October/2011

LOYTEC Express

Building Automation Magazine

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LOYTEC-Express is a magazine for customers and friends of LOYTEC
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Print: Digitaldruck.at, Aredstr. 7, 2544 Leobersdorf

Document: 4014101

Cloud Control - Innovation by Revolution

Predictive Controls for Sustainable Buildings

Ground-breaking Ceremony for New LOYTEC Building

Valued customers,

This is the inaugural issue of LOYTEC's L-Express. Biannually we give you an update of new and interesting topics at LOYTEC. The content extends from market trends to LOYTEC product news, tips for utilization of LOYTEC products and articles of light reading.

During the twelve years of our corporate history LOYTEC has grown from a spin off from the University of Technology Vienna to a company headquartered in Vienna with offices in Germany and the United States providing products worldwide. From the beginning it was clear that our future would be closely linked with the development and market penetration of open and standardized communication protocols. Driven by the need of saving energy and simultaneously gaining comfort and more flexibility in the utilization of facilities, the building automation market has actually developed even more towards open and standardized communication solutions during the last decade. And we are convinced that this beneficial trend will continue providing benefits to our clients.

If you had the dream of using only one single communication standard within the building many years ago, you are now aware, a number of very specialized communication protocols will shape the market of the next coming years. Accordingly, LOYTEC has anticipated and adjusted the range of products to accommodate the "multilingualism" of building applications. Today our product range comprises network infrastructure components, embedded touch panels, DALI lighting solutions, L-INX Automation Servers and the L-ROC room automation system – all of which are "multi-lingual". System integration is reality on the field level, where it is most effective.

Our defined goal is to offer LOYTEC customers products of highest quality, so they can concentrate their effort on the applications in the building. LOYTEC provides technologies for seamless integration into BACnet networks, LonMark systems, KNX, Modbus, M-BUS, DALI, ZigBee Pro or OPC with a unique tooling concept. Applying consistent tooling concepts for all LOYTEC products and respective communication technologies creates an efficient work environment and the basis for highest quality of integration. To ensure quality, LOYTEC has developed a multi-stage quality management system. This is not simply testing each product properly before it leaves LOYTEC manufacturing. By a qualification system we ensure that only qualified LOYTEC Competence Partners operate and integrate our L-INX Automation Servers and the L-ROC room automation system. This type of quality reaches the customer and determines the success of the contractor, the manufacturer and the project.

Take a few minutes to browse the L-Express. Immerse yourself into the world of LOYTEC and find out what we can do for you.

All the best,

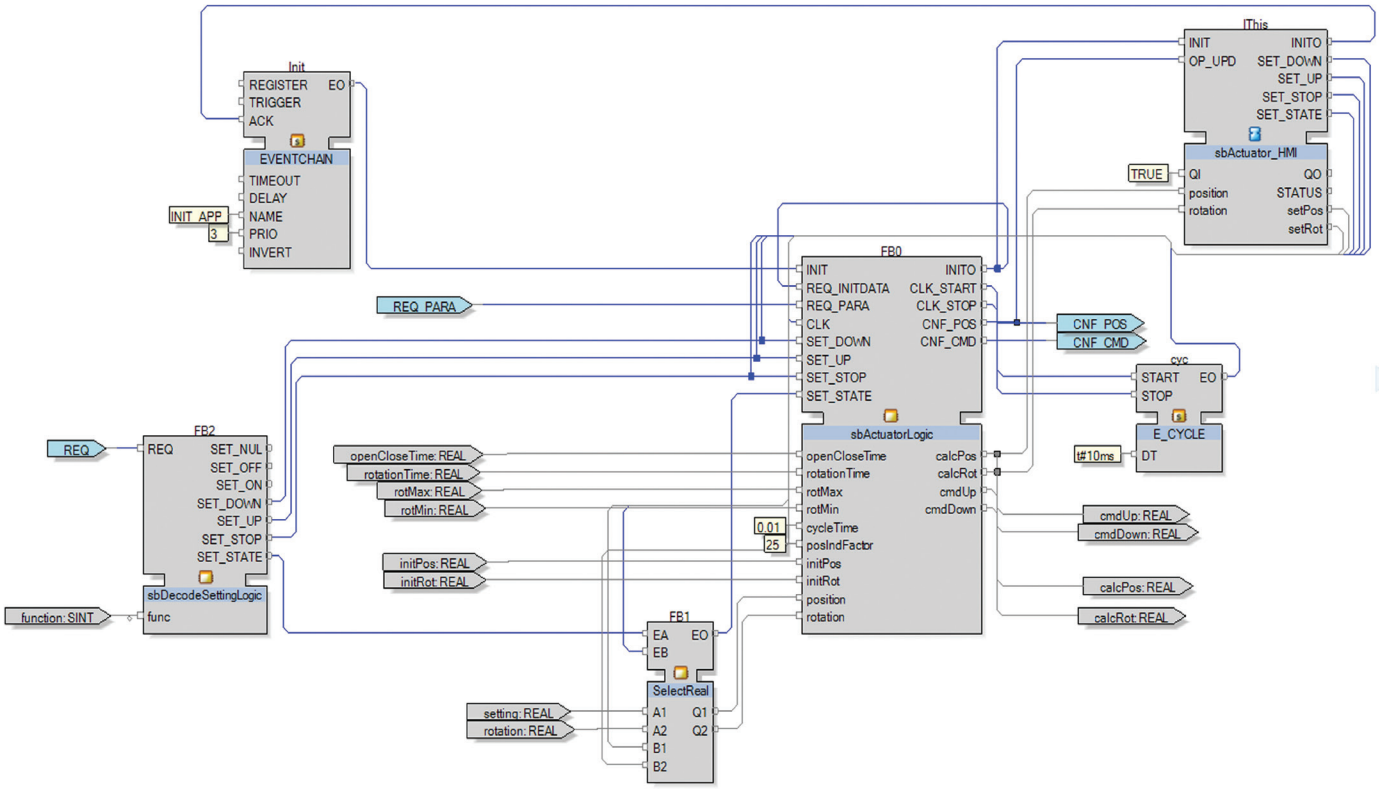
Hans-Jörg Schweinzer

Geschäftsführer
LOYTEC electronics GmbH

Dr. Dietmar Loy

Cloud Control - Innovation by Revolution

L-ROC - revolutionary room automation for flexible room assignment.



The Cloud

LOYTEC is presenting a world premier at this years Buildings Under Control symposium, held in Vienna, Austria. Building automation in the „Cloud“ is not only revolutionary but almost pretentiously evolutionary. If we replace all paradigms currently used in building automation with upcoming innovative technologies, we create the revolutionary L-ROC architecture, which uses the following innovations.

L-Studio Replaces all Other Tools

L-Studio is an integrated design environment which concludes all tasks and functions to automate buildings.

- Programming of functions
- Creating communication relationships
- Debugging and diagnostics
- Creating the visualization
- Creating the documentation
- Deployment into L-ROC controller

Events Replace Cycles

The completely event based programming system based on IEC 61499 replaces the cycle based programming environment according to IEC 61131.

Every button press, every changing temperature, every data packet on the network generates an event that is processed by the L-ROC controller. If the building is sleeping, the L-ROC controllers are also sleeping and are eagerly waiting to immediately process the next occurring event having the full CPU power available. If this event is e.g. a button press to move the sun blinds, this button press is not delayed until the next programming cycle but is immediately processed.

Objects Replace Copies

Only 12 hours before field inspection and some small or large feature nobody paid attention to has slipped the programmer's mind. Every illusion to successfully pass field inspection and to finish the project on time has elapsed. Not in a type based, object oriented approach like L-ROC. We simply add the new functionality to the „type“ and all instances (let's say every room) of this type automatically inherit the new functionality. Not only new functions are type defined but also all communication interfaces. Should the building operator request an additional BACnet object to be displayed in the SCADA or OWS, the BACnet communication interface type is simply extended with the new data point and immediately this new BACnet object will be available on every

room segment or in every air handler.
The repetetive copy functions to duplicate function blocks is replaced by the very powerful type-in-type concept, which supports using types in other types.
In our example of a room automation system, the sun blind controller could be a type that is used in a "window axis" type.
If in a new project a single "window axis" consists of 2 sun blinds (instead of 1), which must be individually controlled, we simply modify the window axis type and add a second instance of the sun blind controller. With a few mouse clicks we have created a new window axis type with 2 seperately controllable sun blind controllers for moving the 2 sun blinds individually.

Distribution Replaces Fixed Programs

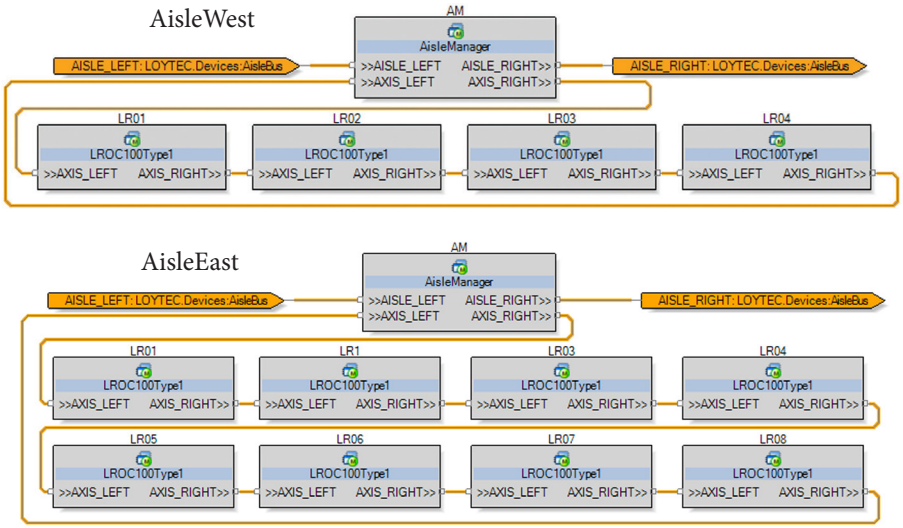
Cloud control means optimum usage of the available CPU processing power for controlling a building. Hence we distribute CPUs around the building were we connect the sensors and actuator with the inputs and outputs of the CPU.
Only during the commissioning phase of the building the desired functions are distributed either automatically or manually to the CPUs. If in the future additional functions are requested by the building operator these additional functions are distributed into the CPUs and they execute their tasks. Provisions for future enhancements have been available since the start-up of the building. Due to the event-oriented processing there is always enough CPU power available for future enhancements.

Open Communication Replaces Proprietary Data Exchange

In an L-ROC system all open communication interfaces like BACnet, CEA-709 (LON), KNX, ZigBee, OPC XML-DA are available. This way, L-ROC integrates perfectly into existing BACnet or CEA-709 buildings and directly provides data to OPC-XML-DA based SCADA packages.

Integrated Visualization Replaces Expensive SCADA Packages

Another component of a "type" is its integrated graphical representation. Already when a type is defined, its graphical representation will be designed. A single object can represent itself in various shapes to please the building operator with one set of information and the service technician with another set of information. As a result, L-VIS and L-WEB projects are automatically created and distributed in the network.



ONE Universal Controller Replaces Various Application-Specific Controllers

The LROC-100 with its expansion capability (LIOB I/O modules) can be used universally at every location of a building. The LROC-100 controls an air handler as well as a whole window axis. This concept allows a fairly simple warehousing of replacement components at the service center and guarantees a straightforward device replacement at the customers site.

Proven and Tested Libraries Replace Unplannable Programming Times

With the product launch of the L-ROC system, a fully tested function library for room automation will be available from LOYTEC. With the components from this function library, a new project can be provided with only a few steps and foreseeable project risk for lighting with daylight harvesting, sun blind control, heating, and cooling.
A library for primary systems like boilers and air handlers will be available in summer 2012.

We Control 288 Window Axes

In the following example we automate an office building with flexible room assignment using the L-ROC technology. The building has 6 floors. Each floor consists of an aisle to the west and an aisle to the east. Aisle west counts 16 window axes, the aisle east counts 32 window axes.
We start modelling the aisle west (AisleWest). Therefore we take from the function library 4 instances of the LROC100Type1 object which can control 4 window axes for lighting, sun blind, heating, and cooling control. In a second step we model the aisle east (AisleEast) where we use 8 instances of the LROC-100Type1 object. By combining an AisleWest and an AisleEast we create a floor (FloorType1). For each floor we automate 16 + 32 = 48 window axes. Since our building has 6 floors we use 6 instances of our object FloorType1 and create a new object Building6Fl. In total we have now automated (16 + 32) · 6 = 288 window axes.
From the object "Building6Fl", the L-Studio automatically creates, configures, and programs 72 LROC-100 controllers with their corresponding LIOB I/O modules.
The communication relationships between the LROC-100 controllers are also created automatically by L-Studio.
With a mouse click, the configuration and programs for the 72 LROC-100 are downloaded into the devices which have been previously installed and wired-up by the electrician.

Flexible room assignment is the premise for this innovative architectural concept. Paired with modern technologies of object oriented programming we created this miracle.

The electrician can use the built-in LCD display to test the wiring of all sensors and actuators and to set the proper IP address of the LROC-100.

After the device installation has been successfully tested by the electrician, the system integrator arrives on site and performs the "deployment". During the deployment, device configuration and programs are downloaded into the LROC-100 controller. All wiring has been tested previously by the electrician and the system integrator hardly ever sees a physical LROC-100 device. Of course the deployment can also be done from remote. L-Studio creates the visualization for the building operator as well as the projects for LVIS-RE touch panels for local room control.

We Parametrize 288 Window axes

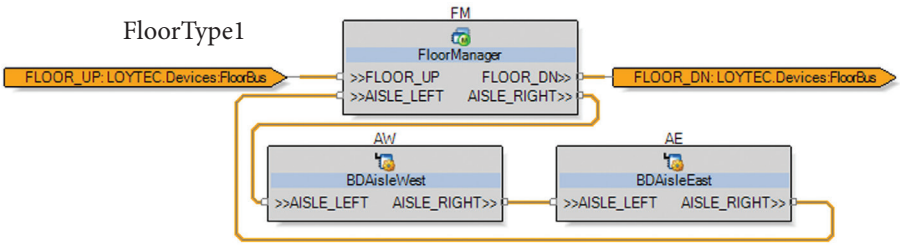
In a last step, rooms must be formed by combining window axes and parameters for constant light controllers, sun blind controllers, heating, and cooling, set points must be set properly. Efficient parameter adjustments for a large number of parameters can be accomplished with the help of the LWEB-821 master parameter editor. Parameters are displayed in spreadsheet style and can be changed simultaneously with multi-select.

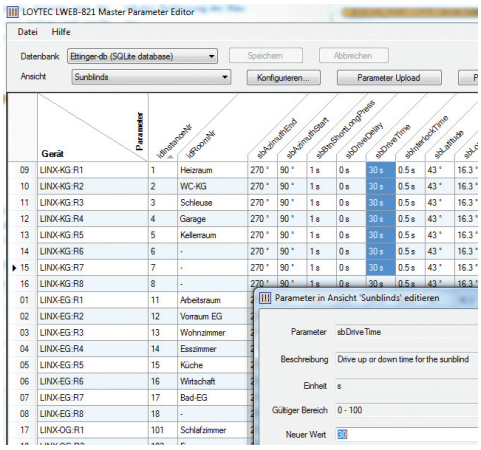
With a single mouse click, sun blind run times for an entire building can be adjusted or a window axis can be assigned to a different room.

We Have to Replace a Device

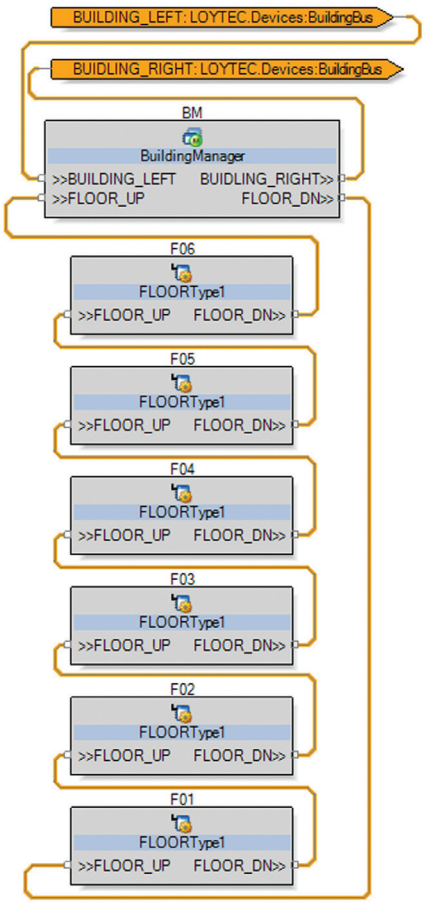
All programs, configurations, and parameters are stored in an SQL database and kept up-to-date with periodic automatic backups. If a LIOB I/O module fails, the new LIOB I/O module is automatically configured by the LROC-100 controller. If an LROC-100 controller fails, the new controller is automatically restored with the latest backup from the SQL database and the building is up and running again.

FloorType1





Bulding6Fl



Reliability is Our Premise

LROC-100 controller can be wired as a physical Ethernet ring to safe wires. If an LROC-100 or a wire connection fails, the Ethernet ring is automatically fed from both ends and the system continues to operate without interruption. This failure condition is reported to the SCADA.

www.loytec.com/newproducts

PCS: Leading Solution Provider in the High-End Segment of the Dutch Industry

PCS – Persy Control Services – is one of LOYTEC's major partners in Belgium and the Netherlands and became a LOYTEC Competence Partner about one year ago. Therefore we want to take the opportunity to introduce Paul Persy's successful and well known entity.

In 1999, as an ambitious young man, Paul Persy founded PCS which has become a leading solution partner for complex building automation projects for customers in the Netherlands and Belgium. Headquartered in Zwijndrecht, with satellite offices in Leek and Maastricht, the specialized company with excellent reputation currently has 16 employees and is still experiencing continuous growth.

Paul Persy, the heart of PCS, brought together extensive background in technical and administrative management with experience in programming and installation of building automation systems. In 1999 Paul was asked by Siemens to help them with the millenium projects, which pushed the company off to a good start in automation services.

PCS provides excellent knowledge for application and management of HVAC and IT solutions. Further, PCS delivers support, training, and consulting services to its customers.

This clearly shows PCS' strategy to use state of the art systems to offer customers a long-term plan for building complex infrastructures that are based on open technologies with a focus on integration, energy control, and ease of management. In addition to consulting and management services and trainings, PCS offers unparalleled support and maintenance, 24 hours a day, 7 days a week.

PCS customers comprise enterprise organizations, academic and research institutions, local, state and federal governments, including: Siemens, AkzoNobel, Atellas, Academic Hospital Maastricht (AZM), European Patent Office and many others. The projects range from energy optimization for European Space Agency to integration of daylight control with L-DALI for Kröller-Müller Museum to a new building automation management level for Abbott Medical Optics.

The PCS management team comprises: Paul Persy, President and Director Marketing and Sales, Jaap Polak, Manager R&D, Products and Technologies, Edward Renneberg, Manager Service and Maintenance, and Jessica van Huizen, Manager Finance and People / Organization.

LOYTEC appreciates the good cooperation with PCS and is looking forward to a continued successful partnership for many years to come.

www.persy.nl
www.loytec.com/references

Dipl.-Ing. Norbert Reiter

Create Templates
with the L-VIS/L-WEB Configurator

A common use case for SCADA systems is to display information like room temperatur and occupancy for a whole building. The displayed information should use the same graphical layout for all rooms. The new template concept in the L-VIS Configurator makes it easy to create such projects.

LOYTEC visualization solutions are often used to create simple but yet flexible and good looking end user interfaces for automation systems. For a better overview, the graphical representation is divided up into several display pages. A common use case requires using the same group of graphical elements on different pages in the project. Starting with version 4.1, the L-Vis Configurator allows defining templates. These templates help organizing and maintaining the grouped elements throughout the project. This article explains how to use templates for the most efficient workflow when using the LOYTEC visualization solutions.

Earlier versions of the L-VIS Configurator already allowed to group elements in a folder hierarchy. These groups helped aligning elements and properly place them on the screen. If the same collection of elements was used multiple times, the folder was duplicated using copy/paste operations.

The disadvantage of this approach becomes obvious when changes on the grouped objects are required – e.g. when a font or the alignment of the objects is changed. The copy/paste approach requires to apply the changes to all copied folders – which can become cumbersome when the folder

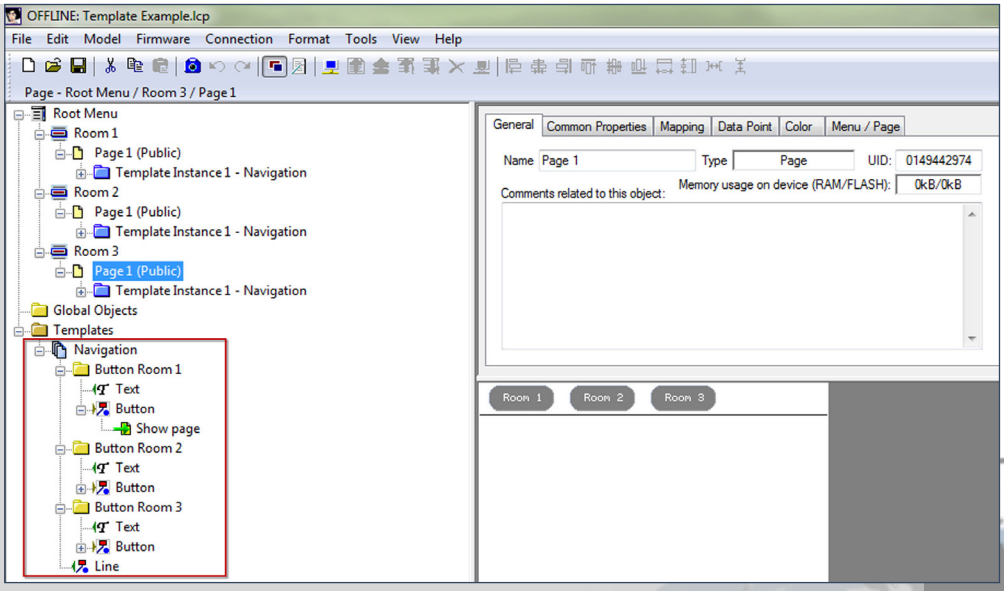


Figure 1: Project navigation in the top area of the displayed page

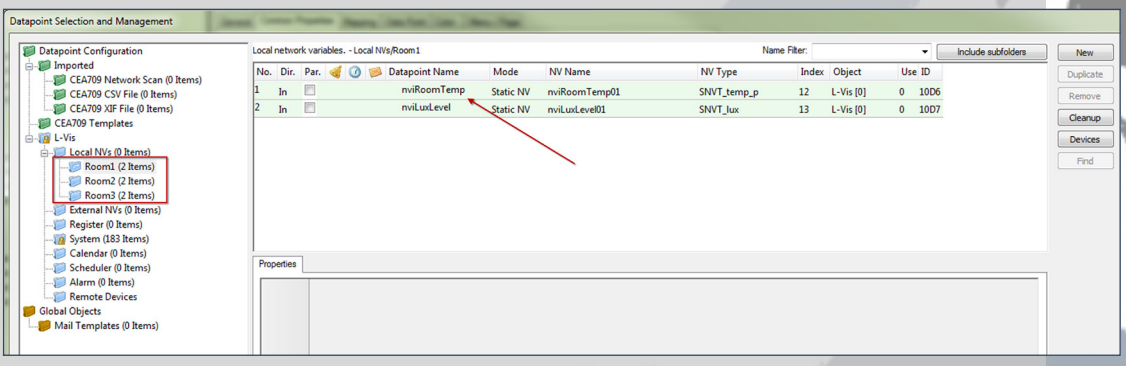


Figure 2: Creating a folder structure in the data point view

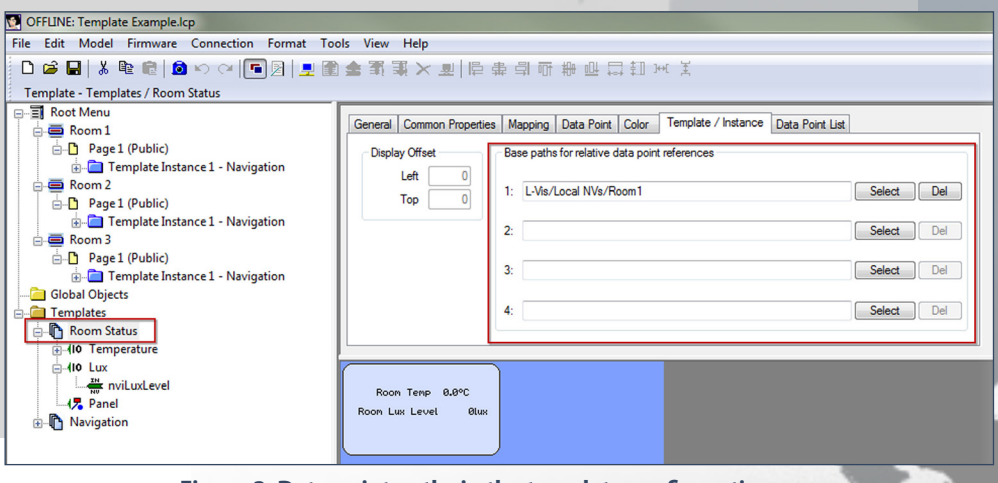


Figure 3: Data point paths in the template configuration

was copied multiple times.
Templates allow grouping objects – just like folders. It is even possible to use folders inside templates. A new template element can be created in the "Templates" folder in the object hierarchy tree view. After creation, controls can be placed on the screen like on a normal page. Different than normal pages, the elements are not automatically used in the project. To display the elements in the visualization project, the templates need to be instantiated on a page.
A template instance is created by dragging the template on a page. The instance does not occupy the whole page, but only requires the space to display elements that are part of the template. Of course it is also possible to create multiple template instances of the same or different templates on a single page. The template instance can be freely placed within the page. It is even possible to apply small changes to a template instance, e.g. by modifying the text of a text control or change the alignment of the objects for this single template instance. Template instances that were modified from the original template are marked with a pencil symbol in the object tree. The changes remain when the original template is modified. To reset the changes, the menu item "Restore defaults" in the template instance context menu of the object tree view can be used.
Templates are not limited to a single hierarchy level – also nested templates, where a template is used inside another template, can be created, too.
A common use case is to implement a template for project specific navigation, using go-to-page actions on graphics in the top area of the displayed page. A template to display status information on the bottom of every page is also often used (See figure 1).
The real power of templates can be realized when data points are used inside templates. This is very useful to display different room values (e.g. room temperature and room lux level) for different rooms. These values can form a template, where template instances are generated for each single room.
When the layout of the template is modified, all template instances are automatically updated. To show the correct values, the template instance must reference the data points for the individual room. This can be accomplished by creating a folder structure in the data point view (as shown in figure 2, page 8). The data point name for the same value must be the same in every folder representing a different room. To display the room temperature, the data point name must e.g. always be nviRoomTemp.

Continued on page 10

A common use case is to implement a template for project specific navigation. A template to display status informations is also often used.

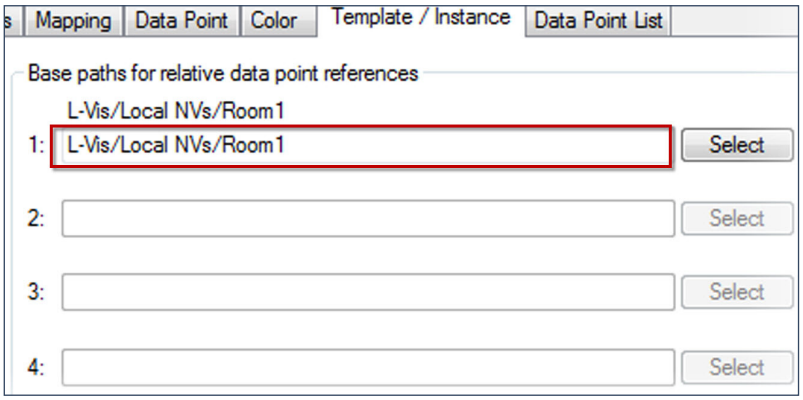


Figure 4: Folder path for the first instance

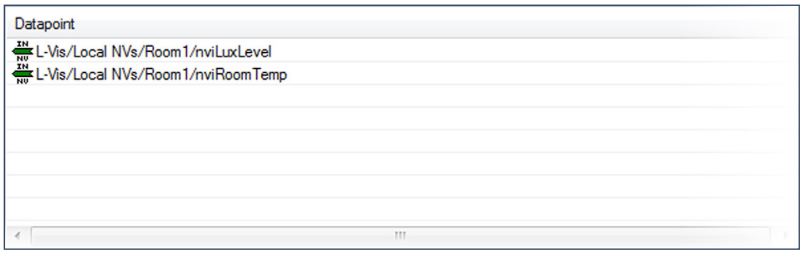


Figure 5: Resulting data point references for the first instance

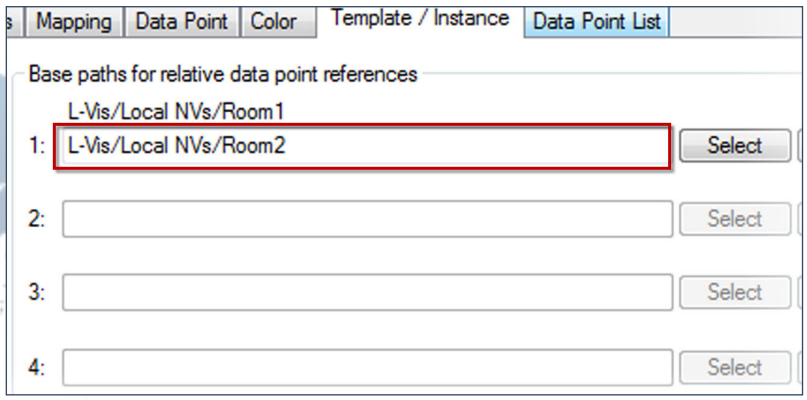


Figure 6: Folder path for the second instance

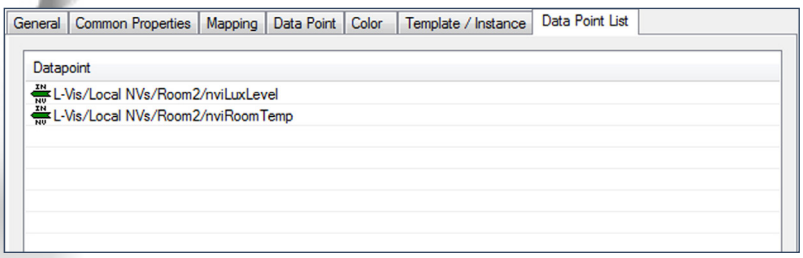


Figure 7: Resulting data point references for the second instance

Continued from page 9

For a template, a root folder pointing to the data point references is specified (See figure 3, page 8). If data points are used from different root folders – for example when users register and CEA709 data points are displayed – it is possible to specify up to 4 root folders. The configuration software automatically detects the correct root folder for each data point and derives relative data point addresses.

For every template instance, the user must enter the folder path for the instance (See figure 4 & 6, page 9). The resulting data point references are displayed on the "Data Point List" tab for the selected template instance (See figure 5 & 7, page 9).
Once you become familiar with the template concept, it is extremely efficient to create and maintain L-WEB and L-VIS projects. Even last minute changes are not a challenge for template-based projects.

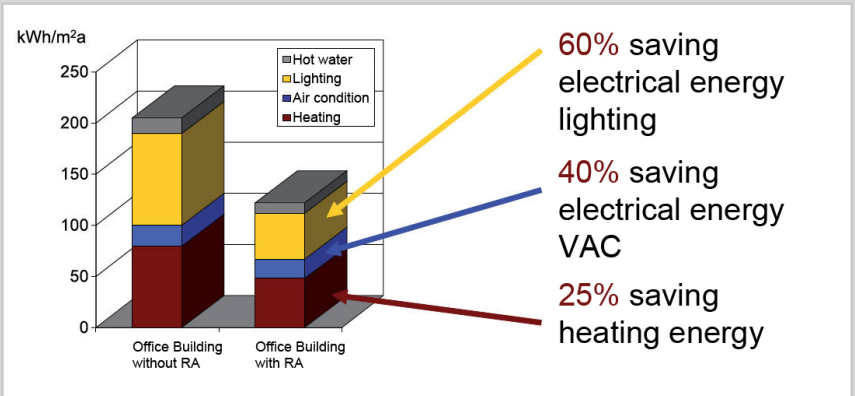
Try it!

www.loytec.com/touchpanel

Lighting Solutions with L-DALI

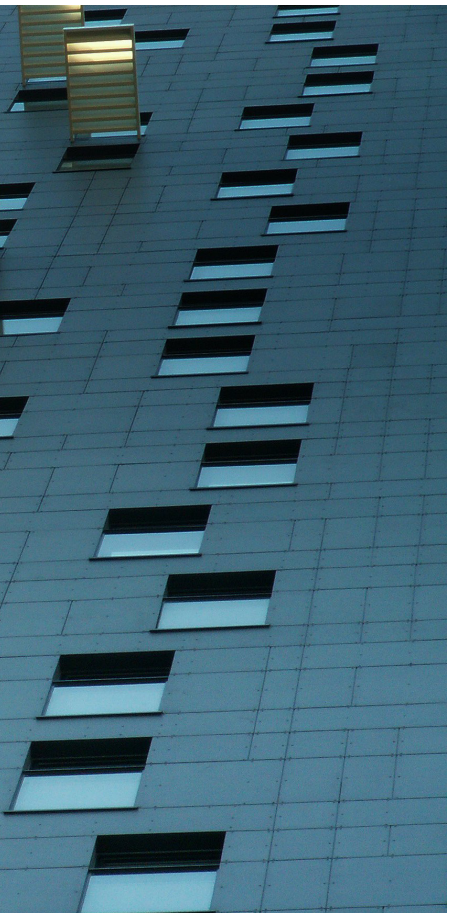
Dirk A. Dronia

Lighting control means more than switching the lights on and off. Optimal lighting control offers comfort and security for the user, simple operation and sensible consumption of energy. Automated lighting control systems used in room automation achieve up to 60 % of energy savings compared to conventional lighting installations based on switches.



Annual energy requirement of an office building with and without room automation. Source: Folder "Energieeffizienz automatisieren", LonMark Deuschland, 7/2009, Reference building with energy-optimized room automation.

Up to 60 % of energy can be saved with advanced lighting control.



DALI (Digital Addressable Lighting Interface)

DALI (Digital Addressable Lighting Interface) brings communication technology into lighting control. Electronic ballasts and dimmers can be addressed directly. With bidirectional communication, the status of lamps can be read and transmitted over the network. The multi-master capability of the DALI system permits the local operation and control via DALI or DALI multi-sensors providing sensing of occupancy, light levels, and switch actions.

L-DALI from LOYTEC

L-DALI by LOYTEC offers the core control for a DALI lighting system. From constant light control with integrated sun blinds via time-dependent switching, to the gateway functions to building automation systems, L-DALI provides flexibility from planning through to operation. As a central unit, L-DALI supports autonomous operation of lighting and integration into a building management system. L-DALI supports features such as burn-in function for lamps, record of energy consumption, and advanced notice about an impending lamp replacement based on detected operating hours.

LOYTEC provides different L-DALI devices for LonMark-Systems and BACnet networks. Both integrate light control systems into building automation, ensuring access to the individual DALI devices and reporting of malfunctions.

Emergency Lighting with L-DALI

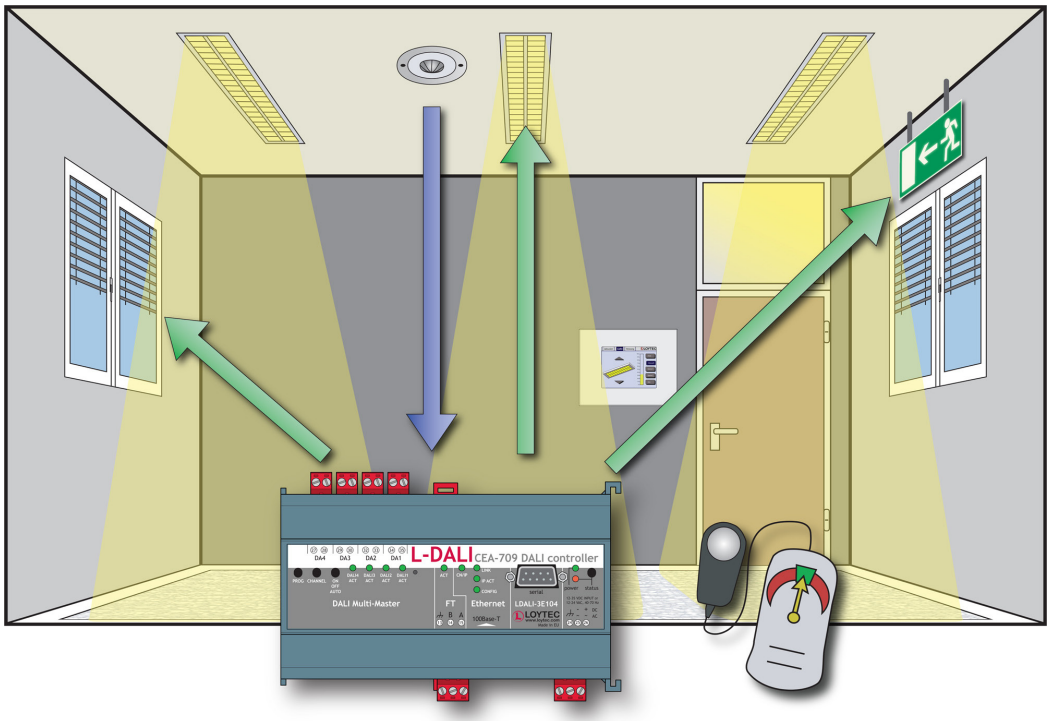
The new DALI standard IEC 62 386 defines the DALI device type "self-contained emergency light". This is already supported by L-DALI. Performance and long-term tests of emergency lighting can be triggered via the building automation system and the test results, or the battery charging status of the emergency lighting system can be checked. Furthermore you can configure automatic test cycles. All tests are logged with time stamp and test results.

Applications

In room automation, lighting control is one of the three major components next to sun blinds and the indoor climate control. Light sensors and presence detectors ensure that the required amount of light is provided to the room.

If the lighting is combined with sun blinds, still natural daylight can be used to light a room via suntracking of the sun blinds instead of using artificial light. The shading in combination with the room climate control helps to reduce cooling effort in summer or to support the heating system in winter by using the warmth of the sun.

What applies to rooms in office buildings can also apply to industrial halls, museums and other buildings. Lighting is used precisely as it is necessary to ensure a safe working environment, to create architectural lighting scenes, or simply to convey a feeling of safety at night in parking garages and outdoor areas.



www.loytec.com/l-dali

Dirk A. Dronia

Holzhafen Hamburg West

Located between the traditional Hamburg fish market and the ferry terminals, "Holzhafen Hamburg" is one of the top addresses on the river Elbe.

Holzhafen West

"Holzhafen Hamburg", constructed in 1880, is located in the bay Billwerder (Rothenburgsort) and is among the oldest in Hamburg harbor. Located between the traditional Hamburg fish market and the ferry terminals, "Holzhafen Hamburg" is one of the top names on the river Elbe. This is the location of the office building "Holzhafen West", whose style is inspired by typical Hamburg storage buildings.

The owner B & L Group has deliberately chosen this site in a district in close proximity to the legendary "Haifisch-Bar". This area is a modern mix of working, living, dining, and shopping amidst a traditional port quarter.

Along with the award-winning twin buildings "Holzhafen Ost" and the unique residential building "Crystal" the dominate "Holzhafen West" office building adds significantly to the appearance of the old Hamburg Holzhafen. Spread over 7 floors, the " Holzhafen West" offers an exquisite address for up to 21 tenants. Even before the scheduled completion in Q3/2011, the well-known office equipment suppliers Bene has moved in the first tenement area. An outstanding feature of the building is the modern, flexible space concept which allows large-and small-space solutions according to the actual needs of the tenants. The thermal activation of building component functions with ventilation, sun protection, glass shading, and additional ventilation ensures a pleasant indoor climate in summer, too.

For maximum flexibility in operation and system expansion, the building owner has decided for a LonMark System for room and building automation.

The central role in the automation of this building is taken over by the L-INX Automation Server LINX-120 with L-IOB I/O modules.

The freely programmable automation station LINX-120 controls the thermal activation of components and hosts scheduler

FACTS	
Location	Hamburg, Deutschland
Constructor	Imtech Hamburg
System Integrator	Assigned by Imtech: HRW Gebäudetechnik GmbH
LOYTEC Components	LINX-120, L-IOB I/O Module, L-VIS Touch Panel

functions for lighting and sun protection. The system operator at anytime has full access to the automation level for service and maintenance purposes via the Ethernet / IP network.

For local operation of the system via the tenants, the building owner has decided for the L-VIS Touch Panel. Adapted to the tenants needs, the user interface ensures an intuitive operation of schedulers, control parameters and commands.

By taking the office floor plan as a basis, the employees find their way quickly. Functions tailored to the tenant avoid misuse of the automation system.

In commissioning the L-INX Automation Server for the project "Holzhafen West", a programmable, fully customized automation solution from LOYTEC was realized.

LOYTEC has been known for more than a decade in the building automation market as a reliable and innovative supplier of infrastructure products.

Now LOYTEC clearly demonstrates meeting this reputation of quality and reliability in providing our customers with innovative automation solutions for building management.

www.loytec.com/references

Predictive Controls for Sustainable Buildings

Dr. Peter Palensky and Dipl.-Ing. Tarik Ferhatbegovic

Sustainable Buildings and Controls

Sustainable buildings have several aspects. Reducing the focus on Energy only, it is especially the runtime that plays the most important role in a life cycle analysis. Choosing efficient building systems and a modern building shell are not the only possibilities to minimize costs and carbon emissions. It is the controls that can yield further percents of efficiency. Adjusting controls is cost efficient – tuning algorithms is just changing software.

Traditional control engineering is reactive. The controller reacts on a changing control variable (a.k.a. system or plant output like the temperature of a room) and tries to compensate deviations from the set point by choosing the right actuating variable (a.k.a. system or plant input like the cooling power of an HVAC system). The high art of control engineering is to master the dynamics of the system: control rise time is expected to be minimized, as well as overshoot, etc.

The mathematical methods for this purpose use signal theory and differential equations which can get pretty complex, especially in non-linear systems. It is just the "magic of the closed control loop" that even non-optimal control parameters can lead to a system where somehow the controller "wins": the control variable reaches the set point. Getting there is, however, far from being optimal: too slow, too energy consuming and (which is the worst) recognizable by the customer.

Seriously wrong control parameters can even lead to instabilities and oscillations which will damage equipment.

Optimal control parameters on the other hand make the controller work quickly, and smoothly, without oscillations.

Reality, unfortunately, shows that controllers are typically configured badly or not at all. This sub-optimal tuning leads to decreased comfort and increased energy consumption.

The reasons for this are, among others, the lack of knowledge about the system under control and the tendency to configure a controller "on the safe side" (i.e. not immune to oscillations). For choosing the right control parameters, a model of the system under control is needed.

Having this model, it makes sense to go one step further by applying a relatively young development within control engi-

neering which outperforms classical control in virtually all aspects.

Model-predictive Controls

Model predictive controls (MPC) work with a prediction horizon, pushed before the "now". Within this prediction horizon, set points and disturbances are known because they are either planned (booked meeting room) or predicted (weather) with a certain confidence interval.

The second "trick" of model predictive controls is the model of the system under control, either explicitly given or learned and derived during runtime.

The predictive controller permanently calculates the optimal actuating variable to react onto the anticipated set points and disturbances. The obvious advantage is that the controller is not surprised by any changes of these values which would lead to a mere (and too-late) reaction; it is rather prepared.

Overshoot, rise time, and setting time are therefore optimal. There are even further advantages. The use of the actuating variable is directly coupled to the energy consumption.

A predictive controller can take this into its set of optimization goals. With this, it not only serves its traditional purpose (mastering the dynamics) but also minimizes energy consumption: an impressive feature.

Another advantage is that non-linear systems are no problem anymore, the dynamics of the system under control is not important for the controller design.

So where is the catch? The math behind MPC is fairly complex and computationally expensive. The researchers at the Austrian Institute of Technology / Energy Department are working on reducing the complexity in order to squeeze this fantastic tool into simple, embedded systems.

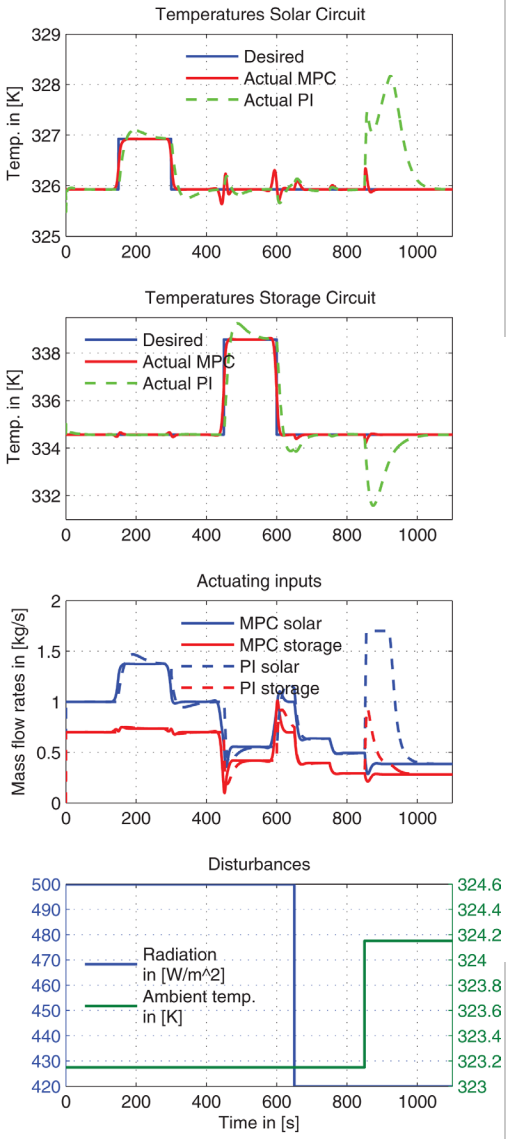
Smart Cities and Grid-connected Buildings

Increased comfort and reduced energy needs are not the only result of MPC. It can also lead to an intelligent energy grid.

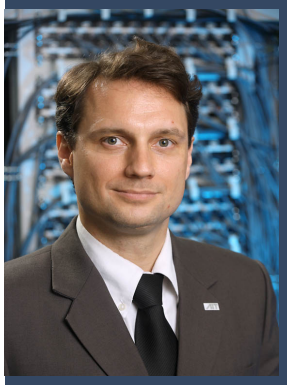
Not only the weather forecast or the usage of a building might be fed into the controller, also energy price forecasts can be used to optimize the operations.

A building can then contribute to the soon-to-come smart grid. The energy grid of the future has two massive problems to solve (which are both environmentally fine but quite a challenge for grid operations): volatile generation from renewable sources and electric mobility. New markets for regulation energy will emerge and an intelligent and (economically) elastic load yields clear benefits. In the easiest case, shiftable loads (like HVAC) are scheduled to low-price periods. The MPC makes sure that its primary purpose – human comfort – is never harmed at any time.

www.ait.ac.at



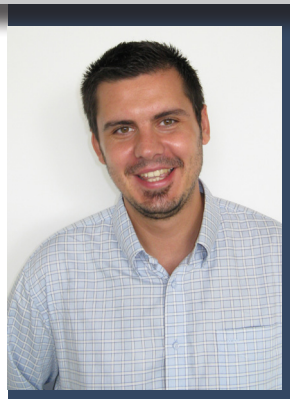
AUTHORS



Dr. Peter Palensky

Head of Business Unit "Sustainable Building Technologies", AIT Austrian Institute of Technology/ Energy Department

Peter Palensky is Head of Business Unit Sustainable Building Technologies at AIT. Before that he was CTO of Envidatec Corp., Hamburg, Germany, associate Professor at University of Pretoria, University Assistant at Vienna University of Technology, Austria, and researcher at the Lawrence Berkeley National Laboratory, California. He is active in international committees like ISO, IEEE and CEN. His main research fields are automation networks, distributed embedded systems, home and building automation and energy management.



Dipl.-Ing. Tarik Ferhatbegovic

Research Fellow at Business Unit "Sustainable Building Technologies", AIT Austrian Institute of Technology/ Energy Department

Tarik Ferhatbegovic holds a master degree from University of Technology in Vienna in electrical engineering (branch automation and control). He worked as project manager in the industrial field of excitation for synchronous generators for Andritz Hydro (Austria). He then changed to the University of Technology as a project researcher in the field of mechatronics and control. Since August 2010 he has been employed by the AIT, Energy Department (Austria) where he is dealing with model based predictive control in heating, ventilation and air-conditioning systems.

CULTURE CORNER ;-)

I'm at a Loss for Words...

Contemporary art often relies on its textual descriptions. Thereby its design vocabulary often is drowned by an overwhelming construct of highly specialized vocabulary.
(Reference: www.art-words.net)

Analogously this can also happen to a technician like you – if f. e. your product is "overtexted" by the related user manual and nobody can figure out what is actually explained.

But it can also be the other way round: Imagine you are in urgent need for text, much text, any amount of words for let's say a speech or a presentation.

But nothing, really nothing comes to your mind. There is only this black hole before your inner eye, the menacing sheet of white paper on your desk, the discouraging empty file on your screen. What to do? The deadline is short, time presses, any inspiration has abandoned you, gradually you start to panic… but you are at a loss for words!

Don't worry anymore, here comes your future ally for all emergencies regarding spate of words: www.art-words.net. What's this? www.art-words.net "…provides a tool for articulation management and helps to achieve competence to compensate incompetence." Clear so far?

By means of a simple example we will demonstrate what is to be done. We imagine that a LINX-150 should be described in a presentation with top-class audience. On the text generator www.art-words.net we quickly select a few words, which seem to match the topic, for our example perhaps these: automation, local, display, to edit, efficient, extension, feature, flexible, function, graphical, ideal, implementation, innovative, integration, intelligent, to communicate, powerful, module, multitasking, network, significant, simultaneously, specific, variable, to connect, to combine, linked, various, visualization. Now we choose the requested number of sentences, f. e. five, evaluate the frequency of repetition and press the icon "generate text" – and the urgently desired text for the presentation appears:

With the significant graphical features an innovative module links the specifically visualized transition, where the network is powerful and connects the process of work in various ways. This flexibility automates the implemented modules in an ideal, intelligent and variable inte-

gration. So flexibility and integration combine a local multitasking here. Flexible extensions edit innovative features simultaneously. The displays communicate autonomously also by using efficient functions.

In case you don't like the spate of words this way, never mind. Just generate another version, until your presentation is finished – at the touch of a button.

www.art-words.net
A project by Miriam Laussegger and Eva Beierheimer.

www.loytec.com/automationserver

Automation - a Drug?

The current art controversy of building automation

Today's review is dedicated to a very special piece of graphic art. In a powerful act of creation, a unique image was accomplished in a confident yet enthusiastic manner. In puristic-minimalist style and yet extremely expressive, a daring and uncompromising derivative of LOYTECs current product catalog cover design emerged.

With verve, aggressively, almost impudent, the eye is moved directly to the point. Sparingly, you might even bring yourself to say achromatic in graphic means of expression, all power lies in the mobilizing, aggressive character of the eye-catching message. The provocative thesis, which the artist establishes in an ironical or even parodistical way, forces itself on the beholder, encouraging reflection. Involuntarily the crucial question occurs: L-INX or no L-INX?

Surprisingly a talent scout could detect the creator of this monumental oeuvre among the LOYTEC development team. We hope for many more inspiring experiments of this aspiring talent.

www.loytec.com/productcatalog

L-Vis is Alive!

If you now think of our L-VIS Touch Panels in different versions and sizes, we are delighted very much. As our "Elvises", as we call them fondly, indeed are highly vivid and lively in their functional variety. But this time we don't mean our Touch Panels although we could tell you a lot about them. And no, we also do not mean the one and only, the legendary king of Rock ´n´ Roll, although, there are rumors about the King which never fade away.... Today we want to talk about a very lively, young L-Vis, whose focus of activity is in visualization of a different sort than our L-VIS Touch Panels.

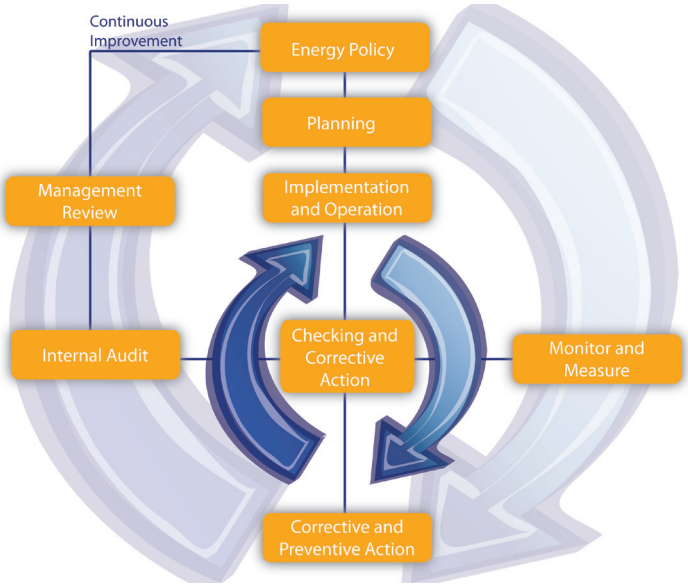
This L-Vis, strictly speaking L-Vis 1990 by full alias, is the video artist, DJ, and promoter James Connolly. Born in Great Britain, he founded the club Night Slugs in London. His club hit United Groove was released on the Mad Decent label with more than 86,000 hits on youtube. Last spring he could be watched in Austria at the Donaufestival in Krems with an attention getting show. L-Vis 1990's newest opus and debut album Neon Dreams was released in September.

www.nightslugs.net/lvis1990
www.loytec.com/touchpanel

DIN EN 16001 - ISO 50001

Dr. Dietmar Loy

Energy Management according ISO 9001 to ISO 50001

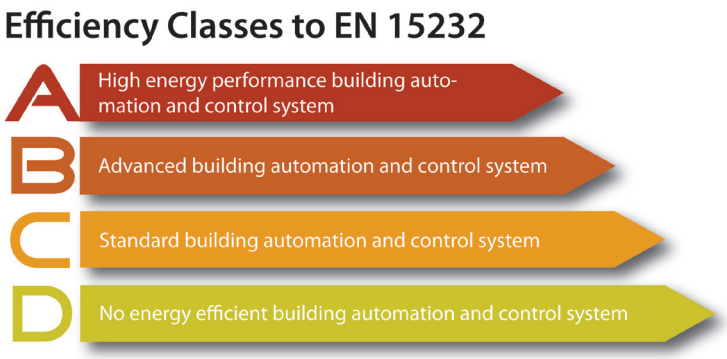


Quality management systems according to ISO 9001:2008 as well as environmental management systems according to ISO 14001:2009 are already massively present in firms and an integral part of the company policy. Relatively new in the group of quality management systems is the energy management system according to DIN EN 16001 resp. the according international standard.
The goal of this standard is to support organizations in the design and implementation of systems and processes to improve their own energy efficiency. As systematic energy management system should help reduce operating costs and greenhouse gas emissions. This standard is applicable to all kinds and sizes of organizations and takes care of geographic, cultural, and social constraints. The structure of ISO 50001 is related to the ISO 14001.
The success of a management system strongly depends on the obligations of all hierarchies and divisions of an organization, especially including the top management.
This standard is based on a method known as PDCA cycle (Plan-Do-Check-Act). "Plan" defines goals and processes to reach the goals set, "Do" implements these processes in an organization, "Check" supervises and measures the processes in respect to the company energy policy, "Act" defines measures for a continued improvement of the energy management.
LOYTEC together with the Austrian Institute of Technology, the Hochschule für Angewandte Wissenschaften Hamburg, and Envidatec GmbH develops within the EC funded project EraSME an automated energy reporting system certified according to DIN EN 16001 and ISO 50001. This reporting system will fully automate the "Check" in the PDCA cycle.
Based on the LINX automation server from LOYTEC, energy data will be collected automatically within the organization and stored into the energy data base JEVIS from Envidatec. JEVIS will create reports and calculate operating figures for bench marking organizations and to support the management in saving energy and making improvements (Act) according to ISO 50001.

EN 15232

Dipl.-Ing. Hans-Jörg Schweinzer

A standard strengthens the position of room automation



The European Standard EN 15232 ("Energy performance of buildings – Impact of Building Automation, Controls and Building Management") was compiled in conjunction with the European Energy Performance Directive. The EN 15232 describes methods for evaluating the influence of building automation and technical building management on the energy consumption of buildings. Therefore the standard defines a structured list of building automation and technical building management functions. It provides a factor based method to achieve a first estimation on the influence of these functions on typical buildings and a detailed method for the evaluation of such influences on a particular building. Four efficiency classes A to D have been introduced for this purpose. Class A represents the highest energy efficiency class that can only be achieved by means of using highly integrated room control functions.
The formulas and rules provided by the EN 15232 deliver performance figures already in the planning phase of a building. For the first time a standard helps to show the significant positive impact of room automation on the energy efficiency of a building already in the planning phase. Investors in particular can base their decisions on such proven numbers - for the benefit of the implementation of highly integrated room automation.

AHR 2011, Las Vegas

ISH 2011, Frankfurt/Main

Climatización 2011, Madrid

LOYTEC Nails its Colors to the Mast

Increased attendance of international tradeshow and exhibition hot spots

Presenting our product solutions to exisiting and prospective customers always has been highly important to LOYTEC. Visiting tradeshows worldwide is an excellent opportunity to remain in good standing with customers and colleagues from the industry.

As LOYTEC releases many innovative products to the market, these tradeshows help to introduce to costumers the increasingly complex and intermeshed applications via live working demonstrations in LOYTEC's exhibition.

The 2011 exhibitions started with LOYTEC's traditional attendance of the AHR Expo hosted in Las Vegas, Nevada, from January 31 to February 2. The exhibit was finished with all new mobile reusable walls. As a result LOYTEC enjoyed a successful show.

Two premieres for LOYTEC followed: Climatizacion in Madrid from March 1 to 4, which is one of the leading biennial events for the industry in Europe. This happened at the invitation of our Spanish business partner e-controls on a joint booth together with Newron System. The joint approach not only smoothed the linguistic obstacles but also enabled direct communication about technical topics with the attendees. Shortly after, our next appearance followed: ISH in Frankfurt from March 15 to 19. Here our fresh, newly designed exhibition look directed interest to our efficient building automation solutions. In the center of attention during all our exhibitions were the new L-INX Automation Servers, especially LINX-150/151, our "all everything" controller, for which no task is too difficult and no open protocol unfamiliar. Further events LOYTEC attended during the year: Greenbuilding in Zurich, January 18, BACnet Forum in London, April 13, EU Gateway to Japan in Tokyo, September 13 to 14, Intelligent Building System (IBS) in Paris, September 20 to 21, and Gebäude Effizienz Dialog in Frankfurt, September 28. Hans-Jörg Schweinzer, LOYTEC CMO personally attends almost all shows for direct interaction with attendees. "LOYTEC believes, it's very important to get in direct touch with our customers and prospects, and I enjoy the dialog and exchange of views."

www.loytec.com/eventreview

Ground-breaking Ceremony

for new LOYTEC building

LOYTEC's five story headquarters in Viennese Blumengasse is bursting at the seams. To alleviate the pressure ,the management decided to acquire an adjacent building. The derelict old bakery, which was located on the site, was razed to make room for the biggest spatial expansion in LOYTEC history.

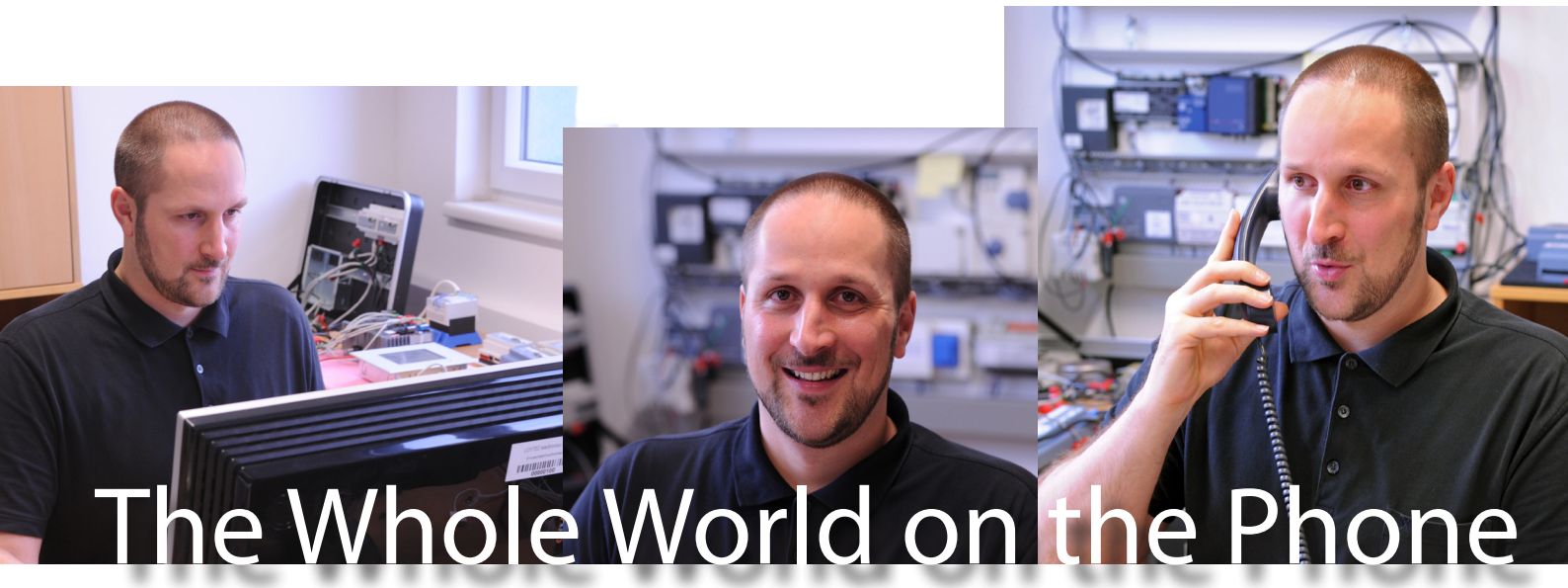
At the new building site within the next year a new company operations building will be erected, which offers 200 % more floor space than the current five-storied structure. From the drastically enlarged space especially the manufacturing department will benefit.

The new building will be erected directly adjoining the current one. Also the support department will be substantially enlarged with spacious new training rooms. For the continuously growing number of employees an improved recreation and sports activity area will be included.

But before the heavy equipment excavators could start rolling, it was time to ceremonially turn the first shovel of earth. Dietmar Loy and Hans-Jörg Schweinzer gathered their staff on the building site on a sunny afternoon May, 20th, 2011 to officially sound the bell for the groundwork in the course of a small party. During the ensuing less arduous enjoyable party until late at night the construction plans were discussed professionally, as the new building will be an example of industry leading automation. The result will be a perfect key reference for building automation à la LOYTEC.

www.loytec.com/eventreview

The joy about the new step of expansion is written in their faces: LOYTECs CTO (le.) Dietmar Loy and CMO (ri.) Hans-Jörg Schweinzer at the ground-breaking ceremony



The Whole World on the Phone

Our ace in the support department: Bernhard Mitter

Many of our valued readers call our support line with confidence as a congenial voice answers at the other end of the phone. No matter which country you are calling from, or how complicated your case might be, Bernhard understands and can help. Bernhard's credo: Finding out as soon as possible what the problem is and figuring out the swiftest way for a solution. "A quick, accurate solution makes the finest support case," states Bernhard.

> *" A quick, accurate solution makes the finest support case.*
>
> Bernhard Mitter, LOYTEC Support

L-Express discussed with Bernhard Mitter, support solutions provider at LOYTEC since three years, what aspects of his job are particularly challenging and what he considered most enjoyable from his experiences in support solutions for customers.

On average, every 30 minutes a customer looking for advice or help calls Bernhard or writes an email to him. "The direct, close contact with so many people from all around the world for me is one of the most enthralling aspects in my job. The special challenge is working around all kinds of communication difficulties to get to the bottom of the customer's issue." This is not always easy in spite of Bernhard's fluent English.

His education as a telecommunications engineer and several years of experience in various technical functions are very useful for him to draw upon. Qualities like patience, friendliness, good manners and respectfulness are much more important in his everyday professional life. "And sometimes you simply have to be able to endure more difficult situations" he adds.

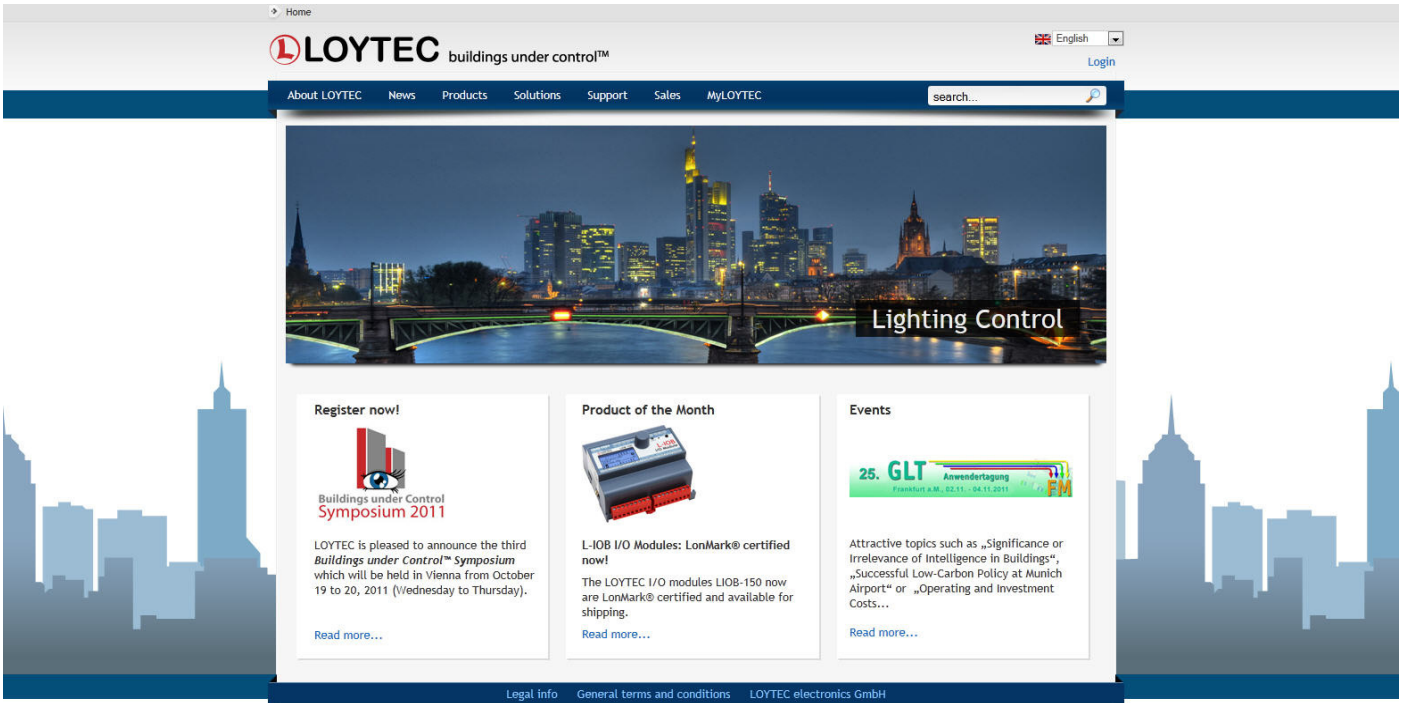
Another important aspect in his continuous dialog with customers lies in the fact that "clients contribute to product improvement." Bernhard relates further: "Our customers may discover an occasional bug, which we reconstruct, debug, and fix. Or they develop suggestions for optimizations, or features. They express their ideas for these new features, and we are interested in what they have to say. We make note, analyze, and evaluate every customer response which we report back to our development department. So in the end, customer input can lead to a product improvement". Bernhard especially appreciates when a customer takes the time to send an email thanking him for his expertise and dedication. "Such acknowledgement is a big motivation", notes Bernhard.

If you want to listen to Bernhard's pleasant baritone without any need for technical support, you should visit the LOYTEC youtube channel: www.youtube.com/loytecgmbh. Our considerable collection of training video clips available both in German and English, containing instructions for usage of diverse LOYTEC products, is narrated by Bernhard.

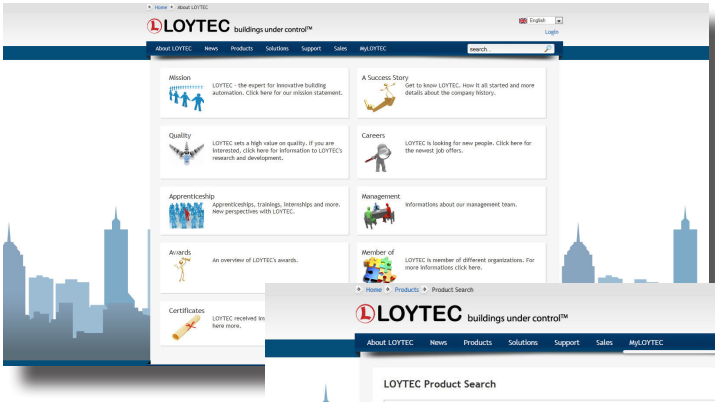
www.loytec.com/support
www.youtube.com/loytecgmbh

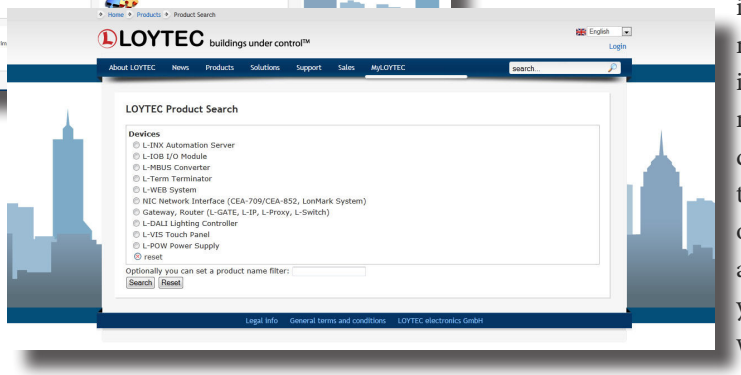
New Look for www.loytec.com

LOYTEC corporate web site provides fresh new look



LOYTEC is pleased to announce the deployment of a new web site. The refined design not only changed the appearance, but provided meaningful change in the approach.





Improvements to navigation are added with an enhanced search function. This site is organized to provide efficient and direct access to all LOYTEC resources for various users. If an online visitor is unsure what products to investigate for his solution the integrated product search allows the user to find the best LOYTEC product for the desired features.

Switching to a new efficient server increases performance for quick viewing of pages and fast download times for software tools and product data. This site upgrade was necessary as hundreds of visitors visit daily and examine an average of twenty pages, comprising many thousand hits per day. Our download area contains approximately 500 files at present, with a volume over 1.62GB of data .

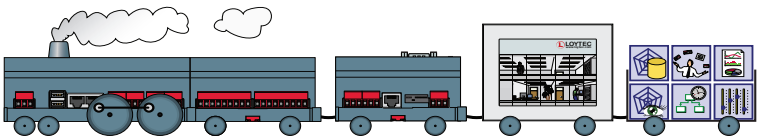
We hope our online visitors are as enthusiastic about our most important information and communication tool as we are: clear access into our deeper online resources. This new site showcases 165 different products which are described and depicted in detail. There are 331 articles online right now, always in German and English. LOYTEC encourages you to make a visit to see how the new website can help you. Upon visitation, please take the time to subscribe to our newsletter, LOYTEC Info. This newsletter notifies you about new products and software, events, and training schedule.

www.loytec.com

Training Schedule

All trainings are taking place at the LOYTEC headqarters in Vienna, Austria. The courses are going to be held by our well experienced trainer, Dipl.-Ing. Norbert Reiter. Additional training dates and training on-site are available on request.

Please contact sales@loytec.com for more information.



LTRAIN-LINX

Programming the L-INX Automation Server (3 days)

- Configuration of the L-IOB I/O Modules
- Creating IEC 61131-3 applications
- Testing and debugging the application
- Using Alarming, Scheduling, and Trending (AST™)

7 Nov 2011 to 9 Nov 2011
17 Jan 2012 to 19 Jan 2012
14 Feb 2012 to 16 Feb 2012
6 Mar 2012 to 8 Mar 2012
3 Apr 2012 to 5 Apr 2012
8 May 2012 to 10 May 2012

LTRAIN-GRAPHICS

Graphical Design for L-VIS and L-WEB (2 days)

- Creating L-VIS and LWEB-800 projects with the L-VIS/L-WEB Configurator
- Creating a distributed visualization based on L-INX and LWEB-800
- Efficient project design using templates

21 Nov 2011 to 22 Nov 2011
20 Mar 2012 to 21 Mar 2012
6 Nov 2012 to 7 Nov 2012

LTRAIN-LPA

Network Design and Troubleshooting (2 days)

- CEA-709 network protocol basics
- CEA-709 network analysis with the LPA protocol analyzer
- Troubleshooting CEA-709 networks
- CEA-709 network design with L-IP and L-Switch

31 Jan 2012 to 1 Feb 2012
4 Oct 2012 to 5 Oct 2012

LTRAIN-LCORE

L-CORE Training (2 days)

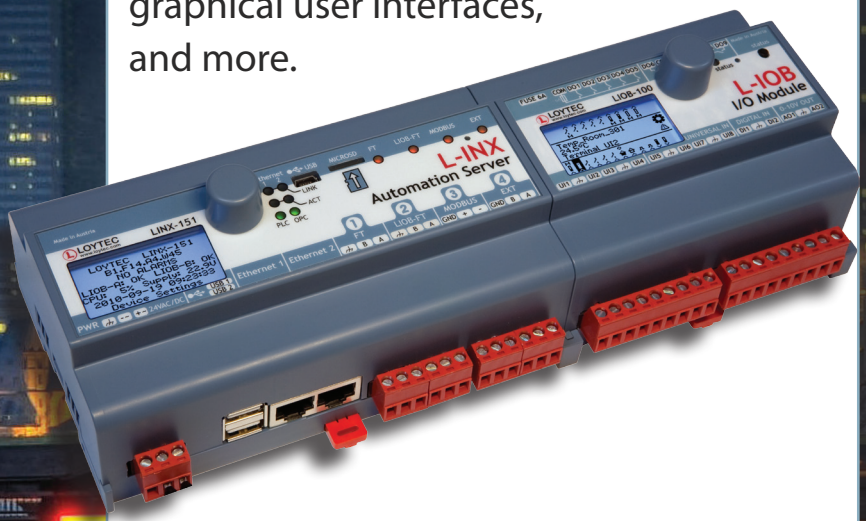
- L-CORE internals, design-in, tools
- Everything for a jumpstart of CEA-709 and CEA-852 networks

26 Jan 2012 to 27 Jan 2012

www.loytec.com/training

Innovative Building Automation

L-INX Automation Servers with stackable L-IOB I/O Modules combine free programmability, standardized communication protocols, gateway functions, graphical user interfaces, and more.



L-INX Automation Servers speak your language: LONMARK® Systems, BACnet® Networks, KNX, ZigBee PRO, Modbus, M-Bus, DALI, and OPC can be integrated.

LOYTEC

buildings under control™

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