy, the SCADA system for online monitoring and the tools for evaluation and analysis of historical data.

THE WIND TURBINE

When constructing a wind power facility, support comes from the many manufacturers of wind turbines. The wind turbine usually comes equipped with a pre-installed control unit, of which the HMI is an integral component. The tasks of the HMI are relatively simple, which is why most manufacturers offer solutions that have been developed in-house for this. This is precisely where zenon Operator and zenon Logic can provide optimum benefit. zenon Operator can be used as the HMI and zenon Logic can be used as an IEC 61131-3-based PLC system with comprehensive communication properties. zenon Operator and zenon Logic can be easily installed and used, based on platforms that use Windows Embedded as the operating system.

zenon Operator offers all HMI functions that are required in a wind turbine, such as communication to the PLC, display of the current status, archiving of events and alarms and on-site operation of the turbines. zenon Logic takes on the automation for automatic starting/stopping, condition monitoring and all other parts of the turbine including communication in accordance with IEC 61400-25. zenon Logic can be configured in accordance with IEC 61850-6 easily and efficiently using its integrated IED Editor. If IEC 61400-25 is not the right standard here, then zenon Logic can also provide the data using DNP3, Modbus or IEC 60870-5-101/-104.

DATA CONCENTRATION AND REMOTE DATA TRANSMISSION

The data is not usually sent directly from the wind turbine to the next operative unit, such as the network operator or central SCADA system. Instead, several wind turbines from a whole wind farm are summarized, concentrated and then forwarded. Furthermore, the high-voltage and medium-voltage switchgear that the wind turbines use to connect to the electrical network are logged and controlled in this manner. Remote terminal units (RTU) are used for this. Such units can be implemented with zenon Logic. For maximum availability and security, zenon Logic can also be set up redundantly or in parallel and the data can be transmitted with the above-mentioned protocols. The data from several wind parks is concentrated by several RTUs and transmitted to a central, often supra-regional, SCADA system.

The zenon Product Family offers a consistent solution. From the energy generation unit through to operative and strategic decision-making levels, zenon ensures that wind farms and photovoltaics farms operate more efficiently and therefore more profitably.

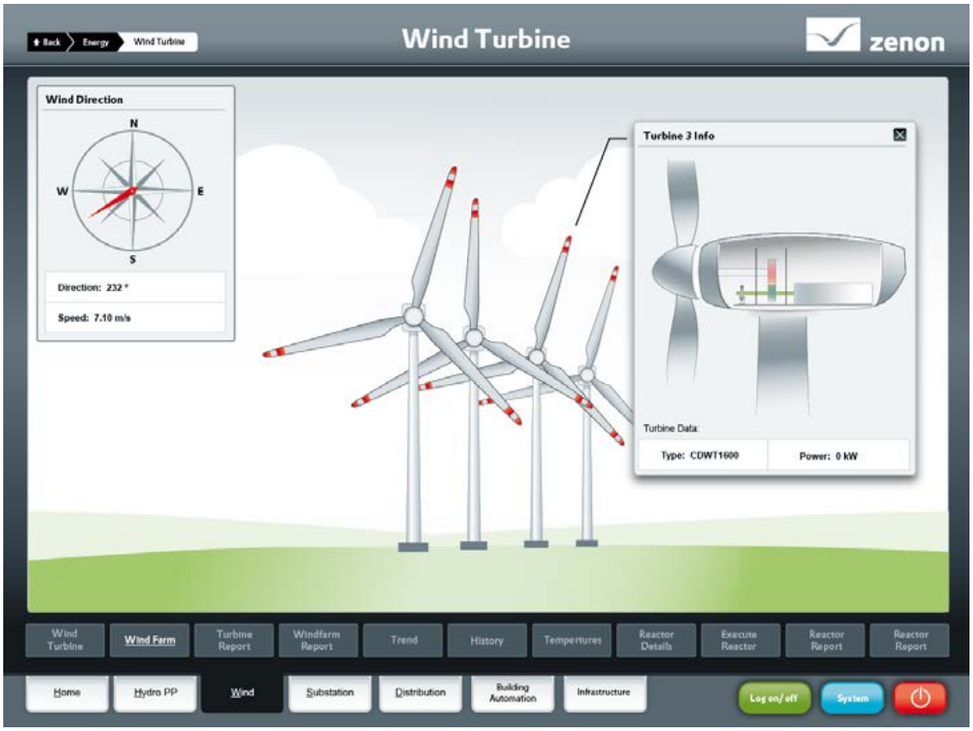


Figure 1

A CENTRAL SCADA SYSTEM

For centralized, real-time operation, a system is needed that offers:

- An overview of the current operating status of the wind turbines
- The possibility of remote operation of the wind turbines and switchgear
- Interfaces to the transmission system operators and
- An interface to the reporting and analysis system

The overview is implemented in the form of a matrix (*Figure 1*) or Geographic Information System (GIS) supported illustrations. The data displayed here provides a current image of the equipment. This can be used to quickly react to problems and abnormalities. In the GIS-supported display, it is usually sufficient to have a map as a background, on which the individual turbines are shown. This type of display also offers a good overview, especially if weather-related problems are displayed or weather-related shutdowns need to be carried out, because you have a better geographical overview. Furthermore, the switch settings of the high-voltage and medium-voltage switches are displayed in, and can be operated from, single-line diagrams. The primary switchgear is ideally monitored by switching-error protection algorithms. All these functions can be covered by zenon Energy Edition. It offers both the moni-

Would you like to find out more about the use of the zenon Product Family in the management of wind farms or photovoltaics farms? Visit our website at ***www.copadata.com/energy*** or send us an email to: ***energy@copadata.com.***

toring capabilities of a state-of-the-art SCADA system as well as control using an integrated switching-error protection algorithm. zenon Energy Edition is a Windows-based system that can run on both desktop operating systems (such as Windows 7) and on server operating systems (such as Windows Server 2008 R2 64 bit).

Depending on requirements for availability and the division of work, the system can be implemented with hot-standby redundancy and the tasks of communication, archiving, and HMI can be shared. Because the information from the central SCADA system is often needed at management level too, the data must be readily accessible through a web browser. zenon Webserver is used for this, providing the equipment screens via the network without any further necessary adaptation .

REPORTING AND ANALYSIS

The reporting and analysis system is the next step in the data chain. This is primarily a case of providing the necessary information to help optimize the operation of the equipment. This happens thanks to the continuous improvement of availability and efficiency of the wind turbines and how they are used. As a result, the operation model in a supra-regional context can be improved because the system could monitor and control several wind farms in different countries. The output of the equipment is maximized using transparent information. At the same time, it should be possible to evaluate the performance of the individual wind farms and also the performance of an individual wind turbine using centralized data. Lastly, a link between the physical performance capacity and the economic contribution can be made, in order to determine variances in relation to the return on investment (ROI).

As part of the zenon Product Family, zenon Analyzer can very easily access real-time data and historical data stored in the zenon archive. In addition, the zenon Analyzer can connect to third-party databases such as Oracle or Microsoft SQL Server. From there, data on energy tariffs or asset data, for example, can be integrated into the reports. Furthermore, zenon Analyzer also allows manual data entry, or Excel forms can be read in. With zenon Analyzer, pre-prepared reports or individually-created reports can be used.

AVAILABILITY REPORTS

In the availability reports, you can find data on, for example, the aggregated availability of wind farms, allocated downtime and peaks in repeat issues. From this, measures to improve availability can be deduced very easily and it is possible to know exactly what to look at and which parts of the wind farm need to be optimized.

EFFICIENCY REPORTS

This type of report puts the efficiency of the wind farms under the magnifying glass. The analysis is either a global analysis of the whole farm or a detailed report using data from the individual wind turbines. A comparison of the actual output curve and the one provided by the manufacturer or a reference curve that was made when the turbine was first put into operation can be made, to easily determine if the turbine performs as promised. Furthermore, different types of wind turbines can be compared to one another, assisting decisions for future acquisition.

SYSTEM AND EFFICIENCY REPORTS

The most important key performance indicators (KPIs) are displayed in these reports. These reports range from individual performance indicators through to waterfall diagrams of wind farms. This allows monetary figures to be calculated, which in turn provide information on the efficiency and profit of a wind power plant.

The zenon Product Family offers a consistent solution, from the energy generation unit through to the operative and strategic decision-making levels. zenon can therefore contribute to making the operation of wind farms and photovoltaics farms more efficient and profitable.

Jürgen Resch

SECURITY THROUGH REDUNDANCY

24/7 Backup Control System Guarantees Complete Network Monitoring

The primary corporate objective of Energie AG Oberösterreich Netz GmbH is the secured supply of electricity to its 435,000 customers. In order to guarantee this supply throughout the year, the energy supply company has deployed a backup control system – in addition to the main grid control system. The engineers at the new grid control center have trusted in the years of experience of system integrator Sprecher Automation GmbH and the modern grid control technology of COPA-DATA for this "insurance".

The backup system runs on a total of four monitors in the grid management center in Linz: two of these are in the area of the high voltage grid control point (pictured) and two are in the area of system data administration. Display on two monitors enables more efficient monitoring: for example, an overview screen and a chronological event list can be displayed at the same time.

© Energie AG Oberösterreich Netz GmbH

Energie AG Oberösterreich Netz GmbH's grid control center controls and monitors around 10,000 km of high and medium voltage grid (110 kV, 60 kV, 30 kV and 10 kV), 63 distribution stations and substations and 8,500 transformers around the clock, 24/7. The distribution network covers an area of around 10,150 km2. Customers in 389 municipalities in Upper Austria, Salzburg, Styria and Lower Austria are supplied with power from Energie AG's distribution equipment. Services in the grid management field range from the control and monitoring of high and medium voltage networks, status estimations for the monitoring of supply quality and comprehensive fault management, to the documentation of all process parameters.

Although the main system has high availability, the experts wanted to be 100% sure with a PC-based backup control system. Johannes Kaindlstorfer, the Operating Network Control Team Leader at Energie AG Oberösterreich, describes the initial situation: "We wanted to achieve 100% system availability and create redundancy for all data and data routes with an additional backup system. From the start, the objective was to set up a backup system in such a way that it could replace the main system in the monitoring direction, if required. It was also important to us that parameters could be set on the new system so it is easy to configure.

As part of a tender process, the decision was made to use a control system from Sprecher Automation, which is based on the control technology of COPA-DATA, because there was already much expertise in using this software at the company, and thus no costly training was required."

Andrej Medved, Manager of the Training Center at Sprecher Automation GmbH, adds: "We provided the first five process screens as part of the basic engineering of a prototype and actively involved the engineers in their configuration. The employees of Netz GmbH were able to create all other screens on their own."

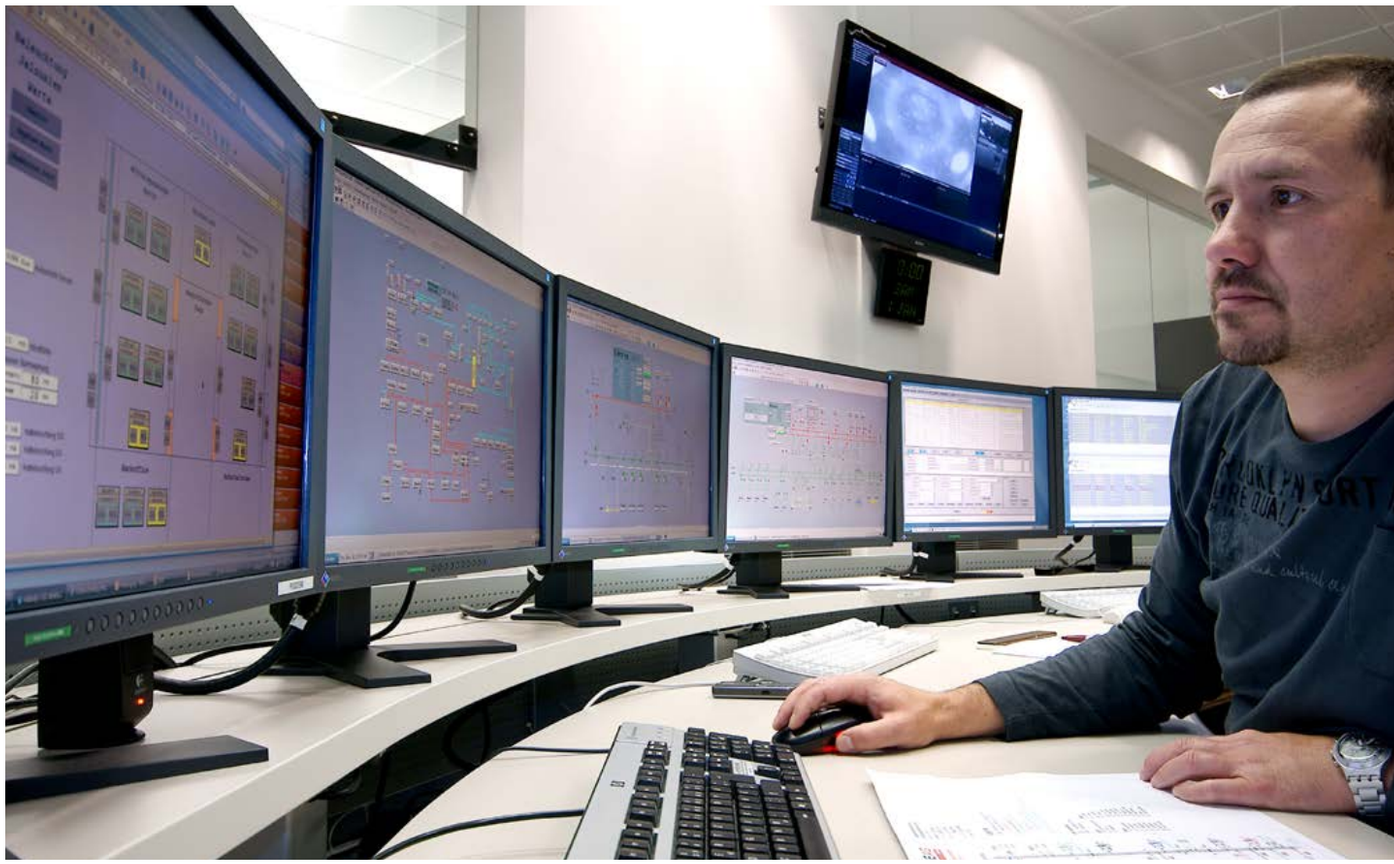
DATA SECURITY THANKS TO INDEPENDENT NETWORKS

In the new network control room in Linz, where centralized control and monitoring of all grids in the supply area takes place, a total of six medium-voltage workspaces, two high-voltage workspaces, and two system maintenance workspaces ensure smooth operation and an overview down to the smallest detail.

The backup system provides visualizations of the desired overview and more detailed analysis on two of its own dedicated monitors whilst on the main system at the same time – one in the high-voltage area and one in system maintenance.

The backup system contains approximately 30,000 data points, with around a third displayed in screens. Each computer is equipped with a LAN interface so that both systems can only be connected to the network provided for them.

The Runtime system and the Editor workspace are operated in stand-alone form by means of a hardware-independent network. Data is transferred over the LAN from the RTUs or SCADA systems from the outer stations to the backup control system directly using IEC 60870-5-104. In contrast to the main system, which takes on the roles of control and regulation, the backup system serves to monitor the data and data routes and is limited to the areas of high voltage, distribution stations and substations. This monitoring is based primarily on switch settings, topological coloring, alarms and measured values. In the high-voltage area it consists of an overview screen of the 110 kV grid and a detailed screen of the 110 kV, 30 kV and 10 kV grid for each distribution station. All flows of data are monitored without fail using the chronological event list and switchgear can be manually updated if required. In addition, a hierarchical backup system is implemented, which is based on alarm classes and priority levels which can be switched on or off. During implementation, particular attention was paid to adapting the design of



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All eight workspaces in the areas of medium-voltage (six workspaces) and high-voltage (two workspaces) are each equipped with six monitors and thus ensure an optimum overview of all data and processes. User-friendliness is also considered and all six monitors can be operated with a single mouse, which also increases working efficiency considerably.

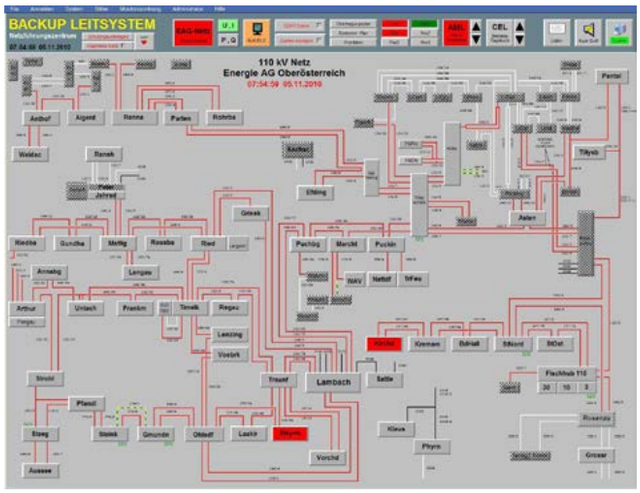
the screens to that of the main system, in order to increase user-friendliness and make it possible for the employees to have a simple, trusted method of operating.

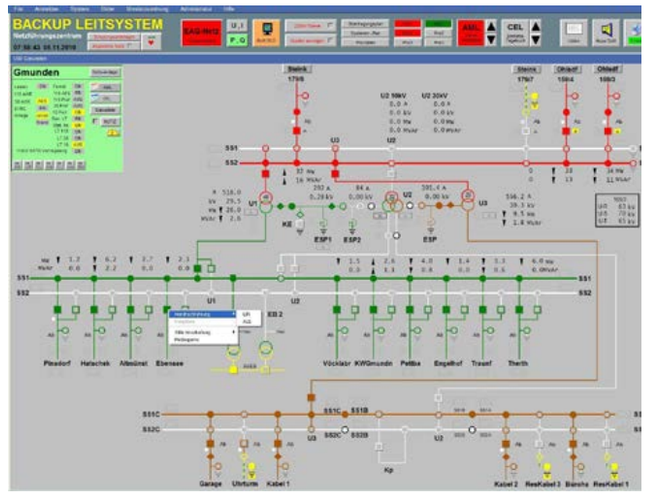
CENTRALLY MONITORED, SUPPLIED AROUND THE CLOCK

By the fall of 2010, Energie AG Oberösterreich Netz GmbH's grid management was carried out in the grid control center for high voltage operations and in five decentralized medium-voltage control centers, three of which are also responsible for the power stations. Once the complete renovation of the grid control center in Wegscheid, Linz, has been completed, all grid control centers will have successfully been converted and operated from the grid control center. Johannes Kaindlstorfer sums up: "The backup system has met all our expectations and has already proven itself in practice. When making changes to the main system as part of the conversion, the backup system took over operations temporarily and everything ran according to plan. As a result, we now know we are equipped for an emergency and can guarantee our customers a consistent supply of energy."

A ONE-STOP SHOP FOR PROFESSIONAL SUPPORT: SPRECHER AUTOMATION

Linz-based Sprecher Automation is an expert in energy equipment, process automation, energy automation, sensors and scanners. In this project it was responsible for successfully implementing and putting into operation the backup control systems. It achieved this using SPRECON V 460, a modified process control system based on the HMI/SCADA technology zenon, from COPADATA. The range of services that the company offers includes: consulting, planning, engineering, documentation, development, manufacturing, assembly, commissioning, training and after-sales services. Around 100 qualified employees, at a total of nine locations, work on professional project execution for municipal operations, public institutions, energy providers, industrial and transport companies. Sprecher Automation GmbH has worked together with the system supplier COPA-DATA since 2006, successfully collaborating on automation projects in the energy sector. It provides its customers with individual, tailor-made complete solutions thanks to its process expertise, gained over decades. *IU*





(Left) The overview screen of the 110 kV grid provides information on the current supply status of individual regions using topological coloring. The users are informed of deviations or faults in the system immediately by means of the integrated alarm management and can immediately instigate the required measures.

(Right) distribution stations are also monitored using the backup system. The picture shows the distribution station in Gmunden (Upper Austria) and its respective load flows. There are three options to process the status of messages: manual updating, (ON/OFF), silent data processing or message blocking.

PROJECT FUNCTIONS IMPLEMENTED

- Display of all Energie AG Oberösterreich distribution stations and substations (63)
- Display of individual screen and grid screen
- Topological coloring
- Alarm management system: three priorities per voltage levels; on/off
- Ground fault display, display of transient ground faults
- Process state logs
- Status processing of messages: silent data processing, message blocking, manual values
- Simple display of load flows
- Notes for disposition
- Option to control

Successful cooperation for constant grid monitoring – the project leaders in the modern grid management center in Linz (from left to right): Andrej Medved, Training Center Manager/Product Portfolio Manager at Sprecher Automation GmbH; Christian Mair, Telematic Services, Energie AG Oberösterreich Data GmbH; Gerhard Luckeneder, Network Data Technician, Energie AG Oberösterreich Netz GmbH; Johannes Kaindlstorfer, Grid Management Operations Team Leader, Energie AG Oberösterreich Netz GmbH and Klaus Gruber, Telematic Services Group Leader, Energie AG Oberösterreich Data GmbH.

Growing Together: "Friendship is essentially a partnership."*

The growing COPA-DATA Partner Community is the springboard to success for motivated System Integrators, General Contractors, OEM's, Value-Added Resellers as well as Educational Institutions and Research Institutions engaged within the automation industry. Throughout the world, COPA-DATA partners are leveraging the competitive advantages of partnering with COPA-DATA to maximize their profits, open doors to new markets and industries and solidify their customer relationships.

COPA-DATA partners all share the same vision, which is to become the heartbeat of the automation industry by staying on the forefront of technological innovation and by making automation an enjoyable, hands-on experience. Of course, with the latest introduction of multitouch in zenon, "hands-on" takes on a whole new meaning!

COPA-DATA PARTNER COMMUNITY IS RAPIDLY GROWING

Around the world, System Integrators, OEM's, General Contractors, Value-Added Resellers as well as Educational Institutions and Research Institutions are joining our Partner Community. The COPA-DATA Partner Community has been well received amongst manufacturers who value our forward-thinking innovation which incorporates the efficiencies created by an ergonomic focus in process automation.

According to Philipp Schmidt, Branch Office Manager for COPA-DATA Germany (North), the value of a COPA-DATA partnership extends the benefits of the technology into a synergy which results when people with a common vision work together: "I think a partnership should be founded on the willingness of both sides to work together and achieve bigger things than each partner could achieve alone."

The versatility of COPA-DATA's products is reflected in the diversity of its partner landscape and the variety of benefits the community provides to partners with different needs. "One company may be focused on sales activities and may want to generate new leads, while another one is willing to do a lot of marketing with us. Partnerships and their associated quality measures will be as diverse as our partner companies are," explains Schmidt.

OPEN, DIRECT AND STRAIGHTFORWARD COMMUNICATION

The overriding benefit mentioned by partners as having the most impact on their commitment to the community also relates to the fundamental principle of COPA-DATA's product and corporate strategies: user-friendliness. Schmidt adds, "There are some points about the Partner Community, which I think are important for both sides. First of all, a partnership between companies should be reasonably framed – and that is what the Partner Community does.

All benefits and requirements are fully understandable and give an idea of the community's targets. In addition to that, we managed to credibly connect the Partner Community to our corporate spirit. We want open, direct and straightforward communication and an attitude of fairness."

Like that of its partners, the future of the COPA-DATA Partner Community is bright and dynamic. Based on open and personal knowledge transfer, straightforward communication and mutual respect, the community is poised to grow and prosper. Partners are consistently

COPA-DATA
Partner Community

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deepening their product knowledge, advancing their competencies and growing their market share whilst keeping an eye on the future.

DEDICATION TO SERVICE

The economic growth in Asia is motivating forward-thinking, growth-oriented system integrators to jump on board in order to capitalize on the profit-maximizing potential of COPA-DATA's products. Of course, this growth also comes with higher customer expectations for prompt, reliable service. In Malaysia, one of COPA-DATA's most recent partners, Muhammad Misbah Soim, of Jamal & Misbah Sdn Bhd, explains, "Our existing customers have become more demanding: expecting full support in shorter timeframes. As a partner of COPA-DATA, we are able to get rapid solutions for any related issues in zenon via the dedicated COPA-DATA support." In the UK, COPA-DATA partners also emphasize the same high quality and consistency in service and support. Beth Ragdale, COPA-DATA UK Partner Manager adds, "Working closely with our partners allows us to have peace of mind when recommending their work to end users. We are reassured that all our partners have relevant and extensive product training and knowledge, as well as providing our end users with solution-focused problem-solving methods whilst using zenon. End customers can be assured that any partner we advise they use is highly recommended based on sheer quality of work."

COPA-DATA PARTNER COMMUNITY – GROWING TOGETHER

Around the world, all members of the COPA-DATA Partner Community are leveraging superior technology, prompt personal service and a common vision to maximize their profits, open doors to new markets and industries and solidify their customer relationships.

At COPA-DATA we are proud of all our members in the COPA-DATA Partner Community and the hard work and commitment we see in all countries. We believe in our partners and in the successful collaboration and want to continue growing and expanding.

If you are looking for a partner or interested in joining, you can find more information at www.copadata.com/partner. You can also contact your local COPA-DATA sales representative, who will support you in either finding a suitable partner or accessing information on how to become a member of the COPA-DATA Partner Community.

Lisette Lillo Fagerstedt

"The versatility of the COPA-DATA Partner Community combined with the professional competence and dependable support of the team, provide us with a crucial competitive advantage over our competitors"

Werner Kropf, CEO Prozesstechnik Kropf GmbH, Germany

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* Aristotle, Ancient Greek Philosopher, Scientist and Physician, 384 BC-322 BC

SERIES: EFFICIENT ENGINEERING WITH ZENON

Part 4: Screen types, templates and the project wizard

zenon 7 has been available since the end of March 2012. It has around 230 new features, ensuring an unparalleled range of capabilities. In this article, I would like to present two particular highlights to those of you interested in efficient engineering: templates for screen types and the new project wizard. These make working with zenon even easier and even more efficient. Both tools are based on proven zenon standards – the screen types and XML export/import. Find out how these zenon standards – which are already very useful – can benefit you to an even greater degree in this, the fourth part of our IU series "Efficient engineering with zenon".

Before we start, I would like to clarify a few basics. Many people who configure projects probably already know what screen types are. For all those who are not familiar with them, here is a brief overview: in zenon, primarily there are process screens, which display the status of processes. To support certain functionalities, there are also additional screen types available. These could be, for example: a screen type for an alarm screen, for the Chronological Event List, for Extended Trend, for the Report Viewer, for the HTML screen etc. Each screen type features certain functionalities appropriate to its respective application.

Some might ask "Why so much specification? Why not incorporate an alarm or a trend display into a standard screen?"

The advantages of using screen types are primarily the flexibility and the scope for individuality which they bring to configuration. Now we will explore how these new tools in zenon 7 can considerably reduce your workload when configuring a new project.

1. SCREEN TYPES

The integration of screen types in zenon is based on many considerations. In an alarm screen, for example, there are many functions – such as acknowledging alarms, inserting comments, various filter options etc. In an Extended Trend screen many different functions are needed – such as the display of curves, selection of curves, zooming, scrolling and so on. These different requirements are met by two types of elements.

Firstly, there are the display elements – screens or lists, such as the Alarm Message List, Chronological Event List, trend screens etc. Secondly, there are operating elements, which are used to control the content of these display elements. These could be buttons, drop-down fields, checkboxes etc. Behind each of these input elements there is a function specific to the screen type. There are 33 such special input and output elements for the Extended Trend alone.

In zenon, there are a total of 26 different screen types available, each of which has completely specific functions for different applications. Already, we can see that listing all functionalities for all screen types in a single list would not give a clear overview. We therefore arrive at one of the major advantages of screen types – the ability to arrange them in groups for a better overview. Behind each screen type, there are the exact elements that are needed for it. This makes it easier for the user to find the right functionalities at any time.

Another important advantage is the reusability of screens. In zenon, a screen that is based on a screen type only specifies its defined display type – the frame, so to speak – in order to display something. The content is not determined in the screen itself; it is always only defined once the screen has been called up by the screen switching filter. These filters are specific to each screen type: an alarm filter appears when an alarm screen is called up, a filter for historical and online values in the Extended Trend, a filter to enter a URL in the HTML screen.

Thanks to this mechanism, it is possible, in the alarm screen, for example, to have all pending alarms from the last three hours or all historical alarms from any desired year displayed together. The screen always remains the same; only the content changes. The advantage is immediately available to the person configuring the project: only one individual screen needs to be maintained, the rest are set either using the screen switching function in the filter or by the user in the Runtime.

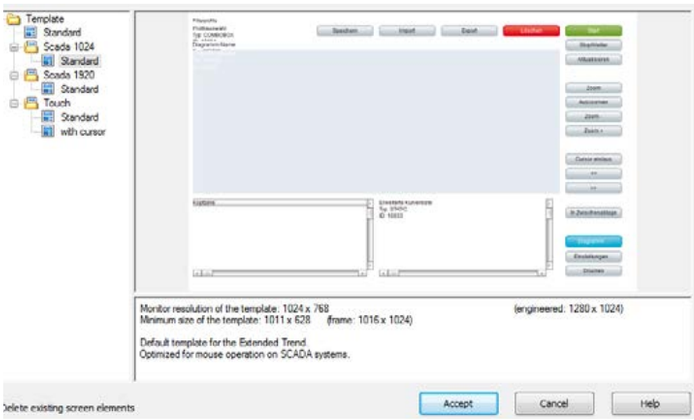


Figure 1: The template selection dialog shows the standard templates in zenon.

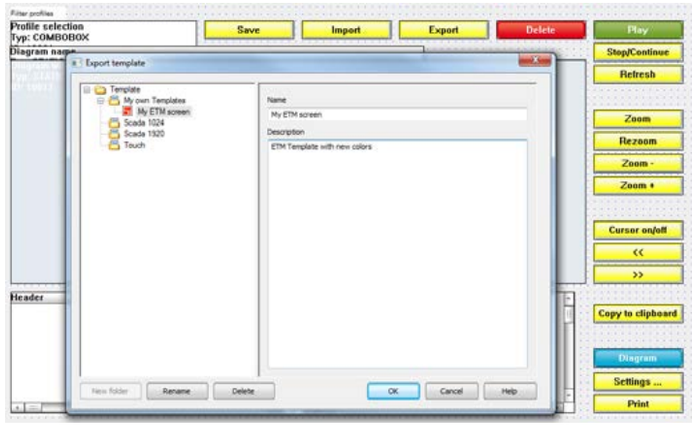


Figure 2: Creation of a user-defined template in zenon.

SO FAR SO GOOD, BUT WHAT'S NEW IN ZENON 7 IN THIS CONTEXT?

To understand this, we need to take a look into the past: until now, there was little help for the user to simply and efficiently create the input or output element of a screen type. After you have selected the desired screen type for a certain screen, you would select the "Insert control element → Default" function in the main menu. A pre-defined layout was created immediately. The example of Extended Trend, with its 33 input and output elements, shows how much time this can take up when placing these elements in the desired locations.

The default setting thus has a significant constraint: it was always the same and could not be changed. The position, color, shape and number of elements, for example, was always fixed and ultimately each element then had to be subsequently edited – although this could be achieved using multi-select and multi-change.

2. TEMPLATES

With zenon 7, using screen types is child's play thanks to the more flexible templates:

a) Users select from a range of useful and graphically appealing default layouts, which have already been adapted to different target resolutions and different operating forms (touch/mouse operation).

b) Each person configuring a project can also now create their own layouts and save them – for each screen type and even for standard screens!

A LOOK AT THE NEW FEATURES IN DETAIL

In the "Control elements" main menu of zenon 7, there is now the "Add template" menu item. This opens a dialog with a tree, a preview area and a detail window. In the tree, you can see the list of available templates for the screen type. The tree can be nested as desired and built up in a grouped manner. COPA-DATA templates and individual, user-specific templates are displayed using different symbols. *(Figure 1.)*

The preview window shows a screenshot of how the screen will subsequently appear. In the detail area information about the purpose of the selected template and the frame size suitable for it is displayed. The person configuring the project must select the desired template and click on "Accept". With the "Delete existing screen elements", all elements from the screen are deleted and the template is inserted. The content of all the COPA-DATA templates has already been translated, so that all elements can be inserted in the language that has been set in the Editor.

As already mentioned, each user is also free to create their own templates too. To do this, you can either insert a COPA-DATA template into the screen and modify it, or place the elements in the screen individually, as you would do usually. This is not only limited to screen-type-specific elements – standard vector elements or dynamic elements such as buttons, numerical values, combined elements, etc. can also be inserted. *(Figure 2.)*

To create a template, you need only to right click in the screen and select the option "Create template for screen type..." A dialog then appears, in which the folder for organizing templates in the tree and the name and description of the template can be assigned. The template is automatically created after clicking on "OK" and is stored in the folder *C:\ProgramData\COPA-DATA\<zenon Version>\Templates\ScreenTypes\<Language>\<Screen Type>*. For a template of the Extended Trend in zenon 7 (in English) the path would be as follows: *C:\ProgramData\COPA-DATA\zenon700\Templates\ScreenTypes\ENGLISH\Extended Trend.*

This template can now be reused as often as you want, even for screens with different background colors. The color information is automatically adapted during the import. Each template consists of a ZIP file. This can simply be copied over and loaded into a different zenon station. This way, work colleagues can also easily use the templates. Because this concept can also be applied to the "Standard" screen type, there is a high degree of flexibility: any user can create screens of any type for themselves – such as menus, process screens or overview screens – and easily save them and share them with other users. *(Figure 3.)*

3. THE PROJECT WIZARD

Since zenon 7, when creating a new zenon project, a wizard automatically appears. Project creation was supported by a wizard prior to this, but it was programmed in such a way that only the implemented graphics set could be created. With zenon 7, we fundamentally revised the wizard in order to make project cre-

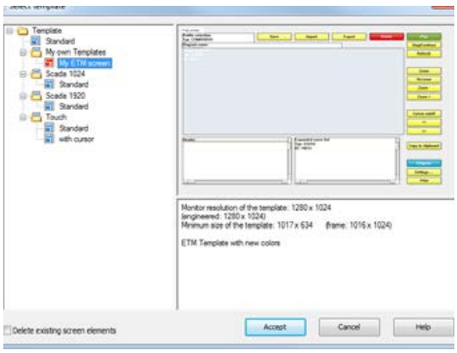


Figure 3: The user-generated template is now present in the template selection dialog, is labeled accordingly using an icon and can thus be easily shared with other users and be reused as often as desired.

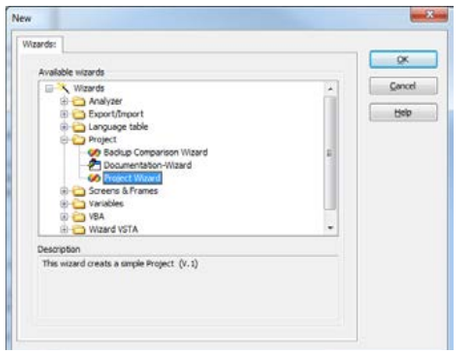


Figure 4: You can now find the new project wizard in the zenon wizard list.

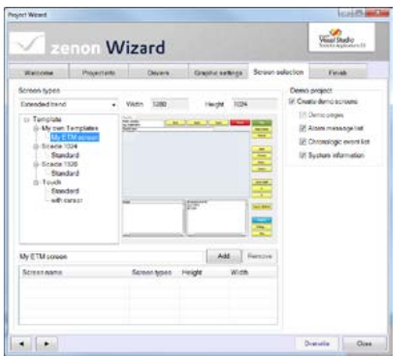


Figure 5: The previously-created template is now available in the project wizard.

ation as simple and flexible for the user as possible. Now, for example, it is even possible to set drivers and the attendant driver variables already in the wizard. The driver variables show system information and statistics in relation to the driver(s) in the Runtime system, for example: the number of read cycles or the minimum/maximum read duration. Potential communication problems can be identified very quickly at the start of any project in this way.

The new project wizard also supports the direct creation of screen types from the templates. *(Figure 4.)* As in the zenon Editor, there is the option to use templates – both those from COPA-DATA as well as user-generated templates. When creating the screens, the wizard uses the existing templates. *(Figure 5.)*

The wizard can do more than this, however. The standard screens and demo screens that are used are no longer programmed by code, but are available as standard zenon XML files. You can now adapt these screens very easily. The folder for these templates is located here: *C:\ProgramData\COPA-DATA\zenon700\Templates\ProjectWizard*.

There you can find subfolders, which contain the corresponding templates according to the resolution. You can easily adapt these to your requirements. To do this, you only need to run through the wizard once step-by-step. After this, you can modify the screens created by the wizard as required and then simply import them back to the correct folder afterwards. The next time you run through it, the wizard will use your user-generated templates.

With its high degree of flexibility, the new project wizard provides important support. It can be modified with little intervention and without any knowledge of programming being required, so that each new project corresponds to your requirements exactly.

The new screen types and templates, as well as the updated project wizard will further reduce the work you need to do to configure a project and will ensure an ergonomic working process, thanks to reusability.

Have fun configuring your projects – with the new tools in zenon 7!

Markus Helbok

.NET in zenon [PART 4]

In the previous parts of this series (Information Unlimited Magazine No. 17, 18 and 20) we focused on the issue of how to embed and use .NET functionality in the form of a .NET user control in zenon. This last part will focus a bit more on the Windows Presentation Foundation (WPF) and the WPF element in zenon.

It will show how this element can be used to take full advantage of the .NET framework. We start off with a small step-by-step tutorial on how to create your own WPF control, based on a ready-to-use Chart Control provided in the free WPF toolkit from Microsoft. This is followed by an explanation about how easily the control can be embedded in zenon using the WPF element. The article closes with an answer to a question we left you with in part 3 of this series: "How do you incorporate a .NET control in zenon using WPF?"

STEP1: DESIGNING YOUR OWN WPF CONTROL

In the first step, we start by creating a new C# project called "WPFControls" in Visual Studio 2008; the project type is "Class Library". After the project has been created, the class "Class1" can be deleted from the project tree. Next, we add a new item called "Chart" to the project; the item type is "Usercontrol(WPF)" from the "WPF" category. Doing this will open the designer window, where we can design the visual representation of our control. To add the existing chart control to the designer's toolbox, we right click the toolbox and select "Choose Items". From the "WPF Components" tab we check the "Chart" control which is included in the "System.Windows.Control.DataVisualization.Charting" namespace. Next, we insert the chart in our control by double clicking on it in the toolbox. We will be updating the content of the chart with our own set of data, therefore we enable the control to use data-binding. We do this using the {Binding} statement and we eliminate unnecessary property values by use of the XAML window so the settings for the chart match:

```
<chartingToolkit:Chart x:Name="chart1">
     <chartingToolkit:Chart.Series>
        <chartingToolkit:PieSeries ItemsSource="{Binding}"
          DependentValuePath="Value"
          IndependentValuePath="Key"
          IsSelectionEnabled="True" />
      </chartingToolkit:Chart.Series>
    </chartingToolkit:Chart>
```

This wraps up the design process, and now we can start with the actual "coding".

STEP2: IMPLEMENTING THE CONTROL

We will need a way to pass data from zenon to the control. To enable this, we will implement a few properties in the control. We would like to keep our control as flexible as possible; the control should be able to display any number of values. To ensure this, we will be implementing a set of properties which enable us to add a variable amount of values and matching descriptions to the chart. We will need to keep track of any data passed on to the control, and display a composition of a full set of data. To pass the data to the control we will implement a property "Value" (type double) to pass a value to the control, and an additional property "Description" to pass a description for the value to the control.

By use of a property "AddToChart" the current values of both of the previous properties are to be stored in the data storage as a chart-pair. Doing this should update the chart and show a visual representation of the data storage. And all subsequent pairs can be passed to the control by use of the properties. Let's start by adding the required member for the data to the implementation of the chart class (found in "chart.xaml.cs"):

```
//Data storage, containing the Value-Description pairs.
    private KeyValuePair<string, double>[] m_Data = null;
```

Follow this by specifying the data properties:

```
public string Description
    {
      get;
      set;
    }
    public double Value
    {
      get;
      set;
    }
```

Finally, add the "AddToChart" property, which uses an additional function to add chart-pairs to the data storage and update the chart.

```
 public Boolean AddValue
    {
      get
      {
        return (m_Data != null);
      }
      set
      {
        //Let's add the data to the chart.
        AddValueToChart(Description, Value);
   }
    }
    private void AddValueToChart(string strText,double dblvalue)
    {
      if (m_Data == null)
      {
              //Create a new KeyValuePairArray.
              m_Data = new KeyValuePair<string, double>[1];
      }
```

```
        else
        {
                //Expand the existing Array containing the chartdata.
                KeyValuePair<string, double>[] newData =
                new KeyValuePair<string, double>[m_Data.Length + 1];
                System.Array.Copy(m_Data, newData, m_Data.Length);
                m_Data = newData;
        }
        //Add the data to the chartdata.
        m_Data.SetValue(new KeyValuePair<string, double>
          (strText, dblvalue), m_Data.Length-1);
        //Update the chart.
        chart1.DataContext = m_Data;
        chart1.UpdateLayout();
      }
```

Now let's build the solution to complete our WPF control exercise.

STEP3: EMBEDDING THE CONTROL IN ZENON

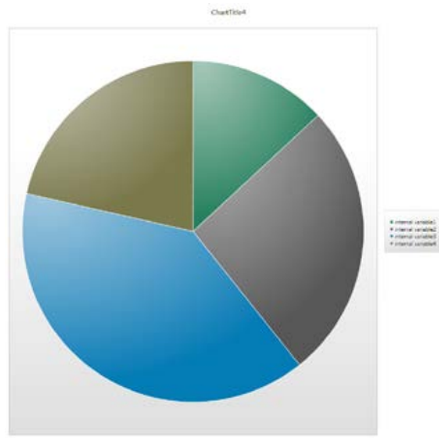
We can now use our own WPF chart control in zenon by use of the WPF element and a Loose-XAML file which links to the "WPFControls.dll". In order to do this we have to add all assemblies from the Visual Studio output folder ("WPFControls.dll", "System.Windows.Controls.DataVisualization.Toolkit.dll" and "WPFToolkit.dll") to the "Additional" files folder of the zenon project. The following XAML file ("Chart.XAML") can be used in zenon by adding it to the "Graphics" folder.

```
<UserControl
  xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
  xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
  xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006"
  xmlns:WPFControls="clr-namespace:WPFControls;assembly=WPFControls">
  <Grid x:Name="LayoutRoot">
  <WPFControls:Chart Name="Chart"></WPFControls:Chart>
  </Grid>
</UserControl>
```

Let's insert a new screen called "Screen 1" and add a WPF element with the name "WPF-Element_1". Next, we select the "Chart.XAML" file from the properties of the WPF element. The chart control should be displayed in the screen, obviously without any data. To display data in the Runtime we create four new internal variables (type "int") with the names "Internal Variable 1", "Internal Variable 2", "Internal Variable 3" and "Internal Variable 4". Now we add four numerical value elements to the screen, and connect each one of them to one of the variables. These are the values we will be displaying in the chart in the Runtime. The next step is to create a small VBA macro. The task of the macro is to take the values from the four internal variables and pass them on to the "Chart" control in our XAML file. To do this we utilize the "WPFProperty" method of the "zenon.Element" object:

```
Public Sub PassDataDirect()
Dim WPF As Element
Dim VarName As String
Dim VarCnt As Integer
Set WPF = thisProject.DynPictures.Item("Screen1").Elements.Item("WPF-Element_1")
For VarCnt = 1 To 4
    VarName = "Internal Variable " + Trim(Str(VarCnt))
```

```
        WPF.WPFProperty("Chart", "Description") = VarName
        WPF.WPFProperty("Chart", "Value") = thisProject.Variables.Item(VarName).Value
        WPF.WPFProperty("Chart", "AddValue") = True
    Next VarCnt
    End Sub
```



Our next step will be to add a new function (Name: "Func_VBA_Direct", Type: Execute VBA-Macro) and configure it so it executes the "PassDataDirect" macro. We connect this function to a new button element which we place onto "Screen 1". We make sure that "Screen 1" is set to be the start screen for the project; we compile the project and start the Runtime. By setting some random values to the internal variables, followed by a click of the button you've just created, the random values will be displayed in the chart.

INCORPORATE A .NET CONTROL IN ZENON USING WPF

WPF offers full access to the entire .NET framework, basically eliminating the need to embed .NET controls using WPF and the zenon WPF element. Virtually anything which can be achieved by use of a .NET control can also be achieved by using a WPF control. In some cases though, for example, if the source code of a control is not available, embedding a .NET user control into zenon by use of the WPF element does make sense. This can be achieved using a similar approach as we used for the chart WPF control. The .NET framework offers a control which can be used as a container for "normal" .NET controls. This container is called "WindowsFormHost" and it can be placed into a WPF control in the Visual Studio Designer the same way we added the chart control from the WPF toolkit. By implementing properties in the WPF control which can be used to set the path and class name of the .NET control, the "WindowsFormHost" can be triggered to load the control.

A huge advantage offered by WPF and the WPF element compared to ActiveX wrappers is the fact that they do not require any of their components to be registered. Any XAML files and assemblies used can be added into the project and transferred onto Runtime machines, neatly side-stepping the registration problems which might occur with ActiveX components.

Stephan Raats

You can also find further information at ***www.uid.com***

COPA-DATA AND USER INTERFACE DESIGN ENTER INTO A PARTNERSHIP

Focus: Usability

COPA-DATA and User Interface Design GmbH (UID) are now working closely together. The objective of the collaboration is to develop user interfaces with attractive designs that can be operated intuitively and efficiently. In doing so, COPA-DATA GmbH and UID offer machine and equipment manufacturers, as well as industry and manufacturing companies, the possibility to implement demanding, ergonomic user-interfaces based on zenon. The service provider UID is a specialist in usability and design and has many years of experience in the design of user-friendly interfaces, in particular for touch and multi-touch applications.

"With COPA-DATA, we have found an ideal partner for UID", explains Andreas Beu, Director of Product Development at UID. "zenon is established and has an excellent reputation in the industry. In addition, COPA-DATA and UID have the same design requirements for HMI/SCADA solutions: outstanding graphic design with optimum usability."

ATTRACTIVE AND INTUITIVE USER INTERFACES FOR INDUSTRY

UID will develop user-friendly user interfaces and corporate HMI guidelines, templates and graphics libraries for end customers, which can be used as a basis for designing zenon applications that have a uniform appearance and work efficiently. For example, the user interface specialist also programs customer-specific, high-value WPF elements that can be integrated into the HMI/SCADA application very easily thanks to the WPF interface in zenon. Andreas Beu from UID adds: "The comprehensive graphics possibilities, as well as zenon's Chameleon Technology allow visual interface designs that were barely possible for HMI/SCADA systems previously." ***COPA-DATA Germany***

ZENON CHAMELEON TECHNOLOGY

Chameleon Technology in zenon is based on centrally switchable color palettes (skins). All colors for all objects can be adapted with one mouse-click. They can also be adapted fully automatically at login – in Runtime, and when being configured in the Editor. Chameleon Technology thus makes it easy to adapt displays to allow for distracting influences such as direct sunlight, or different color perceptions such as color blindness. In addition, different roles and modes can be clearly identified with the skins. Users therefore immediately see the user rights that they are logged in with or can recognize at a glance if the project is running as a simulation or live.

Find out more at www.copadata.com/skins

SPS/IPC/Drives 2011 in Nuremberg, Germany

COPA-DATA demonstrates the visual future

In November 2011, 1,429 exhibitors from 39 countries presented their products in twelve trade fair halls at Europe's largest trade fair for the automation industry. At its 175 m² stand, COPA-DATA presented the Dynamic Production Reporting tool, zenon Analyzer, and zenon multi-touch to the public for the first time. Interested parties were able to gain a comprehensive impression of our automation software, zenon, and its particular features during the course of the three days over which the trade fair took place. With demo projects from the core industries of Automotive, Food & Beverage, Pharma and Energy, the unique requirements of individual industry sectors were portrayed in detail. It also marked the debut presentation of a new app for smartphones, which can be used for any zenon project in future. The ultimate highlight for all trade fair visitors was zenon multi-touch. It enables simple, quick, and modern operation of visualization in the style of an iPhone or any desired smartphone. The standard touch gestures include tapping, swiping and zooming. In addition, the two-hand operation prevents safety-critical actions from being triggered or values being changed by unintended touching. Customers benefit from excellent ease of use when monitoring production, and an intuitive user experience that has long been the standard in the consumer sector. Another new product presentation was our reporting software – zenon Analyzer. It allows for quick and simple evaluation of real-time data and historical data from the production environment and IT systems. Easily-configurable input masks are used in zenon Analyzer to compile online values and metadata from different zenon applications and/or external databases, in order to calculate consumption figures and analyze productivity. The data and key figures are presented in ready-made templates, or individually configurable reports, and allow further benchmarking for permanent production optimization. Companies can directly intervene in their production processes using the data obtained, make the necessary changes, and thus increase productivity on a lasting basis.We would like to thank all who visited the COPA-DATA stand at the trade fair for their interest. **COPA-DATA Germany**

We look forward to SPS/IPC/Drives 2012.
Save the date: November 27-29, 2012, Nuremberg, Germany.

2011 Workshop at BMW Welt in Munich

Rediscover sustainability!

ENERGY AND RESOURCE MANAGEMENT WITH ZENON

With this slogan in mind, COPA-DATA Germany invited customers, partners and interested parties to a workshop at the BMW Welt (BMW World) in Munich. Over 120 participants listened to presentations addressing energy and resource management at BMW Welt, BMW's customer experience and delivery center, with great interest. Visitors were able to get a first-hand impression of zenon's usage onsite, and gain insight into how resources and thus energy costs can be saved in a sustainable fashion.

The morning was peppered with presentations about energy and resource management at BMW. Mr. Martin Megerle, Manager of IT at BMW Welt, opened the sequence of presentations. He introduced the special IT requirements for a major project such as BMW Welt. There, all technical components have to work with each other perfectly – from the presentation of the vehicles under the right light, to the air conditioning and lighting systems of the whole interior design.

In the second presentation, Mr. Günter Kellerer gave a detailed overview of the project's technical implementation. As a planner for the building management system at BMW Welt, he demonstrated the final solution which was implemented using zenon. Therefore, he ran the application live and thus provided insights into the day-to-day workings.

Straight afterwards, Ms. Heike Sommerfeld gave further details about zenon. In her presentation, the Product Manager from COPA-DATA GmbH in Germany underscored the importance of a management system that logs all relevant data, provides key figures for energy monitoring, and enables detailed evaluation.

Over the ensuing lunch, participants had ample opportunities to network and exchange their experiences and ideas regarding the possible uses for zenon. The informative one-day workshop finished off with a tour of BMW Welt.

COPA-DATA Germany

Find out for yourself how effective zenon is at BMW Welt:
www.bmw-welt.com

Test your zenon knowledge

Finally, we invite you to check your current zenon knowledge by answering the following two questions. Have fun!

1. Where do you specify which authorization level is required for a control action?

A ❑ In the properties of the dynamic element

B ❑ In the properties of the variables.

C ❑ In the user administration

D ❑ In the filter settings of the function.

2. A user has the authorization rights for Level 10. Therefore, the user has the rights to perform the following control actions::

A ❑ Control actions for authorization levels 1-10.

B ❑ Control actions for authorization levels 0 and 10

C ❑ Control actions only for authorization level 10.

Correct answers:
Question 1: correct answer: A
Question 2: correct answer: B

COPA-DATA TRAINING

"Development of Competence" on the way into practice

Since IU Magazine No. 21, you may be familiar with DoC not only as a designation of origin but also as the "Development of Competence" – COPA-DATA's new competence center. The concept includes the three support services of education, training and instruction, whereby particular value is put on building competence and knowledge for customers, partners and employees, as well as an efficient training coordination. This initiative was introduced in the Spring of 2011 when it was allocated space at the COPA-DATA Headquarters from which the team would manage competency operations. Based on the three DoC support services, four core activities have been identified, which our competence center will focus on in the future:

1. Vocational education and training and the long-term implementation of a certification system
2. Development of content and didactic approaches – internationally coordinated
3. Anchoring of operational competence development
4. "Train the trainer" program

The DoC project has been supported since start up by an external expert, Mag. Dr. Günter Essl. He is supporting our program until a certification system is established and offers professional and educational trade know-how bundled with practical and scientific expertise.

In particular, the creation of a certification system can be a very sensitive task. In the last IU Magazine we briefly introduced the new COPA-DATA Certification as a modular system. Today, we can give you an overview of how such a system could look. It is based on a multi-layer training concept:

- zenon basic training: In the future the basic training sessions will consist of zenon Product Family training where the fundamentals of our software products will be taught.
- zenon additional training sessions: As further training modules.
- COPA-DATA certification: As evidence of superior knowledge.

To establish a certification concept many small steps need to be taken in advance. One of these steps is the preparation of learning goals, which we would like to explore with you in more detail.

A CLEAR BASIS FOR LEARNING IN ALL TRAINING SESSIONS

Clearly defined learning goals for the participants are outlined at the beginning of all training sessions as well as the contents and didactic orientation. At COPA-DATA, the development of these learning goals is based on the ideas of Benjamin Bloom, an American psychology professor. His approach implies that there are three main directions which can stimulate learning: the cognitive, the affective and the psychomotor branch. Bloom derives his six step taxonomy for learning goals from this. At zenon training sessions where compulsory attendance is required (i.e. classical classroom teaching, in contrast to virtual training in an e-learning framework), we are mostly covering the area of cognitive goals. Here, the primary focus is on perception, recognition and thinking. But even affective goals, the inner engagement and communication of values, play an important role in developing the learning development goals and training plan.

Subsequently, the learning goals also form the basis for the generation of a questionnaire which will be used for testing purposes upon completion of the courses. Positive feedback about the established multiple choice tests supports the approach of our new training concept. Now, the tests are being further developed, on an ongoing basis, and will play an important part in the framework of the certification process in the future. ***Martin Seitlinger***

* Bloom, Benjamin S. (ed.) (1972): Taxonomy for learning goals in the cognitive area.

ZENON AROUND THE GLOBE

COPA-DATA Events 2012

zenon may originate in Austria but our software can be found all over the world – in fact, it is already used in more than 50 countries. So that zenon can continue to integrate everywhere and customers and prospective customers can have the chance to get to know us and our products personally, we will again be touring the globe in 2012. In our luggage: zenon 7 – zenon Analyzer, zenon Supervisor, zenon Operator and zenon Logic, as well as zenon Energy Edition, zenon Pharma Edition, zenon Multitouch, zenon Science Package, wizards, templates and convertors, and years of industry specific know-how, a great number of experts and much more. Be inspired and discover how zenon can bring improved ergonomics to your production processes. *iu*

Together with our international network of distributors and partners we will be taking zenon to your area too – find out exactly where at ***www.copadata.com/events***. We look forward to seeing you there!

11TH - 12ST JUNE 2012
GLOBAL PHARMA MANUFACTURING SUMMIT
Edison / New Jersey, USA
powered by COPA-DATA USA

12TH - 14TH JUNE 2012
POWER DAYS SWITZERLAND
Zurich, Switzerland
powered by COPA-DATA distributor Satomec

20TH - 22ND JUNE 2012
SMART GRIDS PARIS
Paris, France
powered by COPA-DATA distributor JS Automation

27TH - 31ST AUGUST 2012
CIGRE SESSION
Paris, France
powered by COPA-DATA Headquarters and distributor JS Automation

11TH - 14TH SEPTEMBER 2012
ENERGETAB
Bielsko-Biala, Poland
powered by COPA-DATA Poland

17TH - 19TH SEPTEMBER 2012
BECKHOFF AUTOMATION TOBACCO MEETING
Berlin, Germany
powered by COPA-DATA Headquarters

18TH - 21ST SEPTEMBER 2012
INNOTRANS
Berlin, Germany
powered by COPA-DATA Headquarters

25TH - 28TH SEPTEMBER 2012
MAKINAT
Beirut, Lebanon
powered by COPA-DATA CEE and partner ADM Electric

SEPTEMBER 2012
ZENON EXPERIENCE TOUR
September 26, 2012: Graz, Austria
September 27, 2012: Villach, Austria
September 28, 2012: Laško, Slovenia
powered by COPA-DATA CEE

2ND - 5TH OCTOBER 2012
INDUSTRIAL AUTOMATION & DRIVES
Utrecht, the Netherlands
powered by COPA-DATA distributor Sigma Control

29TH - 31ST OCTOBER 2012
EUROPEAN MANUFACTURING STRATEGIES SUMMIT
MITSUBISHI ELECTRIC'S E-F@CTORY VILLAGE
Düsseldorf, Germany
powered by COPA-DATA Headquarters

13TH - 15TH NOVEMBER 2012
BRAU BEVIALE
Nuremberg, Germany
powered by COPA-DATA Headquarters

27TH - 29TH NOVEMBER 2012
SPS/IPC/DRIVES GERMANY
Nürnberg, Deutschland
powered by COPA-DATA Germany

* This list makes no claim to completeness and may be subject to change.