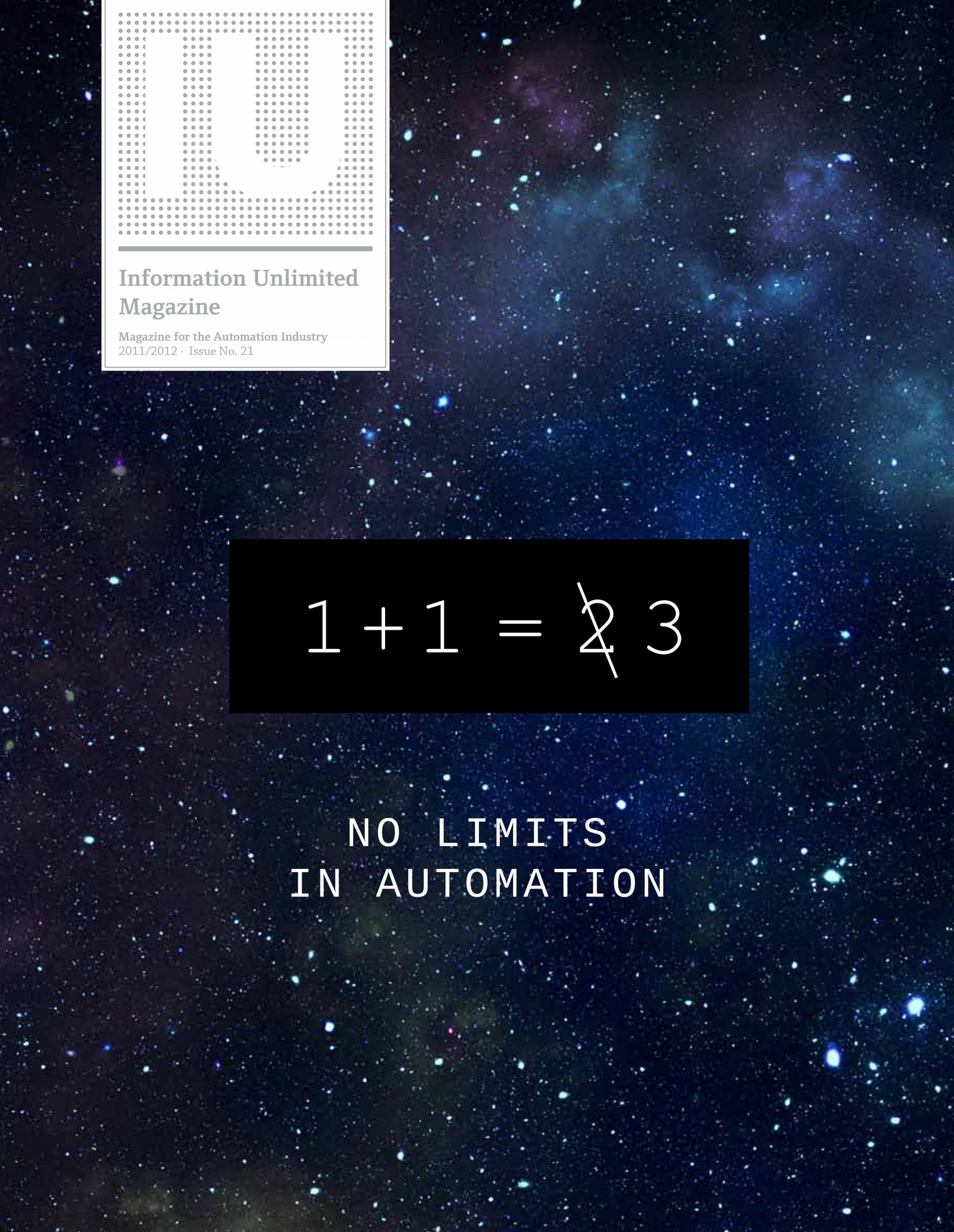

Information Unlimited Magazine

Magazine for the Automation Industry
2011/2012 · Issue No. 21

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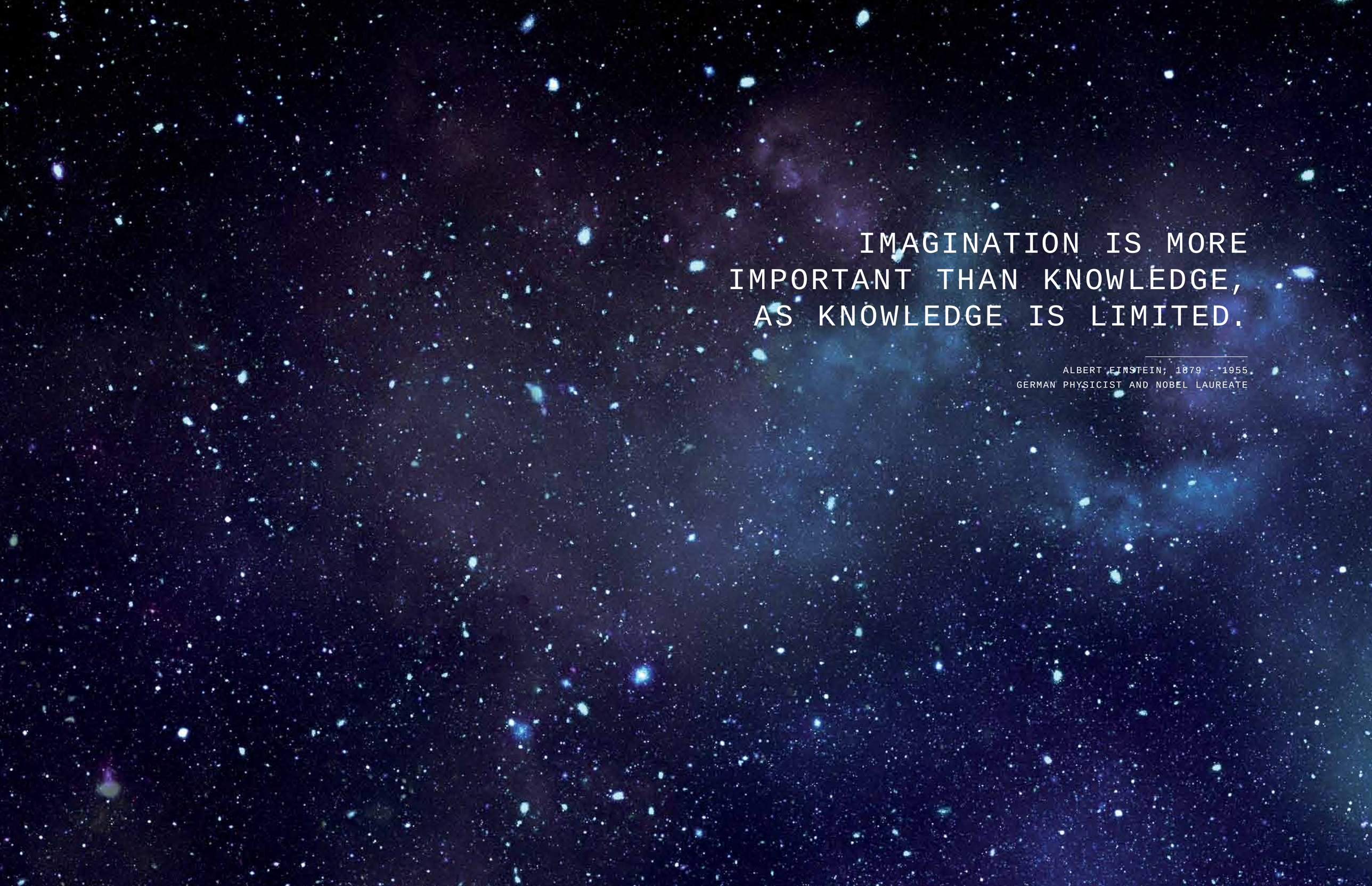
NO LIMITS IN AUTOMATION

NO LIMITS
IN AUTOMATION


IMAGINATION IS MORE
IMPORTANT THAN KNOWLEDGE,
AS KNOWLEDGE IS LIMITED.
ALBERT EINSTEIN, 1879 - 1955
GERMAN PHYSICIST AND NOBEL LAUREATE

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IMPRINT

IU – Information Unlimited Magazine. Magazine for the Automation Industry · No. 21 / November 2011 · **President and Publisher:** Thomas Punzenberger· Ing. Punzenberger COPA-DATA GmbH · Karolingerstraße 7b, 5020 Salzburg, Austria · Commercial Register Number: FN56922i · t +43(0)662431002-0, f +43(0)662431002-33 · www.copadata.com · **Editor-in-Chief:** Julia Angerer, JuliaA@copadata.com · **Art Director:** Eva Plainer, EvaP@copadata.com · Print Office: Kepnerdruck, Druckerei+Verlag GmbH, 75031 Eppingen, Germany · **Copyright:** Ing. Punzenberger COPA-DATA GmbH. The magazine and all the articles and images it contains are protected by copyright. Any use or duplication is not permitted without prior permission from the editorial team. · The technical data contained herein has been provided solely for informational purposes and is not legally binding. zenon® and straton® are trademarks registered by Ing. Punzenberger COPA-DATA GmbH. All other brands or product names are trademarks or registered trademarks of the respective owner and have not been specifically earmarked. · We thank our partners for their friendly support and the pictures they provided. · Subject to change - technical, print or otherwise.

Contact: IU@copadata.com

1 + 1 = ≠ 3

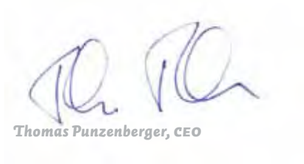
Aristotle recognized "the whole is greater than the sum of its parts". But is this observation from over two thousand years ago still valid today? In a world of bits & bytes, in a world that appears to be completely off track due to speculation and financial bubbles? And what do we individuals have to do with it?

A lot. We are all part of this whole and thus also jointly responsible for the success of the "whole". Everything that we do – and also everything that we don't do – has an influence on the whole. Both in our professional lives and in our private lives. If we succeed in creating synergies with others, we can be really successful.

This applies to us as people. But it also applies to systems such as our product, zenon. Only the perfect interaction of the individual components can create such a powerful system. What would zenon be without its ease of use or its many drivers? New functionalities are added with each new version, and zenon's power multiplies. Saying this, I'm thinking of the new Batch module and the new Multitouch possibilities, the expanded recipe group features and the new security mechanisms. All these new capabilities create together a significantly more powerful whole. The sum of its strengths is multiplied only by their close interaction.

I hope that you enjoy discovering the new possibilities at least as much as we have enjoyed developing them. Let yourself be inspired by Albert Einstein when using our new zenon 7: "Imagination is more important than knowledge, as knowledge is limited."

I wish all readers a happy upcoming holiday season!



Thomas Punzenberger, CEO

CONTRIBUTORS

MARTIN SEITLINGER
explains what the Development of Competence is all about and how it can be utilized as a COPA-DATA concept.

JÜRGEN RESCH
devotes the third part of his series on Smart Grids to, amongst other things, the current question of cyber security.

ROBERT HARRISON
continues his preview of zenon Pharma Edition and also devotes himself to the brand-new zenon Batch Control.

REINHARD MAYR
provides an overview of the zenon product family that will appear with version 7 and presents the new "family members".

MARKUS WINTERSTELLER
understands how to utilize the basic human instinct of playing in the learning process, and describes what LEGO MINDSTORMS has to do with this concept.

GEORGE PAUL UND
LISETTE LILLO FAGERSTEDT
explain how we can grow together with our partner companies and the underlying conditions the new COPA-DATA Partner Community has created for this purpose.

Emilian Axinia, Susanne Bernhardt,
Urszula Bizon-Zaba, Gernot Bugram,
Lisette Lillo Fagerstedt, Susanne Garhammer,
Gero Gruber, Robert Harrison, Markus Helbok,
Kathleen Kuhn, Reinhard Mayr, Tomasz Papaj,
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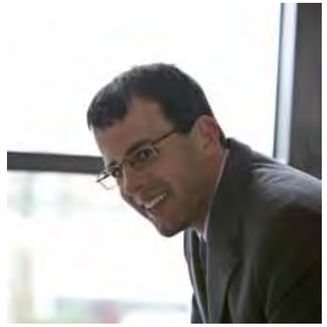
Jennifer Schorn, Bernhard Schuiki,
Martin Seitlinger, Gerhard Sumereder, Phillip Werr,
Bernd Wimmer, Markus Wintersteller

THANK YOU

HIGHLIGHTS

EMILIAN AXINIA
is looking for new methods to increase the efficiency of packaging lines through a joint research project with Technische Universität München.



MARKUS HELBOK
informs us about zenon news such as Multitouch functionalities, the new WinCC-to-zenon Converter and the two-way interface between zenon and Microsoft Dynamics NAV.

PHILLIP WERR
asks how useful analyses can be created from your production data, and explains how the new zenon Analyzer supports customers in doing so.

BERND WIMMER
shows how the zenon Analyzer automatically calculates key figures in the Automotive Industry and provides evaluations at the click of a mouse.

1 + 1 = ~~2~~ 3

THE TRUTH IS IN THE EYE OF THE BEHOLDER

Truth is a question of perspective. Truth is only irrevocable to those who no longer question the given and who, therefore, will never progress. Of course, we need reliable foundations: standards from which we can build; standards that ensure that we are talking about the same things. But development only takes place if we test boundaries and question 'truths'; if we question processes from differing perspectives and choose to tread paths less trodden. It was evident to ancient philosophers: if two people do the same thing, this is by no means the same.

When even simple truths such as "one and one is two" are unquestioningly accepted, fresh thinking and new ideas are stymied. The message is "You don't need to think about it; that's the way it is". Monopolists or guardians of the truth are keen to use this argument but they forget that Math is based on agreements. And, in everyday life, outside of Math, we often find that one and one is not always two.

THINKING 'OUTSIDE THE BOX' BRINGS SUCCESS

Innovative thinking has characterized COPA-DATA since the company was first active in the market and throughout our consistent growth. Effectiveness and efficiency do not come about from repeating the same formulas time and time again; they need a new angle – an impetus to question things and a desire to improve things. This drives positive consequences, such as increased results from the same resources.

An important requirement for economic success is knowing how particular processes operate and how efficient they are under certain conditions. Obtaining information on production performance in real-time can be a decisive competitive advantage. Controlling a facility in an automated manner is not enough to ensure the company's competitive success. It gets interesting when KPIs come into play, when problems can possibly be overcome without significant consequences, or when a great deal of data from many sources can be provided for various target groups. Provided now – not the next day. And from all control units and databases, not just those that suit proprietary software.

To this end, it is sometimes necessary to think out of the box - to ignore your own vanity and be inspired and convinced by others. This is how you get fresh approaches and new solutions. In this edition of Information Unlimited, you will discover a little more about our fresh thinking. Such as the consistent development of the embedded platform. But, most of all, information about the new zenon Analyzer – a product that enables you to obtain data from any desired source, then combine it, analyze it or display it clearly, in graphical form. What would it be like to be able to fine-tune a batch whilst it is still being produced? And what do you think about information that is individually collected and prepared for operators, maintenance technicians and management – automated and precisely adapted to their respective requirements?

LISTENING IS A PREREQUISITE FOR NEW WAYS OF THINKING

What the zenon Analyzer performs, platform-independently, characterizes all of the new zenon product family that we will present in 2012. zenon's guiding principle of "setting parameters instead of programming" has informed the development of zenon networking, which is ready to use with a few mouse clicks. This principle also shapes zenon usability, which is continually improved by working with experts. New thinking also means taking note of what users now expect from an application – as well as giving users trailblazing functionality, which goes on to generate new expectations. It is not by chance that zenon is Multi-touch-compatible for the best intuitive operation.

One and one can suddenly become three; the whole becomes more than the sum of its parts: increased productivity, increased effectiveness, increased efficiency, increased profit … And what about standards and regulations?

Standards set very precisely-defined requirements, which we also implement strictly in line with the protocol. The requirements of FDA 21 CFR Part 11 are adhered to exactly. The IEC 61850 client driver, developed in 2006, has now been certified by KEMA. However, we don't just work to meet standards; we participate in the development of some. You always have a choice with zenon: working strictly in line with standards and regulated procedures or finding your own way. Whatever you decide, implementation with zenon Operator, zenon Supervisor, zenon Logic and zenon Analyzer is always simple and intuitive.

1 + 1 = WHAT YOU MAKE OF IT

For COPA-DATA, going about something new also means not burning existing bridges. Each new feature is checked for compatibility with existing projects. A version upgrade always ensures that all "old" projects remain fully functional. The result is that the process that you have configured and that you expect remains the same. Two remains two, three remains three. However, this does not stop you from efficient action, using varied platforms. With clever inheritance of properties, targeted information at the right time and a single source of data for PLC programming and HMI/SCADA.

Anyone who remains open to new ideas, who is versatile and who keeps moving, can react more quickly and successfully to new challenges and requirements. The truth – or our understanding of it – can change. Technical and societal developments create new conditions – and often require new answers. This is also part of the zenon philosophy, which takes compatibility into account: accommodating the thinking of other manufacturers, the thinking of varied users and their requirements.

One plus one sometimes results in more than the expected outcome, goes beyond guidelines and limitations. As long as it remains traceable and calculable for us to know how we got there, we are able to tap the full potential the "whole" provides. You can find out how our new product developments, our employees and their ideas can support you in this edition of IU. We look forward to your responses! *IU*

zenon Analyzer

Dynamic Production Reporting with the zenon Analyzer

How to Make Information from Data

"Information is a usable answer to an actual question. It is usually deducted or derived from data."

ZEHNDER, C.A., 1998. *Informationssysteme und Datenbanken [Information Systems and Databases]* Publisher: vdf-Hochschulverlag AG, Zurich.

In order to make the right decisions at the right time, you need high-quality, timely information. Regardless of whether you are interested in optimizing consumption, calculating key figures, quality management, or other production-related topics, the data that you need is generally available. However the question is often, "How do I access the data?" and "How can usable information be gleaned from this data?" In this article, you can read how it is now possible to precise obtain real-time information – by using the zenon Analyzer.

THE STORY OF A NEW SOLUTION

The HMI/SCADA system zenon has earned a strong reputation as a pro when it comes to "data acquisition". You know its strengths: diverse native driver connections and communication protocols, as well as advanced capabilities for data processing. The zenon HMI/SCADA system offers many possibilities for you to gain valuable information from data. Because we want to do more for our customers, like leveraging the strength of zenon to collect process data and provide this in a clear manner, or the ability to include data from various sources and process meaningful reports, we created "Dynamic Production Reporting."

No Sooner Said than Done

Based on this objective, we conceived a new product: the zenon Analyzer. So as not to reinvent the wheel, we used existing technology modules from Microsoft SQL Server 2008 R2 for the creation of graphical reports and integrated them into the new reporting tool.

The Finished Product! But its Story has Only just Begun ...

After more than two years of development and testing, we can now present the finished product – the zenon Analyzer. Finished product? A finished software product you ask? Actually you're right; the journey is really just starting. Just like zenon version 1.0, which was introduced to the market in 1992 and which has since constantly gained recognition with new innovations (version 7 is coming soon), the zenon Analyzer will also continue to grow.

From Revolution to Evolution

The revolution: zenon Analyzer's ability to compile your real-time process data with historical data from varied data sources and to translate these into easy-to-read, understandable, graphic reports, which simplify analyzing your production environment.

Evolution is now on the agenda: integrating new features and functionalities, responding to the requirements of our customers and of course, remaining at the forefront of technological development.

INCREASE OUTPUT, REDUCE COSTS, AND OUTPACE THE COMPETITION

There are some issues that are always relevant to production:

- Increasing production efficiency
- Increasing the effectiveness of equipment
- Minimizing the consumption of material and energy
- Improving quality
- and many more

Each of these issues has the common objective of achieving production that is as cost-effective and environmentally friendly as possible, and thus, continually increasing competitiveness. In order for us to achieve this, we need the right information to be provided in such a way that even complex interrelationships can be recognized at a glance. The zenon Analyzer can fulfill this requirement in the form of graphic reports (*see Figures 1–3*).

Register with our Open Innovation Community to discuss your expectations with our experts.
http://reporting.copadata.com

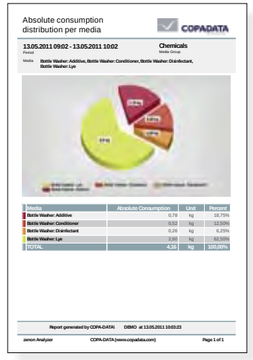


Fig. 1: Consumption analysis of different media

Fig. 2: Analysis on frequency and duration of alarms

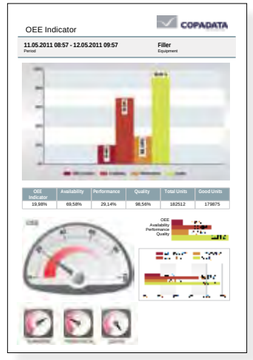


Fig. 3: OEE Indicators to analyze Overall Equipment Effectiveness

Users can choose between pre-configured reports, or define their own company-specific reports. Possible reports include:

- Reports on the consumption of raw materials: these can be filtered according to time period, shift, or production batch, for example.
- Reports on effectiveness: to analyze the output per shift, for example.
- Combined reports: in which energy consumption in relation to production quantities can be given, for example.
- Reports of Key Performance Indicators (KPI reports) with standard key figures such as OEE, or company-specific key figures.
- GANTT charts to analyze the performance of particular equipment components.

Furthermore, there are a wide range of additional reports that you can use to obtain information that is perfectly adapted to your requirements. There are, therefore, many new opportunities to benefit from pre-existing data from production, such as:

- Comparing the consumption of energy and raw materials to your benchmarks from the last production batch whilst production is ongoing.
- Analyzing historical and current alarm statistics from several production lines, in order to compare them.
- Sending automated production reports to pre-defined recipients at pre-defined points in time.
- Integrating price data from other databases, or by manually entering the data into the calculation of your consumption, in order to evaluate not just quantities consumed, but also actual costs at the same time.
- And much more!

What are your specific requirements and how can the zenon Analyzer help you?

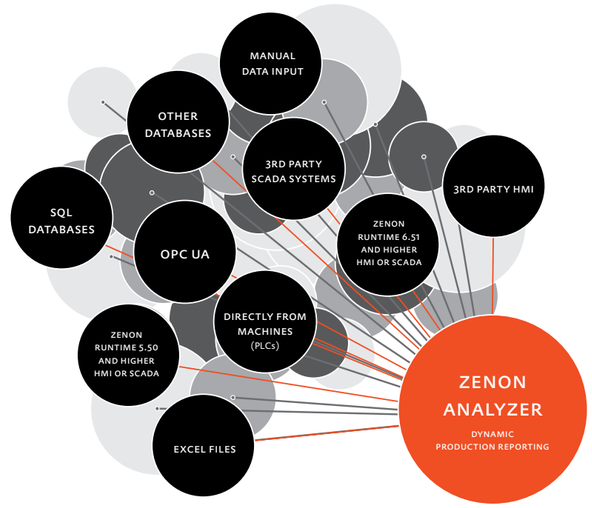
A LOOK UNDER THE HOOD

Access to Distributed Data
With the zenon Analyzer, you have access to all existing distributed data, enabling you to process it in joint reports. Regardless of whether the data is in zenon archives, archives from other HMIs, in some other database or Excel files, you can turn any data into useable information. Even manual data entry is supported.

The Data Can Stay Where it is
zenon Analyzer's ability to work with both online and offline data is revolutionary. This means that data can be prepared in reports that are in zenon Analyzer's own SQL database, but also data that is distributed in your infrastructure. You decide the combination! In this way you can avoid duplicate data being stored, and eliminate the need for a high amount of traffic over the network – and you can process real-time data in your reports.

Data Pre-Processing
In order for data from the process level and from other databases to be processed seamlessly, we have integrated refined data pre-processing into the zenon Analyzer, which turns data into a format that can be used for processing data into reports.

Metadata from your zenon SCADA System
With the Metadata Import Wizard, you can import required metadata from your zenon SCADA system into the zenon Analyzer and thus create the requirements for fully-integrated production reporting.



The end of unreachable data: the zenon Analyzer is versatile in selecting its sources of data.

Dynamic Production Reporting
Dynamic Production Reporting is COPA-DATA's new reporting philosophy that offers you complete flexibility and independence. Real-time data from production can be processed just as historical data can. The user is always free to choose the location where data is saved.

Online Reporting
Online Reporting enables the evaluation of data across distributed systems without copying them to a central database – for example, SCADA archives that are saved to production computers.

Offline Reporting
Offline Reporting relates to the evaluation of centrally-saved data. In the case of the zenon Analyzer, this is data saved in the integrated Microsoft SQL 2008 R2 database. Furthermore, the zenon Analyzer can access data stored in other conventional external databases.

Data connectors
Data connectors connect the zenon Analyzer to varied data sources.

Installation and operation
The zenon Analyzer is easy to install and maintain. Because the interface is completely web-based, no clients need to be installed and access is possible from anywhere in the network. Numerous pre-configured and supplied reports can be used immediately. Individual reports can be quickly created with the help of Microsoft Report Builder 3.0. Thanks to the use of Microsoft SQL Server technology throughout, the zenon Analyzer can be seamlessly integrated into existing security setups.

ROI AND TCO

The zenon Analyzer ensures a first-class return on your investment.

- Transparent pricing without hidden fees or additional costs.
- Quick implementation, because no changes to the existing infrastructure need to be made.
- Use of pre-configured reports, supplied as standard.
- Minimal maintenance costs due to built-in Microsoft technology and web client interface.

Savings and Increased Efficiency
Significant savings can be made from the first day, thanks to the relevance and availability of the information provided in zenon Analyzer's reports. The zenon Analyzer helps to make the hidden potential for improvement in your production processes visible and, therefore, could pay for itself very quickly

ARE YOU READY FOR DYNAMIC PRODUCTION REPORTING?
Turn your data into information that can help you to improve the cost-effectiveness of your processes. We are happy to show you how 1+1 can become 3 when you use the zenon Analyzer. Just contact our sales team at *sales@copadata.com* for more information. ~ ***Phillip Werr***

ANYONE WHO REMAINS OPEN TO NEW IDEAS, WHO IS VERSATILE AND WHO KEEPS MOVING, CAN REACT MORE QUICKLY AND SUCCESSFULLY TO NEW CHALLENGES AND REQUIREMENTS.

The zenon Pharma Edition will be released together with zenon 7 in spring 2012.

Flexibility for the Creative You

Coming soon: zenon Pharma Edition & zenon Batch Control

As well as following in my father's footsteps, for me, becoming an engineer was born out of the desire to release my creative nature into a career. After the early years when, like many, I believed I was going to change the world – as a great inventor or industrial pioneer – the role of creating and designing in a production environment took center stage. For me, this was at Michelin Tyres in my home town. I loved it; everything was new and all to learn. As the years passed and I changed from boy to man, the designing became easier. Projects became easy to conceive and bring to fruition, albeit sometimes with an extensive use of copy-paste. At first this seemed fun and even an evolution. Little did I suspect that the creative times were in their twilight.

WHERE DID THE CREATIVE TIMES GO?

Life got more serious, processes and regulation more demanding, and we engineers and designers found our creative selves constrained by company best practices – where standard modules are repeatedly used and manipulated to suit a particular application. Don't get me wrong, I am all for standardization; after all, who wants to reinvent the wheel at every turn? Please treasure proven solutions and reuse them. But the necessity to implement these standard practices removes the opportunity to express one's passion for creation; the desire to create the small improvements that you can add to a project, the small percentage that is you – the creative you.

But what if your software shouldered the burden of compliance so that you, once again, had the time and the freedom to express your creative impulses and engineer a solution of which you yourself would be proud? Imagine the scene: a new project is commissioned, you apply the company standards to the project via a simple process, and in that instant you have adhered to all the relevant local or international regulations. You complete all this in a short time frame. With little intellectual strain being spent to engineer the work that forms the basis of your project. And now? The rest is up to you – the creative you. You now have the freedom to create the specifics and add your inspired, original ideas to the project.

MAKE IT WORK FOR YOU: STANDARDIZE WITH CREATIVITY

All of you familiar with zenon know we have this philosophy implanted in the zenon Editor, its screen templates, its symbols functionality, symbol in symbol, etc. The new zenon Pharma Edition moves the practical application of our philosophy a stage further by tailoring functionality specifically to the needs of the pharmaceutical sector. The profiles a company uses for compliance to particular regulations are generally standard; these are tried, tested, validated and for the most reused and reused. This is the world of pharmaceutical projects: risk rules the project in many cases. This is due to the cost of change, with the validation and whole quality entourage to satisfy and please. The zenon Pharma Edition allows for a certain regulation profile to be setup, saved and reused time and time again; whether with new projects or with existing applications. Properties such as User Administration, Audit Trail (CEL) activity and Alarm Management can be applied to the project. Creating a new project is achievable with ease because certain screens, reports, alarm groups, reaction matrices and data types can be included in the new project. All this is contained in a configuration profile, which is loaded into the zenon Pharma Edition tool, and with a mouse click a new project can be created or an existing project loaded with the specified behavior. This not only leaves the nice part of the project up to you the designer, but has created a framework of regulatory compliance for your project. Whatever you do, you can always – and easily – make a project compliant with the regulatory requirements your company faces. The framework is in place: make it work for you, not vice-versa. This also opens up the game to allow third party machine manufacturers or system integrators to always design to the same proven standards for a given company and for such third parties to store all of a customer's individual compliance requirements in one file.

The zenon Pharma Edition will also include documentation and comparison tools. This eases the latter part of the project which designers often don't like doing: the project documentation and change control. The documentation wizard aims to create – or at least compile in one document – all the information about the project which you need for the user manual, quality documentation, engineering and warranty documentation. The comparison wizard will aid the validation effort in cases of project evolution, highlighting and documenting in a clear format the changes from a previous project. This tool is ideal for pharmaceutical companies making changes to an existing already-validated process, since it simplifies the compliance procedure and makes the 'risk' clearly visible.

KEEP TRACK OF YOUR PROCESSES WITH ZENON BATCH CONTROL

The portfolio of COPA-DATA is expanding beyond our traditional control environments. Time and time again, COPA-DATA has pushed the boundaries of familiar HMI/SCADA applications by adding advanced functionality. Now we are using our expertise in visualization and control to bring batch management into the SCADA sphere. We are, of course, directly involved in two batch industries – Food & Beverage and Pharmaceuticals – so, this seemed a logical step to take. But we didn't stop there. The batch idea of control – with intelligent modules running individual processes commanded by the Recipe Execution Engine (REE) – can be applied equally in continuous processes and discrete processes. Because zenon is a highly visual product, the aim is to bring recipes, configuration, material flow and processing parameters into this visual arena. Whether you are producing matches, automobiles, fizzy pop, or pain killers, your production process configuration, execution and control can be managed using zenon Batch Control. Allow your processes to interact. Take the whole plant and redesign it for each production order. Open up your processes to increase availability and realize the true possibilities of your operations, manipulating your plant to your daily demands. Not only in the pharmaceutical industry but in other manufacturing industries, zenon Batch Control is a facilitator and transforms old and new processes into leading solutions, to be the best they can be.

For me, the best part about working with COPA-DATA solutions on a daily basis, is knowing that our software is helping to return a little bit of the creativity that I so valued in my youth to the engineering design role. I am a little gray around the temples now, but I can still remember the inventiveness – and that always brings a hint of the cheeky smile from my youth back to my face. ***Robert Harrison***

"The zenon Pharma Edition streamlines our footprint; enabling users to create a framework for standardization which still leaves room to innovate – even within the tight constraints that compliance in such a heavily regulated global market imposes."

Robert Harrison, Industry Manager Pharmaceutical

Who's Who?

GEORGE PAUL

Role at COPA-DATA: Partner Account Manager at COPA-DATA Headquarters. **Responsibilities:** As Partner Account Manager, I am responsible for the operational implementation of the COPA-DATA Partner Community, strategic alliances and all relationships with membership organizations to which COPA-DATA belongs. **Background:** Originally from Houston, Texas, my career began with Foreign Service work for the US government overseas and evolved into high-tech marketing and sales in Silicon Valley, California, business process and business development consulting in USA and, since moving to Austria in 2000, I have been helping various Austrian high-tech companies build and expand their North American presence. As part of my social contribution to higher education and the local community, I am also an external lecturer and professor in the bachelors and masters Design & Product Management/Wood Technology & Economics degree programs at the University of Applied Sciences in Kuchl, Austria and teach swimming to children and the developmentally disabled. **Hobbies and interests:** piano and music composition, open-water swimming, ski-touring and biking. **Me in three words:** even-tempered, flexible, foresighted.

george.paul@copadata.com

LISETTELILLOFAGERSTEDT

Role at COPA-DATA: Partner Program Manager at COPA-DATA Headquarters. **Responsibilities:** As Partner Program Manager, I am responsible for managing the development and continuous improvement of the COPA-DATA Partner Community. This includes creating marketing initiatives to find new partners, as well as the continuous work of adding to the program's benefits and maximizing opportunities for our existing and active partners. **Background:** After completing my university studies, I assisted in the development and management of marketing and partner programs in various industries, including product marketing at EHPT (Ericsson Hewlett Packard Telecommunications), as CRM & Marketing Research Specialist at Sony Europe, and as Partner Manager at Esri Sweden and SiteDirect. **Beginnings at COPA-DATA:** In July 2009 I was introduced to COPA-DATA by Mr. Emås, Managing Director at COPA-DATA Scandinavia and started working at COPA-DATA in August 2009. I am excited about the opportunity to assist partners in maximizing their growth potential within the COPA-DATA Partner Community and look forward to seeing how our partners and the community as a whole grow together with COPA-DATA. **Hobbies and interests:** travelling, skiing, running and playing with my two little boys. **Me in three words:** positive, committed, structured.

lisette.fagerstedt@copadata.com

PHILIPP SCHMIDT

Role at COPA-DATA: Cologne Branch Office Manager, COPA-DATA Germany. **Responsibilities:** Director of the Cologne branch, work in co-operation with universities and associations, contact for the Partner Program and, when necessary, also provide technical support. **Before COPA-DATA:** As the only technically-minded offspring of a family full of pharmacists, after receiving my high school diploma, I began studying Information and Communication Technology at the RWTH Aachen, Germany. I successfully completed this degree in 2010. **Beginnings at COPA-DATA:** I became aware of COPA-DATA whilst looking for a suitable company for my internship semester. I had a very positive impression of the company and applied for a job at COPA-DATA after having completed my studies. My career took off quickly, and the process was enjoyable thanks to my colleagues. I was a Technical Consultant for about six months. Then, as a result of restructuring, I took over managing the Cologne branch and gained many further responsibilities with the new role. **Hobbies and interests:** In addition to working on a second degree in Economics, I find time to do a lot of sports, as well as an hour here and there for PC games. Of course, I make sure to find enough time for my partner and my friends as well. **Me in three words:** enthusiastic, communicative, optimistic.

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MARTIN SEITLINGER

Role at COPA-DATA: Development of Competence, COPA-DATA Headquarters. **Responsibilities:** Managing internal and external training, education and continuing education, build-up of expertise in the COPA-DATA Group, employee development. **Background:** I completed a degree in Business Administration and Information Management and have a background education in Mechanical Engineering. Subsequently, I fulfilled a few different positions in Marketing, Organization & Process Management, and a managerial role in the Quality Management field. In 2005, I temporarily became involved in projects at COPA-DATA, followed by a period as a freelancer. Since February 2011, I have been responsible for the "Development of Competence" department. For me, the exciting thing about my job is working with and for people. **Hobbies and interests:** Sports and nature (mountain biking, climbing, running, going to the gym, sailing), family, travel, coffee, reading the paper, keeping up to date with changes in the economy, technology and society. **Me in three words:** ... or more like in a sentence: "There is only one life, live it!"

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TOMASZ PAPAJ

Role at COPA-DATA: Sales Engineer at COPA-DATA Poland. **Resposibilities:** Customer service and zenon sales in Poland. **Background:** I am a graduate of the University of Agriculture in Krakow, Faculty of Agricultural Engineering, where I gained a master's degree in computer science. Currently, I am about to get my second major in automatics and robotics at the AGH University of Science and Technology, Faculty of Electrical Engineering, Automatics, Computer Science and Electronics. I have extensive work experience. At ARiMR (Agency for Restructuring and Modernization of Agriculture), I performed in situ control of beneficiaries as part of the financing of the Common Agricultural Policy of the EU where I was the leader of a small team. At *bitcom.com* Krakow and WASKO S.A., I worked as an Engineering Specialist, taking care of maintenance, repair and set-up of computer systems and peripheral devices. Furthermore, I carried out Help Desk tasks, providing support for computer systems and applications users at companies and institutions such as TP S.A., BPH, Fortis Bank, ORLEN, ZUS and MEN. I also worked at the service center and directly at customer's locations. I am an energetic, open-minded, assertive, loyal and family-oriented person. I am always willing to help and ready to face new challenges. **Hobbies and interests**: I like new technologies, working with people, playing volleyball and swimming. **Me in three words:** Just like our zenon system, I am open, flexible and reliable.

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SMART GRIDS [PART 3]

Renewable Energy and Cyber Security

Following the first two articles of this Smart Grid series (Information Unlimited Magazine Nos. 19 and 20) which looked at the use of Smart Grids in industry and households and then the medium & low voltage network, in the third part of our Smart Grid series we hope to shed some light on the subjects of renewable energy and cyber security.

GOODBYE NUCLEAR POWER. AND THEN?

While some countries still consider nuclear power as a cost-effective source of energy for the future, others have made a complete U-turn after the Fukushima disaster and plan to increasingly rely on renewable energies. In addition to wind energy, photovoltaics have the greatest potential to close the widening gap in energy supply. To replace all 17 nuclear power stations in Germany, for example, would require the number of wind turbines in Germany to be almost doubled. The switch will not happen overnight. Plus, even if the shortfall in energy supply is met only in part by wind energy, the expansion of wind power plants is likely to continue. The number of turbines already installed, just under 22,000 in Germany alone, will multiply in the coming years. This will affect COPA-DATA because as "one tool for many platforms", zenon already takes on central tasks, such as local turbine management and wind farm management.

In addition to the expansion of renewable energies within national boundaries, concepts with a high reliance on the importing of energy are also increasingly being considered. Firstly, there is the idea of the basic European load being covered by French nuclear power stations in the future, because pulling out of nuclear power is not an option for France. Secondly, there is the hundred-year old idea of obtaining electricity from the desert. Solar-thermal power stations are being built under the name "Desertec". In six hours, the deserts receive more energy from the sun than humanity needs in a year. The deserts of the world could theoretically generate 300 times the amount of energy that humanity requires . The plan envisages converting the solar energy from the Sahara into electrical energy and then routing it to the major energy consumers. These are north of the Sahara – in Europe. To transport massive amounts of energy over several thousand kilometers with as little loss as possible, HVDC (High Voltage Direct Current) is used. The talk is of only a 3% loss over 1,000 kilometers, a tenth of the losses of a 380 kV line using conventional technology with alternating current. These HVDC lines could be the 'umbilical cords' for Europe's energy in the future. For this reason, these power lines have to be exceptionally well-monitored. The safety of a technologically fault-free transfer by SCADA systems, such as zenon, is not sufficient. The whole system must be protected from external attacks.

CYBER SECURITY

The convergence of energy supply control technologies and the internet inevitably creates potential for attacks by hackers. In addition to the theft of energy, hackers with terrorist motives pose a significant threat. In many research projects and working groups, examinations are already being carried out to see how this threat can be controlled. The USA is a step ahead of Europe in this respect. The CIP Standards (Critical Infrastructure Protection) from the NERC (North American Electric Reliability Corporation), which are widely heeded in the energy sector, form the basis for European manufacturers' and integrators' hardening guidelines. The fact that there is a definitive need to act in this sector has been shown by a study from Red Tiger Security. There are already a number of security loopholes in the current conventional system of energy creation, transfer and distribution, which are only closed after an average of 331 days after they have been noticed – a major window of opportunity during which hackers could attack.

Most security loopholes occur between the company network and the HMI network. Between these two areas, there is usually the network for archiving, the domain controller, the web server and various applications for things

The number of turbines already installed, just under 22,000 in Germany alone, will multiply in the coming years. This will affect COPA-DATA because as "one tool for many platforms", zenon already takes on central tasks, such as local turbine management and wind farm management.

Better Protection of Facilities

Cyber attacks occur anywhere where computers are used. We have responded to this fact since the start of product development by arranging for various safety precautions. Safety loopholes that are noticed are continually closed; internal network traffic is encrypted. Furthermore, the communication drivers have been successively implemented in line with the requirements and recommendations of the protocol specifications (such as the IEC standards).

COPA-DATA has also been working closely with universities and other specialist higher education institutes with regards to cyber security and use their expertise to make zenon secure.

Also, in order to be able to provide our customers with guidelines and recommendations to improve the security of their IT environment, COPA-DATA has created a security report which describes the methods that can be used to protect your own IT and SCADA from attacks.

This document can be requested at
sales@copadata.com

such as optimization and forecasting. There is often a lack of a clear definition of responsibilities between these two worlds – the IT world and the SCADA world. This leads to, for example, irregular maintenance cycles and delayed implementation of security patches. Security is not just a matter of technology, it is also very much a matter of defined areas of responsibility – taking responsibility, work processes and documentation. However, it must be possible to rely on the system, based on clear regulations and conduct. zenon already provides a range of features as standard, which help users to meet high security requirements. For example:

- Storage in binary format
- Encrypted network protocol
- Passwords stored in encrypted form
- No SQL server when the program is running
- User administration – Active
- Directory or ADAM
- Documentation of system components
- Separation of application and engineering
- Option for authentication and encryption of communication protocols

Jürgen Resch

*Source: Dr. Gerhard Knies; Physician; Hamburg
*Source: Electricity for Free? The Dirty Underbelly of SCADA and Smart Meters; Jonathan Pollet, CISSP, CAP, PCIP; July 2010

If you would like to find out more about Smart Grids, the security features of zenon and zenon Energy Edition visit us at
www.copadata.com/energy
or write to us at
energy@copadata.com

COPA-DATA's Success at the ENERGETAB Fair in Poland

On the road to success: The COPA-DATA Poland team – the image showing Tomasz Papaj, Alexander Punzenberger and Urszula Bizon-Zaba (from left to right) – is proud to receive another award for the zenon Energy Edition in Poland.

From September 13-15, 2011, COPA-DATA Poland participated as an exhibitor at the 24th edition of the international power industry fair ENERGETAB in Bielsko-Biała, Poland. It was there that the team, along with Managing Director Alexander Punzenberger, was honored to receive another award for our zenon Energy Edition software.

This year's event proved to be the largest in all its history. The more than 680 exhibitors and over 20,000 visitors confirmed the energy industry as one of the greatest evolving industries in Poland at present. Customers and interested parties were invited to learn more about our zenon Energy Edition, dedicated to the specific demands of substation automation and grid control technology. A demo project visualizing and controlling a wind power station was presented on-site in order to demonstrate the functionalities of zenon in the renewable energy sector. After already winning a meaningful prize in May 2011, the zenon Energy Edition won yet again.

DOUBLE AWARDS FOR ZENON ENERGY EDITION IN POLAND

Product of the Year Award
Every year, the Polish automation magazine NAPĘDY I STEROWANIE evaluates automation software on its quality and awards products which best meet the strict award criteria in different categories. In the fourth edition of their competition, the top-class jury – represented by professors of the Technical University Krakow and the readers of the above mentioned magazine – awarded the zenon Energy Edition as Product of the Year 2011 in the "Software in Process Management" category. The award was handed over to Urszula Bizon-Zaba, Marketing Manager of COPA-DATA Polska, during the EXPOPOWER Trade Fair at Poznań, Poland in May 2011.

ENERGETAB Fair Award
Four months later, zenon Energy Edition again convinced technical professors and industry experts of its advanced features and optimal fitness for use in energy automation applications. It was therefore bestowed with "the most distinctive product of ENERGETAB 2011" award.

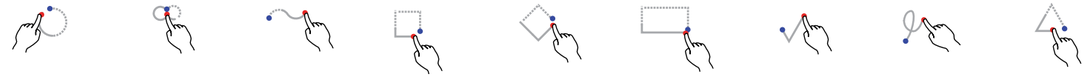
Urszula Bizon-Zaba, who also accepted this new award, states what these awards mean to the young team: "Although COPA-DATA has been active in the Polish market for many years already, the new COPA-DATA office in Krakow was only founded early this year. The two recent awards we received for our software in Poland are a great achievement and incentive for us – and of course, for our customers. The awards validate the premium quality of zenon Energy Edition and will greatly support us in progressing further and increasing our market share in Poland."

COPA-DATA Poland

HMI Gesticulation

zenon Learns Multitouch

Multitouch became a widely-observed feature with the iPhone. By the time the Windows Phone 7 had appeared, there was hardly a smartphone that did without Multitouch. The innovative control concept has advanced with tablets too. What has already become standard in IT is still badly neglected in the industrial environment, where neither hardware nor software has existed – until now …



zenon is the first HMI/SCADA system that is Multitouch compatible. We subjected the matter to intensive analysis and established that Multitouch is exceptionally well-suited to machine operation in industry and relatively simple to implement. This is why we have now implemented Multitouch capabilities in zenon 6.51, where it is available for users, albeit without documentation and with some limitations. However, from version 7 (to be released in spring 2012), Multitouch will be an integral component of zenon and available for universal use in zenon projects. In the meantime, selected zenon customers are already developing prototypes on the basis of 6.51; the first machines should be ready by the end of 2011.

WHAT CAN MULTITOUCH DO?

Multitouch is the ability of a touch-sensitive user interface to perceive the presence of two or more contact points and to inform the operating system of this. The operating system then provides the information to the application which evaluates these contact points and ensures their correct interpretation. But how can Multitouch in a zenon HMI application be useful for machine operation?

It can primarily be used for innovative control concepts. Who hasn't gotten lost at least once in numerous submenus of a project and then not known how to get any further? With Multitouch, the navigation within a project can be designed much more efficiently, with 'docks' appearing instead of menus and their numerous submenus. This is a type of toolbar that arranges the central symbols of a project horizontally and thus grants quick access to the most important screens or applications. With the dragging and positioning possibilities of Multitouch, symbols in the dock can be arranged as desired. The user gets an overview of the whole dock simply by scrolling.

These dragging and positioning possibilities can also be used for standard process screens in diverse ways. For example, instead of opening a screen with the click of a mouse, it can be dragged with a finger from the menu to a certain position on the monitor. This way, the user can set up their workspace so that they can immediately see the most important information at a glance. The screen can be closed again with a downwards swipe movement. Or, with the right downsizing gesture, the user can minimize a screen that is not relevant at a certain time and can instead view another screen with pending alarms in a larger size on the monitor. In addition to these familiar gestures, the zooming of individual screens is part of the zenon Multitouch technology.

Multitouch also makes it possible for zenon users to create different workspaces. For example, the most important key figures can be compiled on workspace 1, the most interesting process screens on workspace 2, the most frequent alarms on workspace 3 etc. A screen can be moved from one workspace to another with a simple dragging movement. The mechanism always remains the same and can, therefore, be operated extremely intuitively: drag it out of the menu into a workspace, drag it to another workspace, drag it back to the menu and thereby close it – all using Multitouch. All settings such as position, size, location in a certain workspace etc. are always saved, so that the user finds their own personal navigation structure when they log in again.

INCREASEDEFFICIENCY,INCREASEDSAFETY

For critical actions within certain applications, especially where safety is paramount, the two-hand operation options of Multitouch are ideal. The operator must firstly press an unlocking button before they can simultaneously carry out a critical action with the second hand. Unwanted switching, which could be life-threatening in certain situations, can thus be prevented by this mechanism.

Another application could be logins using certain key combinations or gestures. Text inputs for passwords are very laborious at a touch-panel and, therefore, inconvenient. With Multitouch, the user need only simultaneously press the two (or more) buttons that they have been allocated in order to log in. An alternative to this could be saving a password in the form of a gesture: the password for user is a U, for example, the password for user B might be a Z – gestures that can each be drawn directly on the touch screen.

The gesture recognition of Multitouch technology can also be used ideally for alarm administration. A tick drawn on the monitor can, for example, mean that an alarm has been acknowledged, a question mark refers to, if defined in advance, further information or help for a certain alarm. In alarm management – more specifically, in all lists – the scrolling possibilities of Multitouch prove to be particularly useful: a quick swipe over the list allows it to be scrolled through. Boring navigation, using scroll bars which are often much too small, or having cursor buttons have become passé with Multitouch.

"zenon is the first HMI/SCADA system that is Multitouch compatible. We subjected the matter to intensive analysis and established that Multitouch is exceptionally well-suited to machine operation in industry and relatively simple to implement."

Gero Gruber, Screen & Interaction Designer

PREVIEW: MULTITOUCH GESTURES IN ZENON 7

- Select (by tapping)
- Drag, scroll
- Two-finger drag
- Swiping within an element
- Flick
- Zoom (by spreading & pinching)
- Further individual gestures can easily be implemented using the zenon API, such as ticking to acknowledge alarms.

THE FIRST ZENON MULTITOUCH LIVE DEMONSTRATION

The international SPS/IPC/DRIVES 2011 trade fair in Nuremburg, Germany is the stage for the first presentation of our new Multitouch-compatible zenon demo project. This demo project shows innovative machine operation using Multitouch, with the following three areas being shown as examples:

Screen 1, Start Screen: Here, the user first selects which machine in a line is to be operated or observed. The central navigation area can be moved intuitively to the left or right, using gestures. In addition, there is an indication of the alarms that are pending for every machine in the overview. At the top edge of the screen, there is an alarm bar as a central element, which shows the most recent alarm. This bar can be expanded downwards with a swipe movement, after which it unfolds into a complete alarm list.

Screen 2, Machine: The core of this area is a "workspace" on which the user can freely position or scale information or control panels. The available panels are parked at the bottom in the dock and can be directly dragged into the workspace. Incidentally, this covers not just one screen page; the panels can be distributed over several pages. The pages can be changed using an intuitive swipe movement. The positioning of the panels is user-specifically saved. Approval (unlocking) of elements, that can only be activated with two-hand movements, is carried out at the bottom left of the monitor. If an attempt is made to operate a locked element, visual feedback tells the user that a two-handed operation is necessary for approval. The alarm bar is also available at the top edge of the screen, but here it only displays machine-specific alarms.

Screen 3, Login: The user is logged in after selection of the user screen by an individual gesture on the login field.

PARADIGM SHIFT IN USER GUIDANCE

With Multitouch in zenon, the innovative control concept is now also advancing into industry. Users benefit from increased usability, an optimum overview of HMI, and intuitive operation. Efficiency and safety of machines and facilities increases noticeably. Multitouch technology makes zenon even easier to use for experts and new users alike. For new users, or those with little experience, the new Multitouch capabilities should help to reduce zenon induction times further still. Typing, wiping, zooming etc. have heralded a paradigm shift in user guidance, which, in combination with zenon, can now also become a reality for industrial equipment. *Markus Helbok*

*Source: http://en.wikipedia.org/wiki/Multitouch

Growing together.

The COPA-DATA Partner Community, launched this year, is an integral part of our channel marketing strategy and plays an important role in generating revenue, increasing brand awareness and successfully positioning COPA-DATA and zenon in the global marketplace. Get a first overview about the program, the benefits for partners and customers and how you can join in.

The COPA-DATA Partner Community is a dynamic community based on open and personal knowledge transfer, straight forward communication and mutual respect whose members strive for excellence in the world of automation. Together with our partners we would like to achieve our corporate vision, which is to become the heartbeat of the automation industry. To ensure that all our partners have the necessary know-how to fulfill our customers' specific business and technical expectations, COPA-DATA Partners are requested to maintain a high degree of competence of zenon and COPA-DATA, which is acquired through regular trainings and customer projects.

A LOCAL COMMITMENT IN AN INTERNATIONAL ENVIRONMENT

Our multi-national customers appreciate the rapid, reliable support we provide for their local production facilities and partners play an essential part in being the local face in the global race to optimize efficiency and improve manufacturing performance. Today, a customer in say, Korea can find a competent COPA-DATA Partner in Germany, with the assurance that they will receive the highest quality support.
By implementing the COPA-DATA Partner Community on a global scale, we increase the standard for excellence in the world of automation. This is done through close, effective cooperation, mutual commitment and a focus on innovation and continuous growth in competence.

BENEFITS FOR PARTNERS AND CUSTOMERS

At COPA-DATA, we value open and personal communication and are responsive to the needs of our partners and customers. We promise fast, reliable support, as well as the opportunity to participate in product development. Together with our partners we are committed to support our customers and assure that their experience with us exceeds their expectations.

The COPA-DATA Partner Community contains a variety of tangible benefits, such as discounts and certification possibilities. We are open to the needs of our partners, and therefore the list of benefits is continuously updated to fulfill our partners' requirements and ensure their longterm success.

Within the COPA-DATA Partner Community there are three levels: Registered Partner, Qualified Partner and Expert Partner. These levels illustrate the competence and commitment of our partners.

GLOBAL IMPLEMENTATION

The first phase of the global implementation of the COPA-DATA Partner Community is focused on Europe. Partner Events have served as the kick-off in many countries where our partners have come together to hear about the new possibilities with one global community. Topics that have been presented are:

- Enhanced possibilities for integration into our business processes
- Additional marketing opportunities together with us
- Increased opportunities to interact directly with our knowledgeable experts around the world
- Direct access to customers through partner networking events

By the end of 2011, we expect to have migrated most existing partners. The implementation will be accomplished in several countries simultaneously. In one year, the program will be in full bloom, encompassing the entire worldwide COPA-DATA partner landscape.

BECOME A PARTNER

The COPA-DATA Partner Community is focusing on System Integrators, General Contractors, OEM's, Hardware Producers and Value Added Resellers within the automation industry.

Are you new to zenon, or are you already an experienced player with good knowledge? We give the opportunity to applicants with all levels of knowledge. Embark as a Registered COPA-DATA Partner and discover opportunities within the Qualified and Expert levels as your business grows.

To join the COPA-DATA Partner Community, please contact your local COPA-DATA sales representative, who will give you all the information you need. You can also email us at *partner@copadata.com*. We're happy to assist you in any way we can.

Registered Partner

All new COPA-DATA Partner Community members start as a Registered Partner. As Registered Partners grow their competencies and market share by taking advantage of the many training opportunities, their business relationship with COPA-DATA matures. This opens doors to new levels and, of course, more opportunities and benefits for partners.

Qualified Partner

Qualified Partners have extensive experience in implementing COPA-DATA's automation solutions and often focus on a specific industry, or customer segment. The commitment as a Qualified Partner is higher, from both the partner and COPA-DATA sides.

Expert Partner

Expert Partners are, as the name indicates, true experts, and they fulfill many criteria, both technical, as well as business expertise. Expert Partners are committed to COPA-DATA and zenon, have several years of experience working independently on COPA-DATA related projects, and enjoy all the benefits available for truly high performers.

FIND A PARTNER

Are you looking for a partner to work with towards a specific solution, or for future opportunities? As our COPA-DATA Partner Community is growing, we are continuously updating our homepage, *www.copadata.com/partner*, where you can find out about new and existing partners.

You can also contact your local COPA-DATA sales representative, who will support you in finding a partner who meets your expectations. We are looking forward to a successful cooperation. *Lisette Lillo Fagerstedt, George Paul*

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Redefining Performance Expectations in Food & Beverage:

A collaboration with Technische Universität München for the LineMET research project, helps identify new methodologies for greater packaging efficiency.

"COPA-DATA's zenon Analyzer made it possible for us to optimally convey our research results. Thanks to our close cooperation, reports were generated within a very short time, enabling article-specific evaluations of efficiency and an analysis of weak points in bottling equipment."

Dipl.-Ing. Stefan Flad, Chair of Food Packaging Technology, Technische Universität München

The zenon Analyzer enables users to benefit from LineMET diagnosis information.

The filling and packaging area is often referred to by production teams as the 'business part' of the plant. It exerts significant influence on the overall financial performance of a Food and Beverage plant. It is not a coincidence, then, that this area is often incredibly dynamic and under constant pressure to increase efficiency.

A packaging line will typically consist of various machines connected by conveyors. Usually, one of the machines will play a central role in the efficiency of the whole line. Once the main machine stops, the whole packaging process is considered as stopped. Let´s take the example of a filling line, where the filler represents the main machine. The ideal situation for the production team is that the filler runs without interruptions and that product quality can be guaranteed throughout the entire planned production time. However, as key performance indicators such as Overall Equipment Effectiveness (OEE) illustrate, in reality this often doesn't happen. The reasons for this can be varied. Being informed about the precise cause of any performance loss is key to taking the right measures in the challenging process of continuously improving performance.

It is from this perspective that the industry is looking to new tools to make such optimization work for production teams and, ultimately, secure optimum performance for every packaging line.

THE LINEMET RESEARCH PROJECT

Leading German research institutions have recently led a research project under the title LineMET (automatic model-based efficiency analysis of bottling plants). These institutions included the Chair of Food Packaging Technology and the Chair of Computer Science IX from Technische Universität München, the Research Group MQM and the Fraunhofer Application Center for Processing Machines and Packaging Technology. This research project was the continuation and expansion of the earlier LineMod research project which looked at the diagnosis model of packaging and filling lines in the food industry. The conclusions from LineMod provided the foundations and models for an automatic analysis of deficiencies in bottling and packaging plants.

The execution of LineMET was undertaken over a two year period (completed July, 2011) and took place in partnership with a variety of representatives from the Food and Beverage Industry: manufacturers, production equipment producers and software solution suppliers. COPA-DATA was glad to be invited to support this project as an industry partner. COPA-DATA's inclusion was the logical extension of its support of other research initiatives in the area of performance improvements development, the conclusions of which often play a vital role in product development across the industry.

The research focused on essential aspects of process efficiency analysis. First of all, the accuracy of data acquisition and archiving is the number one prerequisite for successful results. Further, the mathematical modeling of LineMET makes it possible for even complex packaging lines to be subject to analysis. As a next step, through the implementation of model-based diagnosis algorithms, the raw input data from a packaging line is transformed into very valuable conclusions. The causes of stoppages and/or efficiency losses at the level of the main machine on the packaging line are no longer a matter of supposition. The LineMET solution indicates the cause, the way it was propagated, and its negative influence

"With LineMod and LineMET we firstly followed a model-based diagnosis approach for packaging plants. This provides a flexible efficiency analysis tool with little effort for the adaption to any kind of line or plant constellation."

Dr.-Ing. Tobias Voigt, Chair of Food Packaging Technology, Technische Universität München

on the OEE indicator. The practical application of this methodology in the research project has shown that its precision makes it a reliable analysis tool for real industrial applications. It is estimated that the OEE improvement which can be obtained by applying the LineMod and LineMET methodology is a minimum of 8%.

ZENON ANALYZER FROM COPA-DATA THE VISUALIZATION TOOL FOR LINEMET

In a production environment, the results of the LineMET efficiency analysis have to be made available to their users in a clear and relevant form, so that they are actionable and therefore of real value. Visualization therefore has an essential role to play in the practical implementation of this new model-based methodology.

Because COPA-DATA has collaborated for many years with Technische Universität München in its work on the Weihenstephan Standards, COPA-DATA was well placed to take an active role in the LineMET project. The LineMET team was confident in COPA-DATA's experience in industrial software development, data acquisition and processing and thus asked to use zenon to undertake the visualization tasks required in the LineMET project.

The efficiency analysis makes use of zenon Analyzer, our new reporting software. zenon Analyzer was created to address exactly such industrial requirements. The reporting tool has the capability to use production data stored at equipment level or in different kinds of databases. Sophisticated data processing mechanisms allow for the implementation of complex calculation and data aggregation. The derived indicators and statistics are visualized in a modern, advanced graphical format (bundled in reports) and are made available to users over the Web. Users benefit from interactive filters, top-down views and customizable reports.

The decision by the LineMET team to use zenon Analyzer to display results and diagnosis in graphical reports was a fantastic opportunity for COPA-DATA to test zenon Analyzer in practice, as a part of its development and testing cycle prior to its launch. The production data was collected according to Weihenstephan Standards and stored in an SQL database. This raw data was used by zenon Analyzer for the calculation and display of key information such as OEE indicators and diagrams or Gantt charts illustrating the evolution of machine status. The reports can be filtered depending on the focus of analysis: e.g. by a certain time frame, by packaging article or by production batch.

WHAT ARE THE BENEFITS FOR FOOD & BEVERAGE MANUFACTURING PLANTS?

Using the LineMET methodology will enable Packaging and Production Managers to fulfill performance optimization initiatives in a much more targeted way. Use of the LineMET methodology delivers clear and relevant statistics about the root causes of performance losses, making it much easier to prioritize improvement actions – thereby ensuring maximum benefit at the lowest possible cost.

From COPA-DATA's perspective, the LineMET research project was an opportunity to build on the success of the zenon software suite in the Food and Beverage sector. It offered the possibility of a new, challenging direction and extremely valuable input which is being used to inform further software development. Significant benefit for COPA-DATA's end users, the Food and Beverage manufacturers, will be achieved by integrating a model-based efficiency diagnosis tool in COPA-DATA's Packaging Line Management solution. When this analytical functionality is paired with zenon's existing universal connectivity along with production equipment and advanced graphical capabilities, the end user has a powerful tool to boost performance improvement.

Emilian Axinia

Many thanks to Technische Universität München for the valuable and enjoyable collaboration.

Learn more about the LineMET project at
http://www.lvt.wzw.tum.de/content/Forschung_LineMET_eng

Your contacts at Technische Universität München, Chair of Food Packaging Technology:
Mr. Tobias Voigt, E-mail: tobias.voigt@wzw.tum.de
Mr. Stefan Flad, E-mail: flad@wzw.tum.de

Your contact at COPA-DATA:
Mr. Emilian Axinia, Food & Beverage Industry Manager, E-mail: EmilianA@copadata.com

Development of Competence

Competence through Blended Learning

Education, training, instruction – these three pillars are bundled into a new core area currently promoted in the COPA-DATA Group. The main foci are expanding competence and knowledge for customers, partners and employees, efficient training coordination, and employee career development in the long term. Development of Competence involves the control and maintenance of a training concept, the definition of learning processes, a certification management, as well as controlling and employee development.

Training is not just important for our customers, it is equally important for our trainers. For this reason, we are currently preparing a "Train the Trainer" session, which will enhance our trainers with current methods and teaching skills. We will therefore use a "blended learning approach" in the future, to combine e-learning and classic teaching methods for the optimum model of passing on knowledge. Blended learning combines the advantages of traditional class-based teaching with the flexibility and interactivity of e-learning. For trainers and participants, this means more free scope, increased quality, and longer-lasting learning achievements.

Our future training concept is built on an independent and largely flexible selection of educational modules for the training program. This new focus is thus in line with our conviction that users should be given the freedom to go their own way without neglecting standards in the process. do it your way

Martin Seitlinger

Your contact for Development of Competence:
Martin Seitlinger, COPA-DATA Headquarters
Martin.Seitlinger@copadata.com

zenon and Microsoft Dynamics NAV

zenon Dynamics NAV Interface Connects SCADA and ERP

Microsoft offers Dynamics NAV – previously marketed as Navision – an enterprise resource planning (ERP) solution for SMEs. With Microsoft Dynamics NAV you can obtain proven functionality for financial management, marketing and distribution control, purchasing, sales, storage and logistics, as well as production planning and control.

Software that is precisely predestined to be able to communicate with zenon. A new interface provides a bridge for smooth communication and a full overview of all processes, from order administration through to production and supply. In order to exchange data between production level and business level, we decided to develop a direct connection from zenon to Dynamics NAV: the zenon Dynamics NAV interface. Instead of the error-prone method of transferring production data to the ERP system via interim databases – either manually, or using other channels of exchange the primary objective was to directly transfer real-time data. As Dynamics NAV can also be used for production control, a decision was made to use a two-way interface.

HOW THE ZENON DYNAMICS NAV INTERFACE WORKS

The zenon Dynamics NAV interface consists of two modes – the configuration mode and the runtime mode. In configuration mode, the data to be transferred, the direction in which it is to be transferred and the allocation of the data is defined. The available data is primarily alarm data and online data. Alarm data can be written directly from zenon to any desired Dynamics NAV table. For online values, the actual value direction of zenon to Dynamics NAV and the target value direction is available. Actual values can be transferred to a desired Dynamics NAV table, either cyclically, or by being triggered. Target values are transferred spontaneously from Dynamics NAV to zenon. The configured actions are then carried out in Runtime mode. Each occurring alarm is written directly to Dynamics NAV, whilst the transfer of actual and target values is carried out continually.

With the zenon Dynamics NAV interface, zenon customers using the Microsoft Dynamics NAV as an ERP solution now have a universal online interface, making it possible to transfer data from production to the ERP system in real-time. In addition, the ERP system can directly intervene in the process and send control commands. This way, users can design their production more efficiently and more effectively, have an overview of all processes and save resources at the same time. *Markus Helbok*

Microsoft Dynamics

Markus Helbok would be happy to tell you more
MarkusH@copadata.com

A New Partnership with

Mitsubishi Electric Europe

In summer 2011, we began a new technology based co-operation with Mitsubishi Electric Europe, the market leader for automation solutions. The collaboration is especially advantageous to customers in the Energy Industry who wish to utilize important industry standards.

ACCESS TO IEC 61850 AND IEC 61400-25-4

The co-operation with Mitsubishi Electric Europe is based on porting our IEC 61131-3 soft-PLC straton to the C controller CPU of the modular control system Q from Mitsubishi Electric. This allows users to gain access to a large number of drivers and communication protocols. Above all for use in standards significant to the energy industry – the IEC 61850 and IEC 61400-25-4 have considerable advantages to substation automation and projects in the renewable energy industry. The control system can also function as a fully-fledged IEC 61850/IEC 61400-25-4 server, thanks to straton porting. The straton-equipped controller is currently being comprehensively tested by Mitsubishi Electric customers internationally in a series of pilot projects.

FROM PLC TO ERP – WITH STRATON AND ZENON

straton is fully integrated as a module in our SCADA system, enabling efficient configuration. Both systems make use of the same database and thus ensure a fully-integrated solution. This delivers the advantage of an unlimited exchange of data between PLC programming and SCADA system. Thanks to the new alliance Mitsubishi Electric Europe can offer its customers not only the hardware control components, but also individual overall solutions from PLC through to ERP.

MAKE USE OF SYNERGIES IN THE E-F@CTORY ALLIANCE

Due to the co-operation, COPA-DATA was accepted into the Mitsubishi Electric partner program “e-F@ctory Alliance”. This is an alliance of different technology partners who are pursuing the objective of obtaining the maximum possible benefit for their customers by leveraging all components available to provide a comprehensive solution. *George Paul*

MITSUBISHI ELECTRIC
FACTORY AUTOMATION

You can find out more on this topic at
www.e-f@ctory-alliance.com

zenon Analyzer in the Automotive Industry

Use Information More Intelligently

The economic success of an automotive company nowadays is largely dependent on the quality of decision-relevant information and the provision of this. Only those who continually monitor manufacturing processes and performance can act in a competitive manner and unleash potential to optimize manufacturing. In doing this, the zenon Analyzer supports those in charge of production and company management.

With the zenon Analyzer, COPA-DATA is making a tool available to automobile producers that calculates manufacturing figures automatically and provides statistical analyses at the click of a mouse. The software compiles all the relevant data generated from production processes and provides this in graphical and text form in a clear and understandable manner. Production staff and managers can, thus, always have an overview of historic data such as current information.

Manufacturing figures illustrate trends and illuminate performance. Based on these figures, staff can set benchmarks for different equipment, processes or shifts. To support this, the software offers a multitude of standardized reports that can be used quickly and efficiently. Furthermore, there is the possibility to adapt the pre-defined reports or to define individual reports in order to portray company-specific requirements.

THEHEARTBEATOFAUTOMOBILEPRODUCTION

The time between two consecutive manufacturing steps is called the cycle time. It is the heartbeat of automotive production and provides the rhythm of manufacturing. The duration of the optimum cycle time is dependent on the technical possibilities of manufacturing and the given production time. Deviations from the optimum cycle time directly influence the operating costs. Monitoring of cycle times is, therefore, a fundamental component in the monitoring of automotive manufacturing. The cycle times are automatically recorded and archived in a central database for subsequent evaluation.

The zenon Analyzer can generate, on the basis of this data, histograms that display the statistical distribution of the cycle times at a glance. Deviations therefore become fully transparent. Thanks to the drill-down mechanism, the zenon Analyzer supports a detailed analysis of the cause of these deviations. The filter mechanisms make it possible to quickly and efficiently compare production times or shifts to each other. Manufacturing staff and managers can thus come to conclusions about which external factors are influencing production.

OPTIMIZE THE MANUFACTURING CHAIN

Based on the statistical evaluations of alarms, automobile producers can realize improvement potential in manufacturing. The “Top 10” lists provide a very good overview of the actual situation. This evaluation sorts alarms on the basis of the duration of the problem or their frequency and thus shows weak points directly. In addition, the zenon Analyzer can include further detailed information in these statistics. For example, technical, logistical or organizational causes can be displayed for the respective alarm. It is also possible to have the working times factored into the calculations and to remove break times from the duration of problems. The statistics created are thus very meaningful and serve as the ideal basis for optimization of the manufacturing chain.

ANALYZEPRODUCTIONPROCESSESTHROUGHOUT

The zenon Analyzer makes it possible to link and combine data from different sources. The zenon Analyzer connectors create the necessary data connections to these source systems. It is therefore also possible to create reports and analyses that cover different shifts. The software summarizes the production values, the manufacturing figures calculated, statistical alarm data and system reports with a clear overview. Users can use this information both in tabular form or as graphical reports. The shift logs document the course of production, and all events, on a lasting basis.

Monitoring of cycle times is, therefore, a fundamental component in the monitoring of automotive manufacturing. The cycle times are automatically recorded and archived in a central database for subsequent evaluation.

SUPPORTEDPROCESSES,DOCUMENTEDQUALITY

In order to use historical data and to be able to ensure the level of quality in current production, automobile manufacturers must archive great volumes of data and be able to refer to this when necessary and evaluate it. This way, an automobile producer can, for threaded connections, for example, record and archive a large amount of measurement data such as torque settings, rotation angles and the results of different monitoring mechanisms. These monitoring mechanisms check, for instance, the plausibility of the values that have been automatically recorded. With the zenon Analyzer it is possible to highlight deviations with defined prerequisites, to gain a quick overview thanks to the graphics and to analyze all details in tabular form. The zenon Analyzer is, therefore, an optimum tool for creating quality reports and thus documenting the manufacturing quality of an automobile company. *Bernd Wimmer*

COPA-DATA Project Converter

Simply Change from WinCC to zenon

The WinCC-to-zenon Converter allows you to elegantly convert your projects to zenon whilst profiting from the advantages of an open, consistent and future-proof system.

Thanks to this new tool, it is now completely straightforward to convert a WinCC project to zenon. The new COPA-DATA WinCC-to-zenon Converter allows a simple and reliable change from the Siemens SCADA software to automation with COPA-DATA.

A QUICK CHANGEOVER

The switch from existing HMI/SCADA software to a new, more effective system is often not attempted because the change seems too difficult, risky and time-consuming. A vast number of pictures, symbols and objects need to be recreated, variables redefined, functions reconnected and alarms reconfigured. So it's no wonder that the saying "never touch a running system" has resonated in the automation industry for so long.

However, to stay "as is" all the time can quickly lead to losing competitive advantage. Plus, the outlay of resources and time needed for the migration needn't be as difficult as feared. It isn't always necessary for projects to be completely recreated.

SIMPLE CONVERSION THANKS TO THE IMPORT WIZARD

A C#-based open wizard ensures that pictures, variables and alarm configurations can be easily, automatically and reliably imported from WinCC projects to zenon. All connected settings are carried over 1:1, are ready for use in zenon straightaway and are freely configurable. Once the conversion has taken place, you can benefit from all of the advantages of zenon immediately and fully.

zenon users can request the new project converter directly via their sales representative. *Markus Helbok*

A New Seal of Quality

KEMA Certifies IEC 61850 Client Driver

Complete interoperability with all servers: the zenon IEC 61850 client driver has been certified by the international inspecting authority, KEMA.

It is well worth developing drivers according to strict standards. They provide excellent connections for the user – and sometimes a special pleasure for us. This is the case of our client driver for the energy engineering standard IEC 61850. It has been certified by KEMA, the international inspecting authority.

TESTED INTEROPERABILITY

Users need a suitable driver in order for an automation system like zenon to be able to communicate when using different protocols and standards during use in substation automation. In 2006, the COPA-DATA development team created the zenon IEC 61850 client driver to exchange data using the international standard IEC 61850. After extensive testing, the client driver has now been certified by the inspecting and certification authority, KEMA.

This certification confirms the trouble-free communication using the IEC 61850 standard and hence, seamless interoperability between all available servers within a zenon substation project and the automation technology.

CERTIFICATION ENSURES COMPETITIVE ADVANTAGE

The zenon IEC 61850 client driver has successfully been used in energy projects for years. In current tenders in the field of substation automation, a driver certification is essential. Until now, only a few companies worldwide can boast of this certification. The approval, via an independent inspecting authority such as KEMA, ensures our partners and customers a significant competitive advantage. *Jürgen Resch*

Foundation for Further Expansion

COPA-DATA Reinforces the Cologne Branch

COPA-DATA GmbH Germany is expanding its Cologne branch and therefore preparing for expected continued corporate growth. This reinforcement creates a solid basis for reaching further potential; both economically, and by continuing to expand our presence in the key areas of Automotive, Food & Beverage, as well as Facility Management.

The Cologne team will gain additional support from Philipp Schmidt, Martin Frantzen and Franziska Öhmichen. Philipp Schmidt, until now Technical Consultant at COPA-DATA GmbH, has become Branch Office Manager, taking over the operating responsibilities of the Cologne branch. To read more about Philipp Schmidt and his new areas of responsibility, see the Who's Who section of this magazine edition. Martin Frantzen has taken on the role of Technical Consultant at COPA-DATA GmbH. Positioned in Cologne, he will support customers in northern Germany with all technical questions. Franziska Öhmichen is stationed in the front office of the Cologne branch. Effective immediately, she is the central contact for customers, potential clients, and business partners of COPA DATA GmbH. *COPA-DATA Germany*

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SPS Magazin Awards zenon

Trend Product of 2010/2011

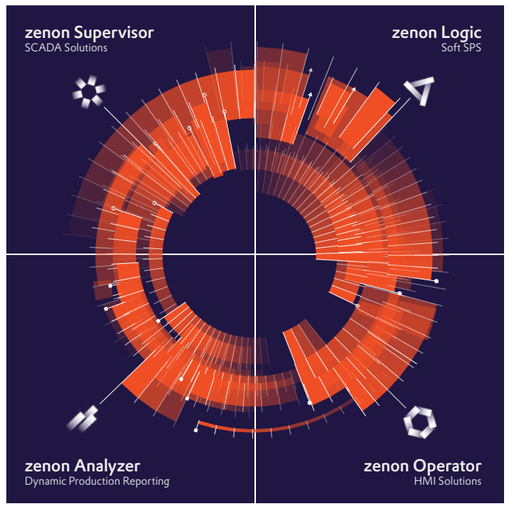
The editors of the established German trade medium, SPS Magazin, are convinced of zenon's level of innovation and user-friendliness. The jury evaluated all of the newly introduced products from 2010 and 2011, and chose zenon as its Trend100 Product of 2010/2011. In addition to usability and innovative qualities, the evaluated products must also represent a current trend shown in a specific way, or set a new trend altogether.

We are very pleased to have received this renowned distinction. It proves that our HMI/SCADA solution is considered the market leader in the areas of functionality, quality, and innovation. COPA-DATA received distinct recognition as early as 2008/2009 from SPS Magazin. straton was selected as Top Product of the Year, with its flexible IEC 61131-3 programming environment, which is fully integrated into zenon as a module today.

The current trend products have been published by TeDo in the 2011 Automation Atlas.
COPA-DATA Germany

Four Products, a Full Range of Services

Coming soon: The zenon Product Family



With the HMI/SCADA software zenon and the integrated soft-logic straton, COPA-DATA already covers a wide range of uses for automation applications in industry. zenon Editor and zenon Runtime for CE have also been in use as variants of zenon especially designed for embedded-systems. Now, in order to prepare our customers for the foreseeable developments and changes in industry and plant construction as best as we can, we are restructuring our product portfolio. From Spring 2012, we will offer a differentiated range with zenon Logic, zenon Operator, zenon Supervisor and zenon Analyzer making up the zenon product family.

WHATBROUGHTTHISABOUT?

Fundamentally changing and expanding a product range that has existed for over 20 years naturally requires much consideration beforehand. There are many reasons behind the decision to have a differentiated range. One of the most significant is the demand for independent embedded systems. Embedded systems, equipped with intelligent software, are increasingly becoming the drivers of product innovation. Individual products in different industries are usually differentiated by means of the software components. These are increasingly decisive in success or failure. Functionality and quality of software contribute directly to competitiveness and can, in some cases, contribute up to 80% of the added value of the overall product. These technologies are a central component of the overall automation system, especially in important industry sectors such as mechanical engineering and plant engineering or environmental or energy technology. The primary challenges of the coming years will be both ensuring energy supply and increasing resource efficiency.

A TOOL FORALLPLATFORMS

COPA-DATA supplies innovative solutions for automation systems and thus also embedded solutions. zenon was the first HMI/SCADA system in the world that could be used completely under the embedded operating system Microsoft Windows CE and also on PDA platforms. Even today, zenon is the only HMI/SCADA system that runs consistently on all Windows platforms. Thanks to this pedigree, many notable international mechanical engineering companies today place their trust in technology from COPA-DATA.

EMBEDDED SYSTEMS GAIN IN SIGNIFICANCE

We follow the trends in the embedded field precisely – and help to shape them with our own concepts and product developments. As a result, we have repeatedly set new technological milestones, such as recipe administration and a web server for embedded systems, and brought them to the market. Intelligent, high-quality embedded systems will be necessary to overcome the economic and social challenges of the future. Their use in the areas of energy management and emissions reduction, as well as production and system security, will increasingly characterize everyday life in the future. In the technical environment, the use of machines and infrastructure will clearly be determined by technologically-demanding innovative and powerful embedded systems. These systems will significantly influence future environmental and societal development, thanks to their real-time compatible and easy-to-network software.

THEBIRTHOFZENONOPERATOR

One trend is evident in many current applications which is particularly noticeable and appears to be unstoppable: the hardware environments and the operating systems are becoming increasingly powerful and the requirements for embedded software solutions thus increase accordingly. For this reason we decided to bring out, at the same time as the release of zenon 7 in Spring 2012 – a platform-independent zenon embedded variant – the zenon Operator. zenon Operator, which can be considered as the successor to the zenon versions for Windows CE platforms, will become a platform-independent embedded solution for all Windows operating systems. Users can look forward to things such as full-fledged recipe administration, trending with recording of historical data and a completely new Message Control to send fault or maintenance messages.

SOMETHINGFOREVERYBODY: THEZENONPRODUCTFAMILY

Together with the new reporting software, zenon Analyzer (read more about this in the IU article on page 12), the SCADA system, zenon Supervisor, and the successor to straton, zenon Logic, which is the integrated IEC 61131-3 solution, the embedded variant zenon Operator completes the new zenon product family.

Our product range thus contains a new strategic arrangement, becomes clearer for users and offers everybody precisely the package they need, regardless of their purpose for using it. Customers freely select the necessary functionality from the product range and use this, optimized for their respective embedded or SCADA platform. The trick is that zenon Operator and zenon Supervisor have the same technology. You can even upgrade zenon Operator to zenon Supervisor without problems and continue to work with the projects that you have already created. Flexible, powerful, and, of course, platform-independent.

You can find out more details about the full scope of the zenon product family, and how you can select the correct zenon for your requirements, in Information *Unlimited Magazine No. 22* in spring 2012. ↬ *Reinhard Mayr*

The following products will be available from zenon 7:

ZENON LOGIC. An IEC 61131-3 solution for the smallest embedded platforms: it can be used not only with Windows, but as it is an independent system, it can also be used with, for example, Linux operating systems too.

ZENON OPERATOR. For classic embedded HMI applications: with alarm management, trending and archiving.

ZENON SUPERVISOR. For comprehensive SCADA applications: with redundancy, long-term archiving of data, report generation and much more.

ZENON ANALYZER. For Dynamic Production Reporting: with access to current and historical production data and combined online and offline reporting.

ONE PLUS ONE
SOMETIMES
RESULTS IN
MORE THAN
THE EXPECTED
OUTCOME.
IT GOES BEYOND
GUIDELINES AND
LIMITATIONS.

Clean Heat for Santa Caterina

There are plenty of winter sports enthusiasts who count Santa Caterina as their favourite resort. Santa Caterina has also hosted more than its share of exciting world-cup skiing. Cold temperatures may be welcomed out on the slope, but whether you're a casual weekend skier or a top international athlete, you'll still want to be snug and warm once you're back indoors. This presents a challenging task for TCVVV AG and its district heating plant in Santa Caterina Valfurva.

The company TCVVV AG was founded in 1997 to produce and distribute clean energy from biomass, and use it for heating and electricity generation. This company builds production facilities, and designs and constructs district heating plants and electricity stations. Managing director Walter Righini: "Our primary objective is to use and add value to local resources; by using renewable energy sources we aim to reduce our dependence on energy from external sources. The municipality of Santa Caterina Valfurva is not connected to the methane gas network, but it does have access to renewable energy sources, in particular wood. This is the main pre-requisite for building a district heating plant fuelled with biomass."

The district heating plant uses mainly waste products from wood processing, tree surgery and afforestation. Weekly deliveries from local sawmills and other local suppliers guarantee the plant's supply of renewable energy sources. To protect the environment, the waste gases produced in the combustion process are constantly monitored. The amount of CO_2 produced when the plant is in operation is exactly the same as the amount of CO_2 absorbed by the trees during their life cycle; this is why the district heating plant can justifiably claim to operate on a CO_2-neutral basis. For control and data acquisition in its district heating plant, TCVVV AG was keen to go specifically with PC-based technology and an Ethernet network. For safety reasons, redundancy was to be built into the PC network. In the words of engineer Fabio Pola, who held overall responsibility for all the hardware and software: "We were particularly keen to avoid as far as possible working with conventional PLCs, because redundant hard PLCs are difficult to find and also costly. We were looking for modern, open technology that would allow us to work in a flexible way whilst at the same time reducing our costs."

DESIGNING A CLEAN ENERGY SUPPLY

COPA-DATA proposed a redundant, integrated solution to TCVVV AG to safely supply the district with heating. The district heating plant in Santa Caterina features a zenon control system that gives the operator central access to all the parameters for the burners. The IEC 61131 compliant straton is already integrated into zenon. This is a soft PLC which is also embedded in a hardware PLC, and it created the link with the controllers. Redundancy can easily be incorporated into both these systems.

The zenon operating system and straton work extremely well together, and this brings the project a number of benefits, especially in terms of speed, data security, and cost reductions. zenon and straton run on the same server. They are so closely linked that they even use the same database, which makes configuration considerably simpler, quicker and safer. Variables therefore only need to be created and maintained once. The server for the TCVVV project is also designed with built-in redundancy, and it will continue to work perfectly even if a module in a computer should malfunction.

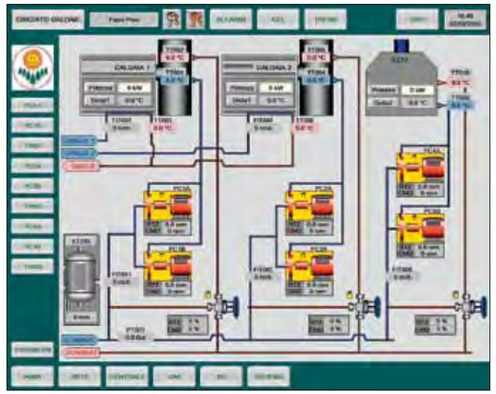
Both systems – server and stand-by – are always supplied with the latest data. They also both communicate with the controllers; in other words all the data sent by a PLC arrives simultaneously on both computers. If the control computer fails, then the stand-by machine will take over immediately. As soon as the first server is operational again it will automatically retrieve all the latest data and will resume control, again with no interruption.

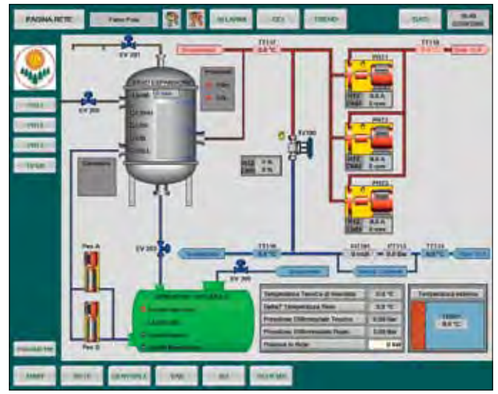
INTEGRATED SOLUTION FOR SAFE, ECONOMICAL OPERATION

Different controllers are addressed from the control station, and by using Profinet the existing network structure can continue to be used. As the standard fieldbus, Profibus replaces the inconvenient serial connections and expensive special plugs with Industrial Ethernet. This provides considerably more functions, simpler operation and greater speed. It also spares TCVVV AG the time and expense of special cabling.

straton checks via its Profinet link five Wago 750-340 Profinet devices at a distance of 30 to 40 metres and, as a soft PLC, controls various steam boilers using these fieldbus couplers and retrieves temperature values for archiving in the control system, where they are analysed in trends. Analog signals from the boilers are retrieved and the relevant valves controlled. The cycle time is 100 ms.

However, straton is used not only on the I/O level. Being a versatile tool and an embedded solution, it also carries out important functions in controlling the pressure compensating tank. For safety reasons, the standard requires that a hard PLC should be installed. Even if the device loses its link with the network, it is essential to ensure that the tank is carefully controlled. The device selected was a Wago 750-860 fieldbus controller in which straton, embedded as a runtime PLC, ensures reliable performance. As an embedded solution, straton is particularly convenient for the end customer as it simply needs to be unpacked and connected. All the configuration modules are created using the straightforward intuitive straton configuration tool with its graphical interface, and variables are linked via a menu or using drag-and-drop techniques. The district heating plant in Santa Caterina benefits above all from the extremely productive integration between straton and zenon. Both straton and zenon can be operated as redundant systems with just a few mouse clicks. Only two PCs are needed to implement a redundant system: all straton projects, just like visualisation running under zenon, will run on a single PC. The second computer is present in a stand-by capacity. This combination of redundant visualisation, soft PLCs and fieldbus I/O produces a highly secure solution that is very easy to configure and can, moreover, be implemented affordably. The straton projects, like the visualisation modules, are configured in the zenon Editor. Software engineer Fabio Pola comments: "We found this integrated solution especially effective from the point of view of configuration. Not only do the visualisation module and the PLC share the same database, but the same, familiar editor can also be used to configure different target systems."





The versatility offered by straton is demonstrated by the way it can operate as a gateway for an ABB gas measuring device. Interestingly, the gas measuring device has only analog outputs and needs to interface to another control system that monitors the gas concentration and is used for certifying the system. straton, therefore uses the Profinet couplers from Wago to read out the values, and then makes them available to the control system via Modbus. In this situation straton is acting as a slave, but it could also act equally well as a master. But another point illustrated by straton and zenon in Santa Caterina is how easily existing systems can be integrated into a project. In parallel with the district biomass heating plant, a collective boiler also had to be integrated with the visualisation and control modules. This "VAS" boiler is controlled with an S7-300 which is linked directly to zenon by using a dedicated S7-TCP driver. The alarm sensor and analog data, for instance, can be evaluated simply without any need to invest in any additional hardware or software.

KNOWING WHAT'S GOING ON

Data produced during ongoing operation is available at all times. It is collected by straton and zenon and archived by zenon. The plant operator alone makes the decision regarding where these archives are stored. If they wish, zenon can even write archives direct to databases, ensuring that no data is lost in the event of system failures. Like on-line data, archived data can also be displayed at any time in the form of an informative trend display:

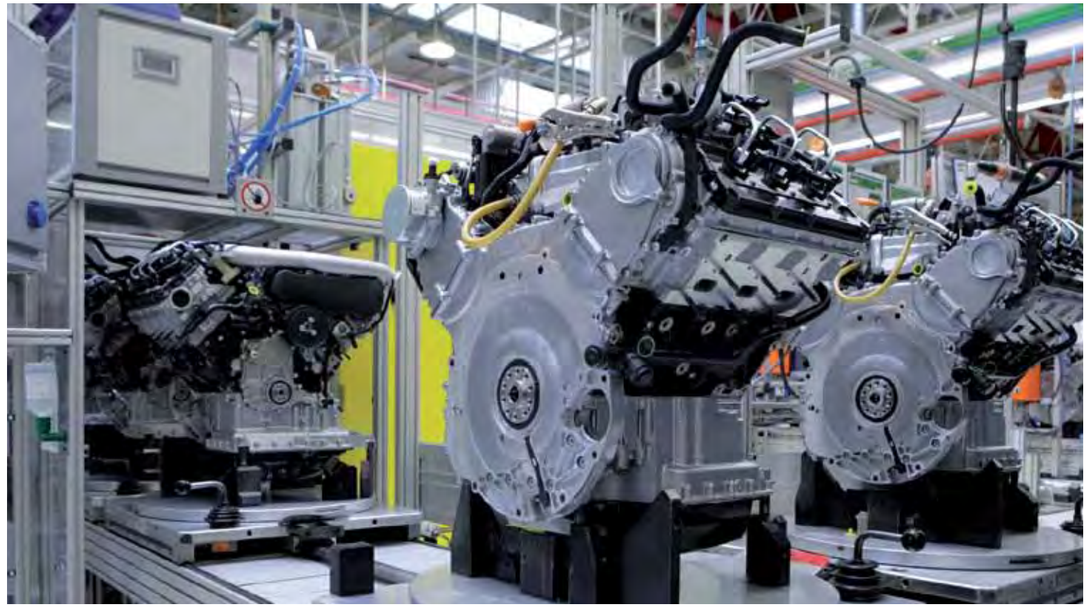
The Extended Trend feature in zenon converts historical and current values into smooth curves. This feature gives full control over curve parameters, axis configuration, zoom factor and much more. Any number of curves can be displayed simultaneously, even if their scaling varies. Since the Extended Trend can display two time axes at the same time in the same chart, it is simple to compare different time periods or batches.

QUICK AND SECURE CONFIGURATION

TCVVV AG succeeded in commissioning its district heating plant within 12 months. It didn't take long to get zenon configured either. Klaus Rebecchi from COPA-DATA Italia commented: "The TCVVV AG engineers are particularly enthusiastic about the way all the details, including straton, are configured in a single development environment. In other words only one tool is required, and it takes next to no time to learn how to use it."

This brings down both training and running costs considerably, and at the same time reduces dependence on outside experts. The redundant technology increases operational reliability and ensures that the control system is available at all times.

Software engineer Fabio Pola comments: "zenon and straton have enabled us to make use of innovative and affordable PC-based technologies with our existing Ethernet, and to communicate directly with the PLCs from a PC. This solution has significantly reduced our investment and maintenance costs." *iu*



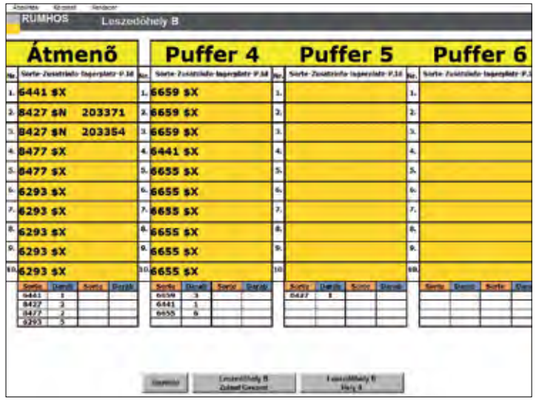
Audi Engine Production Plant in Győr Carries out Pioneering Logistics Management

zenon Paves the Way for Just-in-Sequence Production

Following on from just-in-time methodologies, the new challenge in the Automation Industry is 'just-in-sequence': the right amount, in the right sequence, at the right time, in the right place. In a second stage of project expansion, Audi Hungaria, in cooperation with COPA-DATA, SAP AG and Prozesstechnik Kropf GmbH, had to meet this challenge. Bi-directional communication between the process and the business systems will optimize the coordination between the logistics supply chain and delivery to make a perfect chain of events possible.

"Vorsprung durch Technik" (advantage through technology) is a slogan that perfectly encapsulates AUDI AG in terms of its essence and its brand. At eight automotive production locations around the world, 58,000 employees uphold Audi standards; the highest in quality, efficiency and environmental friendliness. In addition to the technical development and production in Germany, the manufacture of first-class engines in the Hungarian factory plays a particularly key role. Audi Hungaria Motor Kft., a wholly-owned subsidiary of AUDI AG, manufactures virtually the whole range of engines for the Audi Group and assembles, in conjunction with Ingolstadt, the Audi TT range and the A3 Cabriolet.

The Hungarian site manufactures not only four, five, six, eight, ten and twelve cylinder engines, and some special engines for Audi, it also supplies the brands Volkswagen, Seat, Skoda and Lamborghini. Five days a week, an average of 6,500 engines are produced each day in Győr: a total of 1,383,909 engines in 2009. The engine manufacture, engine testing, and assembly are supported by modern conveyor technology and the efficient optimization of transport management.



Display for staplers :
Display of information for the series engines conveyor equipment buffered section($X), including data on the type. For 'Perlenkette' engines($N), the palette ID is also shown.

Display for shop floor workers: The system only provides a complete data set for 'Perlenkette' engines. Before the 'Perlenkette' engines arrive at their discharge point, the employees receive all the information on the desired handling. For example, which conveyor workpiece carrier is to carry the engine, on which palette, in which position, with which hanger the engine is to be deposited, and where it should be deposited.

STEP BY STEP TO REDUCED THROUGHPUT TIME

The Audi factory in Györ started to optimize the 5 km long conveyor system incrementally, using zenon, in 2005. Since then, zenon has enabled visualization of all status and user operation at a central location. Processes can be traced by recording important data such as palette number, engine number (serial number), engine type, and storage movement (the loading point and discharge side), which gives a better overview of the entire plant. The idea of creating a bridge between the SAP ERP system and the process control system was considered right from the beginning of the project. The particular advantage of this would be a smooth exchange of data and, thus, optimum coordination of transport management. However, the system in use before zenon did not cover these requirements satisfactorily. Because zenon was already successfully in use at Audi in Germany, and because it met all Audi's system requirements, the Project Managers in Györ also decided to use the COPA-DATA software.

In cooperation with the system integrator, Prozesstechnik Kropf, and the software developers at COPA-DATA, the conveyor equipment was optimized to modern automation standards. Dennis Jährlich, who has been in charge of system configuration at Prozesstechnik Kropf GmbH at the Györ site since the start of the venture explains: "The main focus of the project was to deliver complete visualization of the conveyor equipment. A project structure with a clear overview should ensure more transparency and traceability. Additional key requirements were: a high degree of system stability, reliable alarm management, consistency, redundancy, the possibility to switch languages and effective user administration. All these requirements have now been successfully delivered for the facility."

EXPLOIT POTENTIAL SYNERGIES

The intralogistics were at their limit, despite the fact that the conveyor system was equipped with additional memory and automatic sorting mechanisms and the visualization had ensured all transport routes were traceable down to the smallest detail. "Due to the lack of communication between zenon and the SAP system, we could not sufficiently coordinate the logistics supply chain with the actual delivery. It was impossible to prepare the engines in precisely the right numbers and types that our end users required. Strictly speaking, we were producing more engines than were needed," explains Balasz Balogh, responsible for engine handling at Audi Györ. Despite interim buffering in the feed line memory and the circulation memory, and a system of roughly sorting according to type, the engines had to be manually sorted at the different discharge points, rearranged, and then returned to interim storage. The engines were held at this interim stage until their actual outbound delivery, which involved an enormous expenditure of time and cost, which Audi Györ was no longer prepared to accept. In addition, there was a problem with space: "With the production of approximately 350 different types of engines here at Györ, you can imagine how much space was required for interim storage. Space that even a factory as large as Audi Györ cannot provide on an ongoing basis", adds Balogh. A connection between zenon and the SAP ERP software had to be implemented as soon as possible.

BI-DIRECTIONAL COMMUNICATION

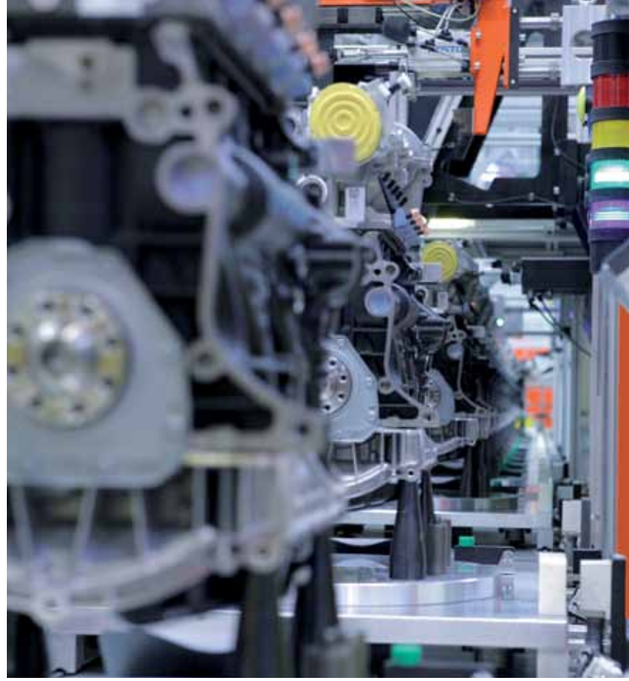
With the implementation of zenon 6.50 at the Györ site, the zenon SAP interface was also embedded into the existing infrastructure. zenon addresses a function module in SAP ERP especially created for Audi Györ by means of an Remote Function Call (RFC) interface to which certain pre-defined data is transferred. This data transfer is based in three basic stages. In the first stage, information about the sequencing is transferred. This means that, when the engines arrive at the discharge point, zenon reports the properties of each engine to the SAP ERP system. In the second stage, data regarding stock movements of the engines is exchanged. When the data from zenon arrives at the SAP system, the storage transfer process is complete. This means that the engines are now treated as "in storage". As a result of this, the number of engines in between the production and storage bays is evident. In the third stage, the data from the SAP ERP system is visualized in zenon. If an engine that is intended for sequence production runs through the conveyor equipment, a request is sent to the SAP ERP. After this, it is prioritized for dispatch to the customer in the SAP system and zenon receives additional information from the SAP system: storage location, chassis number, palette ID, item number on the palette, type of hanger. This data is then displayed in the discharge space at the discharge point, which gives the shop floor workers the necessary instructions about the delivery specifications for that engine.

JUST-IN-SEQUENCE – THE PERFECT CHAIN OF EVENTS

One of the prerequisites for this process is for the customer to send orders from their ordering system direct to Audi Györ in advance. From there, they are then entered into the central SAP ERP module and edited for exchange with zenon. It is, therefore, possible for Audi's intralogisitics to handle the engines in the exact sequence requested by the end user – ready for them to pick up. This process, called 'Perlenkette' (sequence control) at Audi is driven purely by the end customers, i.e. automobile manufacturers. Because of this, Audi Györ is reliant on its customers sending their orders. In addition to the end user's commitment to send the sequences, just-in-sequence deliveries require just-in-sequence production at the automobile manufacturer. With the SAP interface from zenon, new potential has been opened up and the way paved for just-in-sequence production. In an ideal situation, the whole process will also involve manufacturing; so that all processes – from the creation of the engine to its installation in the car – are optimally sequenced for each other. Audi Györ's Project Managers are approaching this ideal step by step.

FROM 0 TO 60 IN REAL TIME

The operators at Audi Györ can trace which motor is where and when it is there, at any time using zenon. In addition, the exchange of data between the process and the ERP system makes it possible to prepare transport exactly as required for deliveries. "This economic use of our engine conveyor equipment brings enormous savings in terms of time and cost – and reduces the logistical work to a minimum. We have short through-put times, less inventory in stock and can deliver more quickly. We are currently using this optimized process for the Audi A8 and R8 models. This represents a volume of approximately 150 to 200 engines daily", says Balász Balogh. The next planned increase in volume will see this rise to approximately 400 engines per day. In principle, the transport of all engines produced at Audi Györ could be done using the 'Perlenkette' method. The Project Managers are endeavoring to continue to expand the project. Negotiations with additional customers have already begun in relation to this. *iu*



AN OVERVIEW OF THE EQUIPMENT IN GYÖR

- zenon 6.50: 20 clients distributed throughout the discharge points of the conveyor equipment
- Runtime server, Standby server, WEB Server Pro: guarantees a high degree of reliability and secure alarm management
- IEC 61131-3 straton programming system: makes complex calculations and control tasks possible and provides displays in tabular form
- SAP interface from zenon: enables bi-directional communication between zenon and SAP ERP
- Multiple monitor administration: ensures a better overview
- Industrial performance analyzer: evaluates the alarm data statistically and uses them to recognize the weak points in the equipment
- Language switching: enables user-friendly operation in German and Hungarian
- Message Control: informs Maintenance by SMS and email about any problems that may occur in the equipment

Find out more:
www.copadata.com/LEGO
http://mindstorms.lego.com
http://education.lego.com

Building, Tinkering, Learning

LEGO MINDSTORMS Enriches COPA-DATA Training

LEGO MINDSTORMS NXT is the name of a programmable LEGO building block. It is used for the logic ("the brain") in the LEGO MINDSTORMS robots and it brings them to life. With the NXT 2.0 version, LEGO has opened up its platform and thus opened the door to creative, free programming. The source code of this platform is provided by LEGO on their website to download. This is great for anybody who always wanted to really control LEGO. But what does that have to do with COPA-DATA? Probably a lot more than you think!

The idea of utilizing LEGO MINDSTORMS for professional purposes at COPA-DATA originated in Sweden – at COPA-DATA Scandinavia. As part of an internal driver training session, a colleague from our Swedish team complained that there was not yet a zenon LEGO driver, which he wanted to have for his private LEGO MINDSTORMS system. Inspired by his enthusiasm, two consultants immediately got to work on a driver. First a simple I/O driver for use in straton on the PC was created. It soon became clear that this toy could be used for training purposes and that it would enhance our training sessions. After some internal presentations, more colleagues were excited by the thought, which led to a professional solution: straton was, instead of the LEGO firmware, ported onto the NXT controller directly, where it took on the complete control and the logic of the system. The cornerstone was laid for using LEGO MINDSTORMS in our training sessions professionally, in a way that reflects the use of control units in industrial environments. The existing high acceptance of LEGO systems at training institutes, such as colleges of higher education and universities, supported our desire to bring automation technology to a wide audience in a simple, presentable manner.

BUILDING – A BASIC HUMAN INSTINCT

Virtually anything can be created with LEGO building blocks. From simple structures such as houses, through to vehicles and robots, to highly complex assembly lines. An ideal basis for implementing demonstrative models for actual tasks with little effort and at low cost. With the implementation of straton on the NXT controller, we can now offer a mix of LEGO and straton. zenon supplements the overall package with the visualization and operating components.

This is what you need to start now:
- a LEGO MINDSTORMS NXT 2.0 kit, such as no. 8547 or the school version no. 9797
- straton add-ons (I/O-driver and functional locks, download from www.copadata.com/LEGO)
- zenon, version 6.51 SP0 Build 5 or later (or the zenon Education DVD incl. straton add-ons)

LEARNING BY DOING

Conveying only the facts in a training session is very difficult and monotonous; it also often does not even achieve the objective – this applies for both the trainer and the participants. If you consider that only 50% of what learners hear or see is retained, at least in short-term memory, but 90% of things that we actually do is retained , it is logical that we orient our training to ward "doing". LEGO is an ideal aid for this. Participants in training sessions where LEGO MINDSTORMS was used for the first time did not consciously notice how much knowledge they learnt in a short space of time. The "game for adults" proved to be an ideal conveyor of knowledge, which makes it possible to teach the use of high-tech software in a playful manner, quickly, and with the use of examples, so that is learnt is remembered for longer.

ZENON AND STRATON AS A GUEST AT THE SCHOOLCHILDREN'S UNIVERSITY

The fact that LEGO MINDSTORMS is not just a "toy for adults" was proven through practical use with 9-14 year-old schoolchildren. As part of the Schoolchildren's University of the Privatuniversität Schloss Seeburg [Schloss Seeburg Private University], we took the opportunity again, following COPA-DATA's great reception there in 2010, to get children closer to the topic of software automation and programming. The two LEGO MINDSTORMS robots that we brought, controlled by straton and visualized with zenon, were the major stars there. The highlight was when the participants programmed one of the robots themselves and determined which commands it was to carry out. The young students went about it very enthusiastically. How do you actually control such a machine? Who switches the lighting in a football stadium? How is automobile production monitored and how do you keep an overview of electricity grids? These and many more topics were covered in a joint workshop with the knowledge-hungry kids and presented to numerous guests at the end of the study week. COPA-DATA congratulates the young students on their achievements, which were recognized at the end with a diploma. *Markus Wintersteller, Martin Seitlinger*

SCHOOLCHILDREN'S UNIVERSITY
22–26 August, 2011
Organizer: Privatuniversität Schloss Seeburg, Seeburgstraße 8, 5201 Seekirchen, Austria, *www.uni-seeburg.at*
Blog about Schoolchildren's University 2011 [in German]: *http://schueleruni-seeburg*.

* Source [German]: Lernlust statt Lernfrust [A Willingness to Learn Instead of Frustration]. Upper Austrian State Government; Education and Social Department, Youth Group; Silvia Lernbeiss; April 2011;
URL: http://www.land-oberoesterreich.gv.at/files/publikationen/Bi_PolePosition.pdf

LOTTERY

STRATON PLAY WELL

Make your dreams come true with your own robot!

COPA-DATA is giving away a **LEGO MINDSTORMS NXT 2.0 KIT, including a zenon Education DVD**, drawn from all entries received. Decide for yourself, which tasks your robot should perform and take control of it as you wish. Just answer the lottery question correctly and send or fax the coupon to COPA-DATA (+43 662 43 10 02-33). Submission deadline: January 31, 2012.

The winner will be advised in writing. One entry per person permitted. Lottery without possibility of recourse to legal action, winnings cannot be redeemed in cash. With entry to this lottery you are agreeing to the use of your contact details for COPA-DATA's marketing and advertising purposes, without remuneration. COPA-DATA employees may not take part in the lottery.

For which purposes does COPA-DATA use LEGO MINDSTORMS NXT 2.0?

- ❑ as hardware for training courses
- ❑ as a household robot

Submission deadline: January 31, 2012

FIRST AND LAST NAME

COMPANY

STREET, HOUSE NUMBER

POSTAL CODE, TOWN

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please stamp sufficiently

Ing. Punzenberger COPA-DATA GMBH
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Karolingerstr. 7 B
5020 Salzburg
Austria

FAQs

Following information on the topics of diagnosis viewer, driver analysis, performance and simulation, the third and last part of this FAQ series gives answers relating to zenon in the energy sector. Our experts from consulting provide practical tips on the IEC 61850 driver and explain what "standard double point value mapping" is all about. Further FAQs and tips and tricks can be found on our online forum at www.copadata.com/forums.

[PART 3]

IEC 61850 DRIVER

BERNHARD SCHUIKI
MARKUS WINTERSTELLER
URSULA PIELA

How can I analyze the connection status of an IEC 61850 connection?

In virtually every zenon application there is a requirement to visualize or monitor the current status of a driver connection. Normally, this is achieved using an I-Bit and a reaction matrix. For drivers supporting polling, because of the constant communication, detecting a connection failure doesn't present a problem. This is, however, more difficult with drivers using spontaneous communication.

The IEC 61850 driver is principally used as a polling driver, yet it also supports 'reporting' or spontaneous communication, where a value is assigned only when a change in the value is noted. Usually, as many variables as possible are communicated via reporting, in order to reduce the amount of data. In most cases, it is even possible to receive all of the process-relevant data points via reporting.

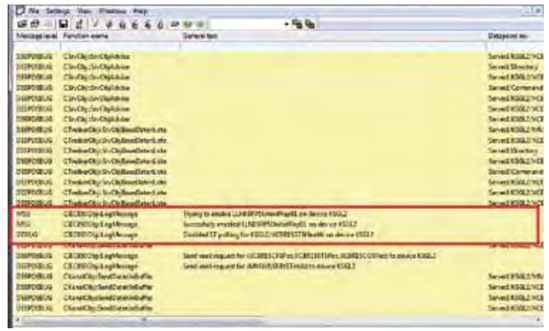
The IEC 61850 standard does not provide a Watchdog function and it is also not possible for the zenon driver to monitor the status of a reporting connection. As a solution, the easiest way to achieve this is to poll a variable of the IEC device. Then, with this polled data point, I-Bit monitoring can be programmed again.

How can you ensure whether the IEC 61850 driver polls a data point or communicates spontaneously?

In the project engineering phase, it is sometimes necessary to determine if a specific data point of the IEC 61850 driver is conveyed as polled or if its values have changed.

The best way to check the transmission mode is to use the diagnosis viewer. In doing so, the logging for all modules of the IEC 61850 driver is activated. The diagnosis viewer must be started before the zenon Runtime. Consequently, all driver activities will be recorded at the Runtime start. During the initialization phase the driver attempts to set up all relevant reports. This can be seen in the diagnosis viewer (Line 2).

The message "disabled ST polling..." in Line 3 shows that all variables from the data object ".../XCBR1/Pos/***[ST]" are carried over as a report and, therefore, spontaneously. All other data points are still polled.



What is "standard double point value mapping" used for?

In the energy sector, various devices make use of a system of status mapping known as "double points" (so called because it uses 2 bit information). These double points can each have four states (values in binary format):

00 ->intermediate-state (neither open nor closed)
01 -> off (switch open)
10 -> on (switch closed)
11 -> bad-state

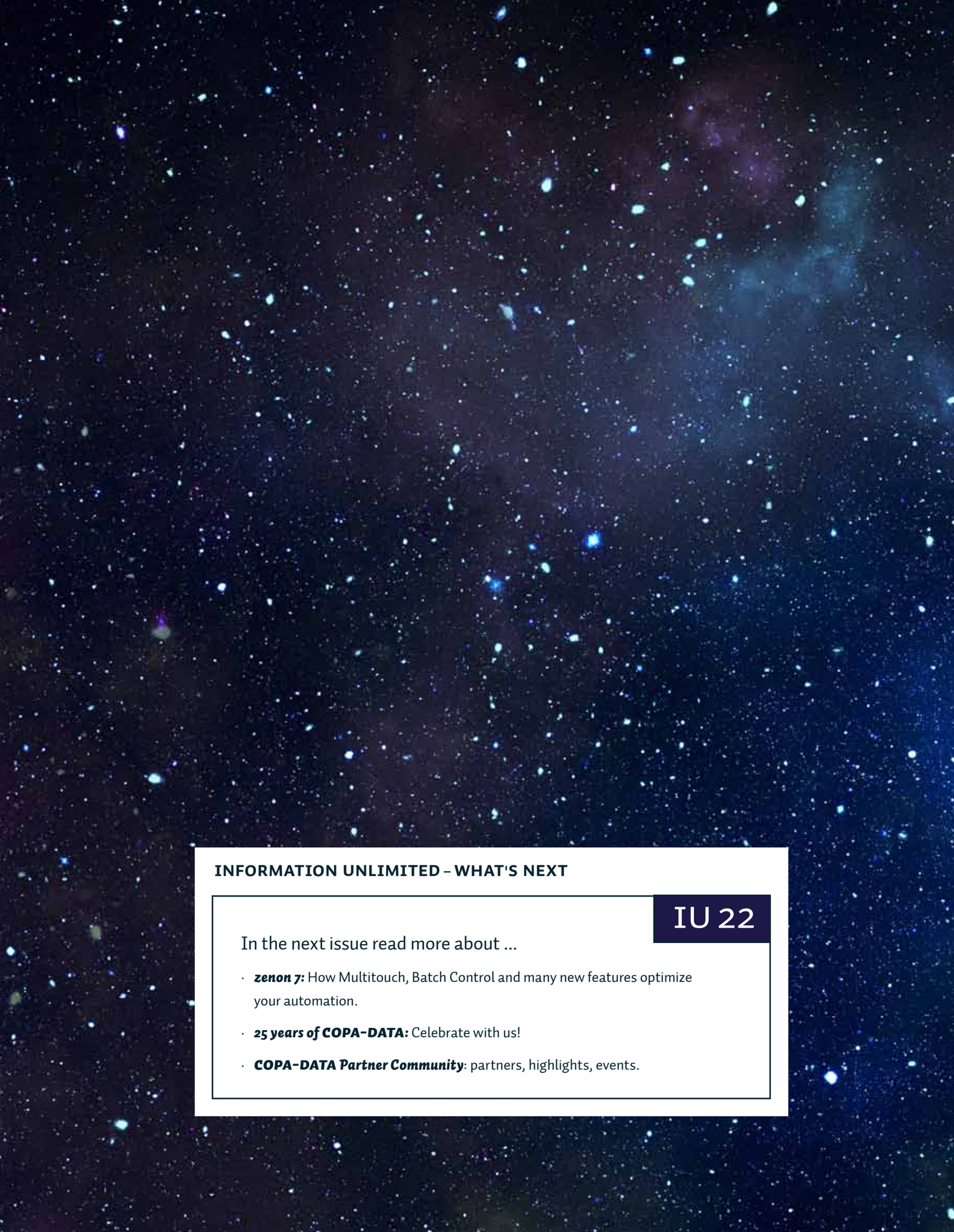
In zenon, however, because of its compatibility with other industry standards, all actions, conditions, etc. are represented or applied using 0 = OFF and 1 = ON.

Hence, an incompatibility would occur between the energy communication protocols and zenon, because the values of the variables would not correspond. Therefore, the so called "standard double point value mapping" was implemented in the energy sector drivers. This functionality takes double the information from the communications protocol into a compatible form with zenon, and vice versa:

Intermediate (00)	zenon value: 2
Open (01)	zenon value: 0 -> (OFF)
Closed (10)	zenon value: 1 -> (ON)
Fault (11)	zenon value: 3

In a given project, it may be necessary to obtain values directly from the devices and without conversion. In this case, it is possible to deactivate this conversion in the driver configuration of the corresponding drivers.

Bernhard Schuiki



INFORMATION UNLIMITED – WHAT'S NEXT

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In the next issue read more about ...

- ***zenon 7:*** How Multitouch, Batch Control and many new features optimize your automation.
- ***25 years of COPA-DATA:*** Celebrate with us!
- ***COPA-DATA Partner Community***: partners, highlights, events.