teco®

Teco Info

January 2012

BULLETIN FOR USERS OF TECO CONTROLLERS

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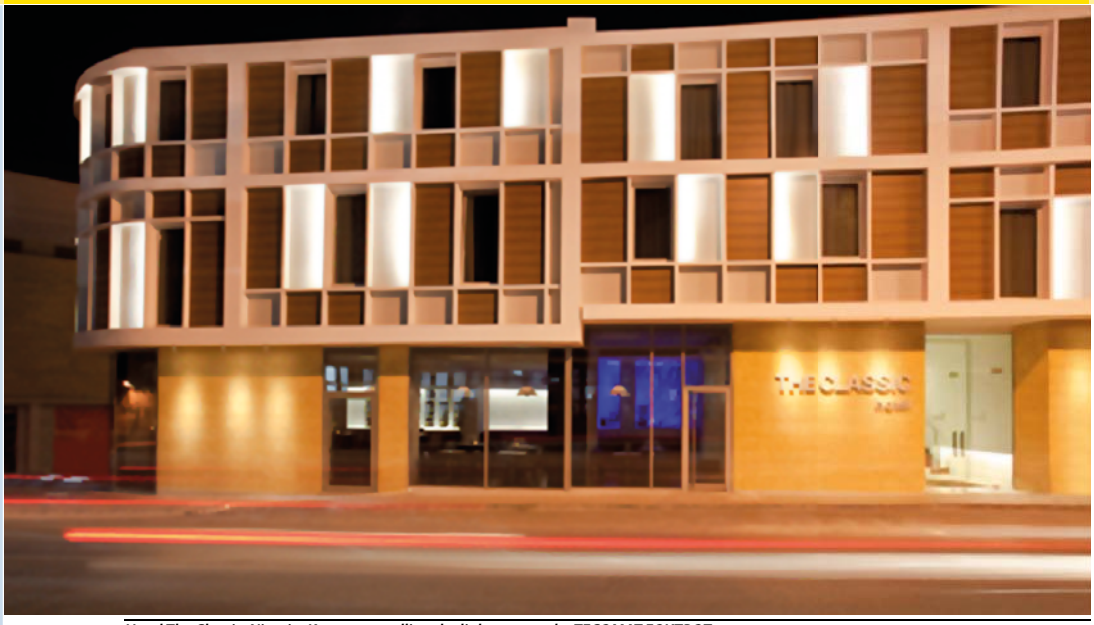
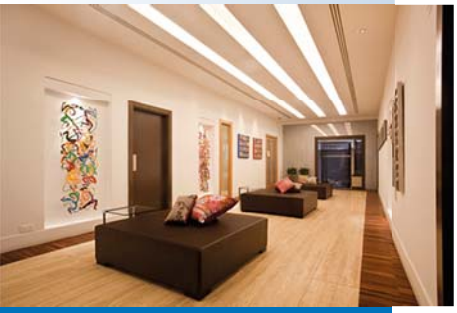


Hotel The Classic, Nicosia, Kypr – controlling the lights system by TECOMAT FOXTROT



Dear customers, colleagues and friends!

In the introduction of these magazíne, let me kindly notice the important anniversary. This year we celebrate 45 years of development and production of control systems in our plant in Kolin and 35 years of development and production of Programmable Logic Controllers (PLC). We succesfully develop these systems for the future, even the automation from its beginning has come through rapid development. From the humble beginnings in 1966, when we controlled numeric control machines, based on reed releys, then period of transistors, integrated circuits until today, characterized by sophisticated powerfull microprocessors. Year 1976 is next important milestone in our history. We launched on the market first electronical control systems of kind Programmable Logic Controllers for wide range of automation. From nineties we produce them under brand Tecomat. Our philosophy, since our beginning, is to offer customers open control system, that let them to use all benefits and advantages of automation without any limits in every field and every application. System that is at the present and will be in the future compatible for a long time, very flexible and let customer control for a long time industrial processes, technologies, machines, commercial and residential buildings and transport. The system that holds for a long period the same communications and programmable software for a different kinds and generations of control systems and let you combine them. As well as in the past, we have done a strong hardware and software development in the past period of central modules and peripherals, so the customer has more functions and application possibilities. It brings easier use and installation, make the work of designer, integrator and programmer more comfortable and on the other side it brings more comfort to the user of the system. I am glad that even in the time of economic recession of industry and building markets our comapany shows its stability and we increased the intensity of development. These effort brings good response from our customers on domestic and more and more on foreign markets and do motivate us to futher intensive work in the future.

We live in times when the generation exchange of technologies not only in consumer electronics, but as well in industrial electronics is still faster. That´s why that is still more important the right choice of suitable control system that will not bring limits for the user in the future, but will let him to complement and expand it and let him to use latest technologies in the future. So the right choice of the control system may protect customers investment. All these requirements the Tecomat systems fulfill. 35 years of presence on domestic and foreign PLC markets shows the abilities of our emploees to develop and manufacture control systems fully competitive on globalized markets and meet the challenging requirements of customers.

Let me thank all our colleagues for where we are and especially our customers, who motivates us in further work. I wish you all the best in your private and professional life!

Ing. Jiří Kovářík
Managing Director

Content

Business growth on domestic and foreign markets

First half of the year 2011 shows positive trade results, we have reached 10% year-on-year growth. As an important pillar of the growth we see applications of system Tecomat Foxtrot on field of commercial and residential buildings and homes. There is doubtless growing market there, with a lot of potential, especially in home automation – smart homes. We have developed a lot of peripherials for Foxtrot system, that expand possibilities of building and home control. Thanks to this Foxtrot becomes more popular as building and home control system on domestic and foreign markets.

During the last period, our systems (Foxtrot and TC700) have been applicated into interesting applied in many countries worldwide and some of them you may find in this magazine. I wish you pleasant reading of the magazine and work with our systems.

Ing. Jaromír Klaban
Commercial Director

Expandation of Tecomat Foxtrot product line

In last period we have launched on the market many interesting products. First of all I have to mention central module of Tecomat Foxtrot system – CP-1000. This module is a full substitution of CU-2 central module, that oves to integrators a possibility of easy parametrization of smart building and home functions with parametrization software FoxTool, but oves them also very important possibility of free programming in software Mosaic.

We have expanded the Tecomat Foxtrot system with CFox peripherals (connected to the system with CIB bus) and RFox peripherals (connected wirelessly), so customer may control all the house with one complex control system. Information about the most important new products you will find in this magazine.

We pay attention also to field of machinery and process control. We have developed new central module CP-1003 and CP-1013. These central modules are designed specialy for machinery and process control applications. They have high speed 100 kHz inputs and outputs and direct control of stepping motors. You may read about it in next article.

Ing. Jindřich Kubec
Hardware Development Manager

ČEZ has choosen Tecomat Foxtrot into PLC applications for next ten years

The only one czech electricity producer ČEZ has done tender for applications of programmable logic controllers for next ten years. Participant of the tender and deliver of PLC for ČEZ in the future, company SPEL, addressed our company with possibilities of application of Tecomat system for ČEZ, because it meets the criterias of the tender. Together we prepared the offer for ČEZ and our offer has been accepted by ČEZ together with 2 other systems. For integrators it is a good news. They may offer the Foxtrot and TC-700 systems to ČEZ for all their branches and plants. ■

New central modules for Tecomat Foxtrot

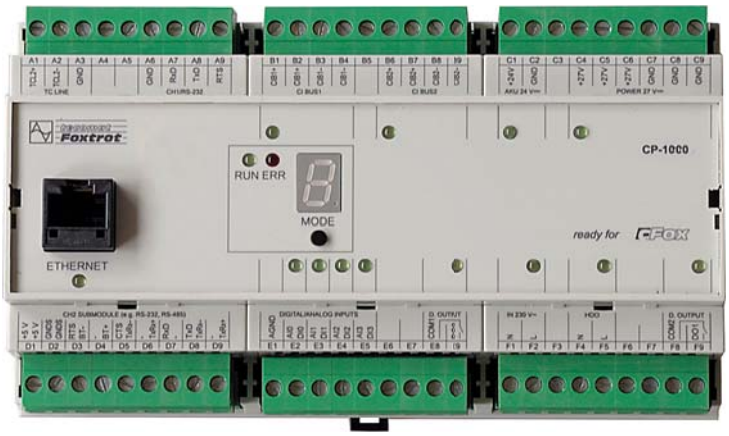
During this spring we began sales of CP-1000, new central module. Thanks to integrated 2 CIB inputs it is perfect solution for houses and buildings control. Two powered CIB inputs/branches means, that there is no need to instal and connect the external module to power the bus. Central module CP-1000 has size as 9 installation modules. Another bus branches you may add via new masters CF-1141, these may be connect to TCL2 bus. The new masters in 3 modules size has integrated CIB bus full powered circuits, so the assembly in switch board is more simple and it also saves place on DIN rail.

New central modules are free programmable as PLC in Mosaic software. Non-programmers may use parametrization software FoxTool, that let them parametrize all basic functions and combinations we may need in typical houses and buildings. CP-1000 and FoxTool let you connect all modules of iNELS 1) that on CIB bus integrated Teco company. CP-1000 and CF-1141 are full substitution of CU2-01M and MI2-02M, that we have manufactured in the past. Teco company guarantee customers continuity of development and full compatibility of its products with our past control systems.

The news, we prepare for Tecomat Foxtrot line at present, is central unit CP-1003. There will be a vision with display and keyboard as well, with name CP-1013.

The module CP-1003 has 2 TCL2 buses and no CIB bus, so it is primary designed for machinery and industrial applications. But connection of CIB bus is possible by external masters CF-1141. Two TCL2 buses let you connect up to 20 peripherals and double the number of controlled inputs and outputs. Central module is in size 9 installation modules and contains: 8 universal inputs AI/DI (0-10 V, 0/4-20 mA, resistance temperature sensors, standard 24 V DC digital input). The module will have also 8 digital inputs. These are grouped in 4 and may be set as digital inputs type I according to IEC 61131, but also as fast counters or 2 complete counters for encoders up to 100 kHz. These inputs have power voltage option 5 or 24 V DC. Digital outputs create 7 relay outputs, organized to 2 groups of 3 relay 5 A and one switch relay 16 A. 4 fast transistors with supplement functions PWM and frequency output up to 100 kHz with direct control of stepper motor function. Permanent capacity of 1,5 A current has its use in machinery. Number of inputs complement 4 analog outputs and free slot for choosing any submodul with further I/O. Central module CP-1003 has favourite free slot for up to 3 serial channels CH2, CH3 and CH4. Basic serial channel CH1 is with bus interface RS-485. Ethernet 10/100 MBit/s is the base communication and programming channel as in the all Tecomat lines. ■

[1]) iNELS is registered trademark of company ELKO EP, s.r.o.



Foxtrot for healthy living

Intelligent ventilation with recuperation inVENTer® directly on CIB bus

We live in a period of mass expandation of low-energy and passive houses, when low consumption of energy is achieved by perfect isolation, heat loss is reduced by perfectly sealed windows and as a heat source we use heat pump. So controled ventilation with recuperation is more and more important topic.

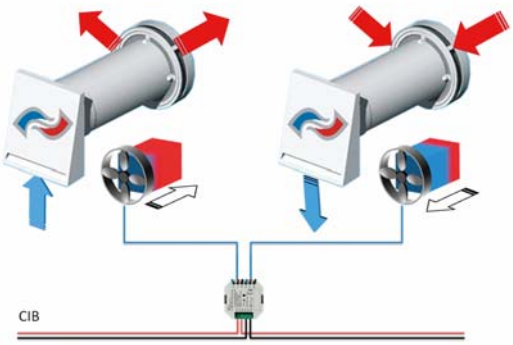
One possibility for saving energy spent for heating or cooling is proprietary system of ventilation with recuperation inVENTer. The principle of the system is in ceramic heat exchanger, the air from the room is going out through it for 70 sec. During that period the exchanger is charging temperature from the flowing air. So in winter it´s taking the heat and during summer, when we cool the room, it´s taking the cold. Follows the reverse phase, when the air is going back to room for 70 sec. and is taking the heat or cold from the exchanger. To protect the rooms for pressure or vacuum, they use double exchangers with synchronization.

CFox line has expanded with C-VT-0102B module, that meet the needs of inVENTer. The module may measure the temperature inside the rooms and directly control the direction and speed of fan in inVENTer device. Because the inVENTers are devices with low energy consumption, the energy from CIB bus is enough to power them.

We may say that these 2 fans are a part of C-VT-0102B module and the new product in CFox line is recuperation unit with air exchange capacity 30-40 m3 per hour. The functions of whole recuperation system, we may programme and set in application software. Except above mentioned recuperation mode we may for summer expand the programme for a mode of loading the house with cold air during the night, when we let the cold air go only inside the house. So we short the time of cooling with air condition.

Ventilation and recuperation system we may in Foxtrot combine with blind control, so just for instance during the summer the interiors are protected for direct sun shine. System may be completed with humidity sensor C-AQ-0004R and CO2 sensor C-AQ-0001R, showing us stuffy air inside. Inside the places where is smoking permitted, we may measure smoke concentration with C-AQ-0003R. So the control of climate is with Foxtrot really complex and intelligent.

That´s the way how Foxtrot helps to healthy living. ■



Air exchange principle

Module for connection of multi switches with LED diods

The line of CFox products is going to expand for C-IT-0908S. With its 9 universal inputs and 8 outputs for LED control (<3 mA) it is primary designed for up to 8 times wall switches with integrated LED of JUNG company or 6 times wall switches of GIRA or EATON company. The module is for customer who likes the design of these brands or for these who prefer controllers integrated as much as possible into one installation box. Because of universality of the inputs and outputs, the module is very flexible and universal. You may combine contacts, temperature resistance sensors or balanced inputs for safety sensors. ■

Gira/System 22, Eaton/Pure, Jung/Flat

Wall switches in DECENTE design

Foxtrot system is in the principle open system for an integration of any wall controllers design – wall switch, button switch, sockets, etc. After successful integration of ABB Time design we are integrating the DECENTE design of company OBZOR. This design has timeless cover shapes and allows interesting large-scale combinations of 3 basic materials – wood, glass and metal. These decors let us to create very interesting color and shape combinations that satisfy even most demanding customer or his architect. Integration of this design is going to finish in the beginning of 2012. ■

Thermovalves directly on CIB bus

In filed of thermovalves we have away of already mentioned wireless (RF) valve R-HC-0101F developped new thermovalve **C-HC-0201F-E** , designed for direct connection to CIB bus.

Basic function of the valve is smooth set from 0 to 100%, but it has more functions. Two universal inputs, ready for connecting external temperature sensor or windows contact, simplify the work, improve the controlling principle and increase the savings by direct identification of open window. Of course, the window contact in Foxtrot system may be used also for safety part of the installation.

Modules for LED light control

In this time the classical bulb lights are dying, so we put effort to system approach of LED light control on CIB bus. LED lights has a big potential in intelligent houses and especially in the present time there is a huge development of LED lights and their designs. LED lights 30 or 100W are not exceptions. LED lights organized into linear belts gives us the whole new possibilities of lighting and even the color control!

Let out of our interest the LED bulb and LED tube control, these are designed for 230 V and we may switch them with any relay outputs from CFox products. Interesting topis is direct power LED control with controlled current source. Favourite LED belts are controlled by controlled voltage source. The need of control last two, we meet with : is designed for LED belts. It´s ready to control the belts 12V and 24V. Maximum total current in module is 24A, that is 6A per channel. It represents up to 10 m of belt.

The modules are visually almost the same, the difference is in connector and terminal design. For programmer they are the same.

C-DM-0006M-ILED

C-DM-0006M-ULED

These modules are modules on DIN rail into switch box. Each one is able to control independently up to 6 LED lights. On the other side, there is a possibility to group the channels and on one module we may create full color RGB channels. Module with name ending ILED is designed for direct LED chip (Power LED) control in standard lines 150/350/500 and 700 mA, up to 48V, what is equivalent of 13 white diods and 22 red diods. Module with name ending ULED

LED light control through DMX bus.

Foxtrot systems thinks of customers, who prefer lights with DMX512 protocol from manufacture. Submodule MR-0115 with tripple serial interface RS-485 allows to create from Foxtrot a master for 2 DMX branches, each for 512 devices. For programming you may use software Mosaic and it is supported by function block from library DMX512Lib. ■

Modules for IR remote control. Illuminance sensoring.

Experience of integrators has shown us the need to integrate into CFox line the infra-red universal receiver and transmitter. It may be used for system control of audio/video devices in different scenes and air-condition units control. Its outside or central units have communication interface accecible through its modems, remote control has each inside unit. And in intelligent installation we do need to control the units – temperature setting, mode change etc.

C-RI-0401S

According to these experience we developed new built-in module C-RI-0401S. It integrates inside both IR receiver and transmitter. Setting of each device is in „learn" mode when we generate commands on original remote controller and assign internal codes. The codes are called by Foxtrot then.

Module has 2 universal inputs, so we may connect binar signals – contacts, temperature resistance sensors or any resistance, for instance potentiometer. Analog values are processed in resolution 12 bits. Module is developed also for illuminance metering. It may be connected with external sensor BPW 21, that has the same sensibility like human eye.

C-RI-0401R-Time

Built-in module C-RI-0401S allows us to place the sensor, IR receiver and IR transmitter arbitrarily according to our needs, like stick directly to the sensor o fair-condition unit or audio/video device. Module C-RI-0401R-Time integrates all sensors into interior box in ABB Time design. The standard is white color, all sensors, IR receiver and IR transmitter inside. Other colors or sensor combination is possible as custom design. ■

TECOMETER

electricity consumption metering comfortable on TV screen

Our company together with ZPA Smart Energy, electricity meter producer, developed new product - Tecometer. The device of set top box shape, placed close to TV screen and connected with it by HDMI cable, may read wireless data from invoice electricity meter delivered by electricity supplier. Tecometer read value every 30 s and visualizes the values on TV screen in comfortable mode for last hour. The user may switch the TV on „Economy channel" and see the value of consumption in kWh and in Euro (or its currency) and the value, that will be invoiced by electricity supplier. He may see the historic data for any day or month for last year and compare it with previous year. Test project has begun with PRE (Prague´s electricity distributor) and ČEZ is preparing the project in Vrchlabi city. ■

New relay modules in CFox product line

New products of this summer are two power relays modules with guaranteed continuous switching current 16 A and peak current 80 A. New relay modules are available in two designs.

C-OR-0008M

Under name C-OR-0008M we deliver module in 6 modules size with DIN rail assembly. It contains 8 relays, each relay has 3 individual contacts. So they may be connected with different potentials or with external link of switch on and switch over contacts of two bordering relays we may directly control up to 4 blinds drives, sunblinds drives or other drives – doors, servos etc.

C-OR-0202B

Second type is C-OR-0202-B in boxed design or design under cover of controlled device. Module has 2 relays for continuous 16 A current, but also 2 inputs. Both are favourite universal inputs, that may be used for sensing the status of contact, and also meter the temperature with directly connected passive resistance sensor. The module may be connected with NTC 12k, Pt1000 and Ni1000 sensors. Each relay has 3 independent contacts. By connecting 2 of them we change the module for blind drive control. Combination with 2 inputs gives flexibility of use for this module. It may be used, for instance, for switching the room floor heating, and connect it with floor temperature sensor and surround temperature sensor. You may replace standard double wall switch or double switch button in old electroinstallation. Relay outputs replace contacts of old wall switch and we have wall switch and device controlled by system. 2 power relays with 2 inputs have wide range of use. ■

Connecting of GIOM3000 meteostation to the Tecomat systems

We have developed direct connection of GIOM3000 meteostation to the Tecomat Foxtrot systems. Meteostation is connected together with Foxtrot central module to the LAN network. For easy data reading in Mosaic we prepared for programmers function block in library MeteoGiom3000. Meteostation Giom3000 informs us about wind direction and speed, temperature, pressure and relative humidity. We have available other data, calculated from measured values – barometric altitude, relative pressure QNH/QFF, wind power according to Beaufort scale, windchill influenced by wind and monture, pressure of saturated water vapor, absolute humidity g/m3 and g/kg and dew point.

New CFox, Rfox Design and Installation Guide

Just for spring trainings for designers we launched new CFoc, RFox Design and installation guide. The guide is continuously updated for news and practical guidance, how to connect standard devices like lights, blinds, thermostats for zone temperature control, presence detectors, etc., but also some tricks. The guide is too large, just for your imagine here are some topics:

- Floor electric or warm water heating, floor convectors, fan coils, intelligent ventilation with recuperation.
- LED lights – switching, dimming, color control, LED belts, direct power LED control, fluorescent lamp ballast DALI connecting, DMX interface device.
- Drives control for blinds and sunblinds.
- Presence detectors for safety systems and for lighting.
- Infra-red remote control.

Large topic is wall switch, button and heating controllers connection of different designs. Next huge topic is temperature metering. It contains combinations of many modules, temperature sensors and values. Similar topic is air quality metering – temperature, humidity, CO2 concentration. We do not forget cigarette smoke.
Actual topic is also electricity consumption metering. You´ll find how to connect the main and secondary electricity meter, water meter, gas meter, caloric meter.
You´ll also find how to connect to the system exterior device like sidewalks and eaves defrosting, PH and REDOX monitoring in pools and limited or continuous water level metering in walls and tanks.
Many articles are connected to device of some real manufacturers, e.g. fan coils and conventers ISAN, secondary electricity meters ZPA Smart Energy, wall switches GIRA, JUNG or ABB. ■

FOXTROT Complete control system for buildings and houses

Have you ever heard the phrase intelligent home or smart house? Not everyone knows this meaning well. We´d better know phrase Energy-saving house, but how intelligent our house may be?

Just imagine you are going back from holidays one day earlier. Would you like to come into a cold house? Sure not. Could you call your grandma and ask her to switch on the heating system of your house? Of course, you could. But definitely cheaper and more comfortable is to send one SMS message and let your house to do what you asked. So in this case the house begin to heat the house on required temperature.

Have you left your house and not sure whether the lights are off?

No problem. Have a look into your house from anywhere, let´s say via iPhone, what´s going in, what light is on or off, but also what electric devices are on and off. But not only that. You may watch and also control all the house. So anywhere in the world you are, you have control of your house in your hands. In the case you have cameras in your house, you may watch them anywhere. There´s no need to be far away of your house. It´s comfortable to look at your children via phone while watching television or during party at your neighbors.

Intelligent house brings to you the great comfort of living, but also other benefits. One of most important is energy savings. Intelligent house heats when and where we need and the same with lights. According to programmed scenario depending on time, temperature, presence, weather etc. Cameras in the house may begin recording at the time there is an intruder. At the same time the control system switch on the alarm and send you a SMS message to your mobile phone. The message may be sent also to a guard agency.

What means intelligent houses and what allow us?

Intelligent houses we call such houses with intelligent electroinstallation. The difference between conventional and intelligent electroinstallation is this – intelligent electroinstallation has „central brain" – usually central module, what means a small box unit in switch board and many sensors, actors, switches as well as cameras in your house. All these may control your house according to preset parameters.

All the system may run without you for ages and do all the job independently, but you, as a resident of your house, may control in your house whatever device from anywhere in the world.

Why Tecomat Foxtrot?

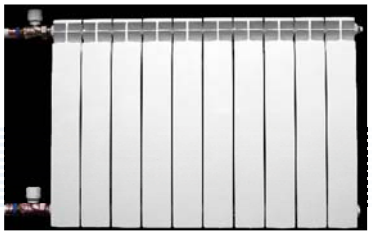
Tecomat Foxtrot is a complete house and building control system and gives you a possibility to control in your house all. You may control heating system, lights and light scenes, any electric device, blinds, swimming pool, garden irrigation, but also your audio system and home theatre. There are many ways how to control the intelligent house there. In intelligent house you have, of course, the convenient wall switches, but you may control the house also with wall touch screens, phone, smart phone, iPod, iPad, iPhone, TV screen or notebook. From anywhere. Through these devices you see into your house, what is on and off, what temperature is where, where you heat and with cameras you see directly into your house. Even it may look complicated, but it´s simple and fun. The control is simple and intuitive, so everybody may do it easily, even the small child or elderly people. That´s why the intelligent systems are so popular.

Intelligent control systems for building and houses are very popular in west Europe and USA and they become popular on domestic market. There are more manufacturers of control systems for houses and one of them is our company Teco a.s. Company Teco is traditional development and manufactoring company with more then 35 years of experience with control systems PLC (Programmable Logic Controller) for industry, processes and buildings. The experience from industry we put into development of quite new control system for building and houses Tecomat Foxtrot. Foxtrot soon became successful and has been applied in thousands installations worldwide. From small houses through hotels up to big commercial buildings.

Most intelligent control systems are used during new house construction, because it is not much comfortable to install wires into old house. Tecomat Foxtrot has possibility to control the house with wires but also wirelesly. So if you want to install it into your old house, you may get it without heavy construction work. This advantage is very good also for owners of new buildings with Foxtrot system. If they want to expand the control of their house in the future, there is no need to install wires and interior design damage.

One more important benefit of Foxtrot system

Foxtrot system is price acceptable, so it is used a lot for residential houses. That´s why it´s affordable solution for you. For more information about Foxtrot please see website www.controlyourhouse.com, get information about benefits for you and find an installation company close to you. If you are an integrator company and want to offer Foxtrot to your customers, please contact us at teco@tecomat.com for more details. ■

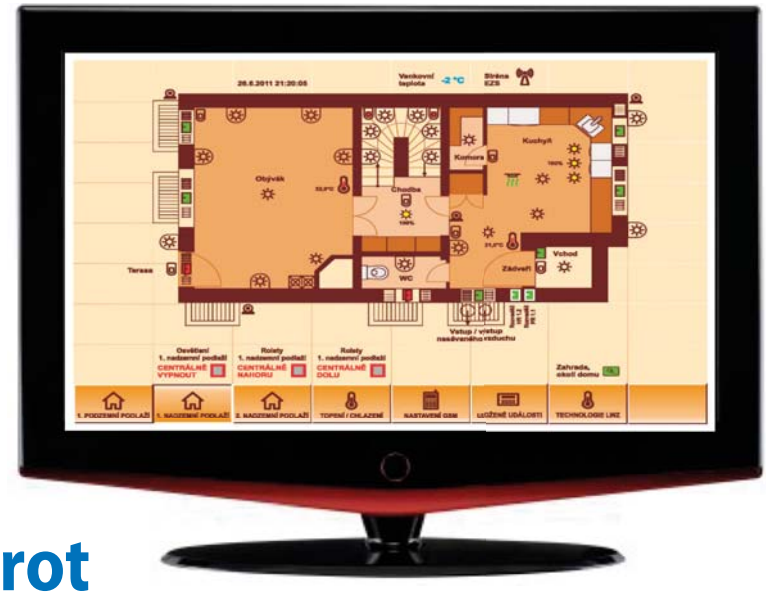


FOXTROT Control Your House!

During this year we have launched promotion campaign Foxtrot – Control Your House! The campaign is aimed at potential customers who prepare construction of new house or remodelling of their flat and tell them what benefits Foxtrot brings to their life.

Customer – the laymen – get information about Foxtrot advantages, what he can control by Foxtrot and what may be into the control system integrated. He may find a list of partners – authorized distributors. These companies have been trained for Foxtrot integration and installation, work for a long time in home automation and have many experiences and references. That´s why they are able to recommend customers many practical functions and smart tricks. Then the customer may use a maximum of Foxtrot abilities.

First thing in customers hands is brochure Foxtrot – Control Your House! and following website – www.controlyourhouse.com. We launched technical and promotion articles, these are also a part of the campaign. We cooperate with publishing companies and the mass media. The campaign is global, so we published the brochure in czech, english, russian and slovak languages. The website has also language versions. So you may find english (www.controlyourhouse.com), russian (www.controlyourhouse.com/ru), czech (www.ovladejsvujdum.cz) and slovak www.ovladajsvojdom.sk). The customer may choose a right language on each of them. A part of campaign is also our exhibition on selected trade fairs. Brochures are available for our distributors. They get a strong marketing tool for intelligent control promotion for potential customers. Shortly after launching the campaign we have received good feedback from our integrators, distributors and also from potential customers. Thanks to this campaign the benefits and advantages of living with Foxtrot get more and more customers. ■



Foxtrot
as a basic equipment of apartments in Residence Swisshouse Prague

Luxury as a standard

The idea of Residence Swisshouse is to offer the space for living without any limitation. Developer company offers to customers extraordinary attitude like individual solution of each customer requirements. To be able to offer this solution also with electroinstallation, heating and air condition, the developer came to company Insight Home (www.insighthome.eu). The result is a solution, that in every apartments contains intelligent electroinstallation Foxtrot and CIB bus modules CFox, placed in the switchboard. These modules are connected with lights, blinds, thermostats for individual temperature control in each room. Foxtrot system is a basic spin of in-Home solution that use an AMX control system.

Technical equipment – maximum comfort

The apartments are equipped with intercom, telephone, ADSL internet connection, satellite antenna for digital broadcast receiving and safety cameras wire connection for home and garage entrance monitoring, electronic safety system and independent fire sensor. Each apartment has its gas condensing boiler with tank for heating water and combination of plate radiators and fan-coils. All apartments are equipped with central air condition unit. Each apartment has its independent gas, electricity and water metering. Preloaded Foxtrot system connect all mentioned devices as a higher standard even in basic equipment of the apartments. It gives developer advantage to offer customer possibility of customized connection or multimedia/home theater connection even before customers move in.

Energy consumption metering – Comfort may be economical

The house is interesting by its size, equipment, energy metering and by the fact, that there will be applied electricity meter of new generation AMM. These energy meters allow electricity supplier PRE remote reading of consumption and the resident of the house may monitor its consumption and visualize it on TV green via our product Tecometer. So he may switch the TV to „Economic“ channel and see the consumption of the house in minutes, hours, days, weeks and months in kW/h or in EUR (or relevant currency). He may compare the values with values of past time or preset values.

New standard in developper´s offer

Companies Teco and Insight Home together with developer Marking are showing in practice, that intelligent electroinstallation with Foxtrot system is ready for mass application into new buildings and houses. ■

News in Mosaic software

Let us kindly inform you about news in Mosaic software. We hope these will make your work and applications with our systems more easy and comfortable.

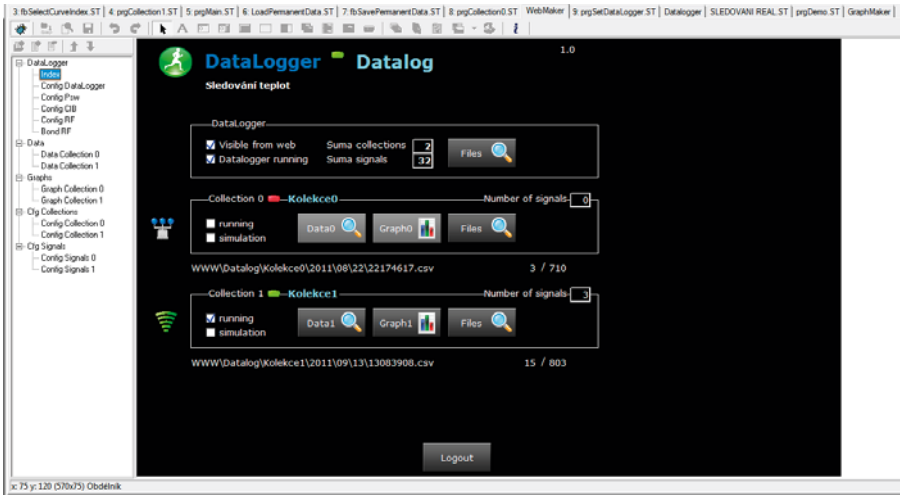
CFC editor

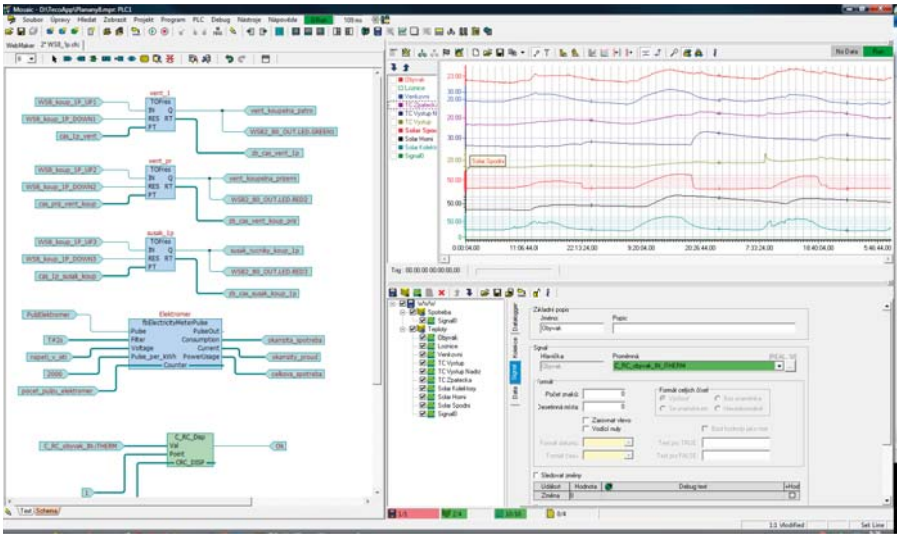
Who installed new vision of Mosaic in half year 2011, found inside the beta version of new editor in programming language CFC (Continuous Function Chart). Again it is a language of function blocks, each blocks you may placed, in contrast of editor FBD language, freely over the surface and the connections may be done horizontal and vertical. Function blocks are available in editors toolbar. Links you may input by click on connecting points and you may branch and wrap them. The programm may be redesigned, you may move function block with links by puting them with connections and creation of the programm is more easy and well-arranged. Values of variables are during programm tuning are shown like in other languages and lighted links show status of binary variables. New editor will definitely make the programmers work more comfortable..

Datalogger

Very important news in Mosaic is addition of datalogger. Tecomat systems allowed store measured data into files on memory card even in the past, but it was necessary to create special programm with function blocks from library FileLib. Datalogger tool allows to set the variables and conditions, that are stored, very simply by a dialog, Datalogger generates configuration file and the rest is provided by internal function of the system. Data are stored into CSV file. The tool is available even in Mosaic Lite version, but takes off one module in system configuration. Please remember it, when you create the programm without HW key (maximum 3 modules). Have a look at the tool in details.

Data are separated into collections, these are set of signals and its values have to be stored in to text file. Datalogger may contains up to 4 collections, each one may contains up to 16 signals. Each log is completed with time mark. Data may be recorded periodicaly – the period is set up the same for all collection, or unperiodicaly – on basis of control variable collection change. The third kind is signal collection – the recording is running only in case of predefined statuses of event for each signal. The signal may be any variable of user programm. For each signal we may define a format of stored file and there is an option to define the event, that cause the logging into file. That event may be the change of variable value or paging the value of variable over the defined value. At signal collections we may specify for each signal a set of additional variables, that are stored together with the signal values. Datalogger support in central module provide putting the information about logging into user file, from which we may control the logging process. Datalogger in PLC restore the data in memory every 10 minuts. Frequency of restoring in CSV files may be controlled from user programm. Data stored in CSV files may be visualized by GraphMaker. Final values we may visualize direct in Mosaic software..





Communication between PLCs through network variables

Into Tecomat systems we built in new support of mutual communication through network variables sharing. After network support PLCnet switching on we may in configuration dialog share each variables and offer them to other PLC in the group.

Communication in PLCnet is peer to peer, what means independently among each pair. It is suitable for low data volume transmission and in cases, where every PLC requires from its neighbour different data. In case of big amount of PLC the communication is more slow then in PLC mode. PLC mode of communication is going also to the PLC that do not need it. But in case of sending big volume of data this way of communication is better, and especially when we need to send the same data to all PLCs.

The advantage of network PLCnet communication is that in case of variables moving in memory it is not necessary to redefine communication zone and save the programm into all PLCs in network. Programm is changing only in the PLC, where the moving has been done. If we want to change the list of variables in target PLC, we save programm only into that PLC and not in all PLCs.

Multistatus pictures, animation in webpage

By addition of multistatus picture into WebMaker tool we have a possibility to use animated pictures in Tecomat website. Simple animation we create by cyclic picture changing, managed from user programm.

Languages support on website

By adding Language manager we may manage the website in more languages. In language manager you may define texts for each language versions (up to 15 languages) and choose the active one. During translation are generated webpages with texts in active language.

Graph visualization in the website

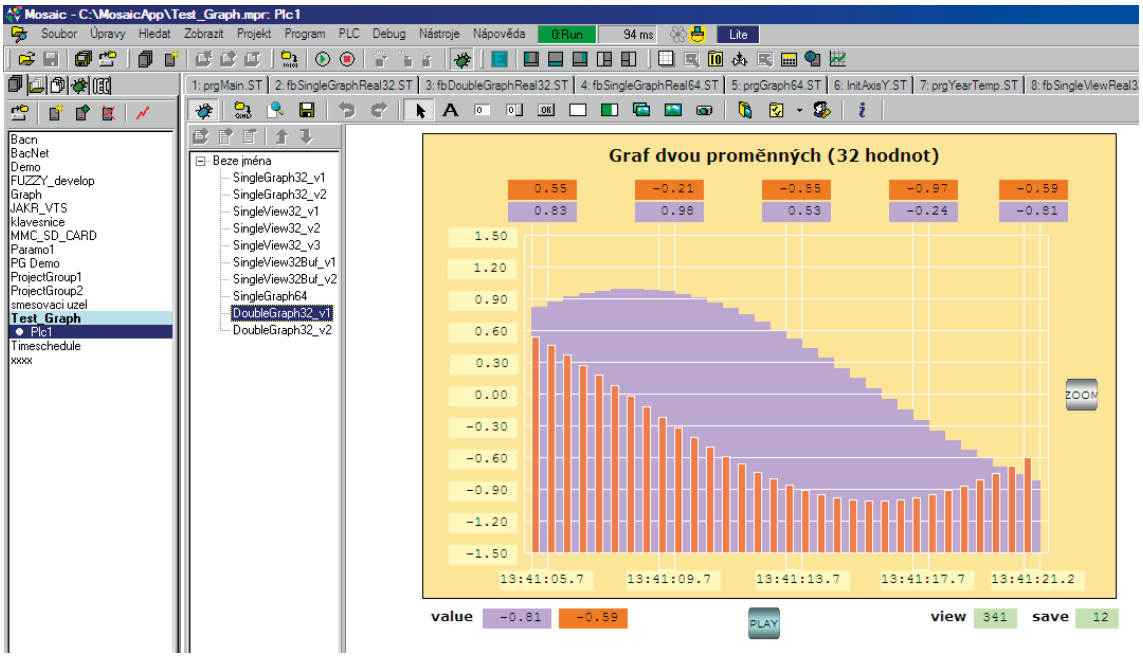
Frequent requirement is graph visualization direct in the website. The task is not easy, because we need for it the scripts and running the scripts depends on internet browser. Our solution with library support WebGraphLib is based on cyclic use of column graph element to show required variables course. This solution do not need the scripts. Values of variables are sequensely stored into stack with predefined number of samples and this stack is under function block, that fill the graph on website with data. Graph may run as floating, showing the last value, we may stop it and move back or forward by buttons and then go back in online mode.

New libraries in Mosaic

We continuously add new libraries into Mosaic. In connection with energy consumption metering we prepare library EnergyLib, that allows reading values from electricity meter, connected through opto-head and calculated energy consumption on the base of S0 impulses from the meter.

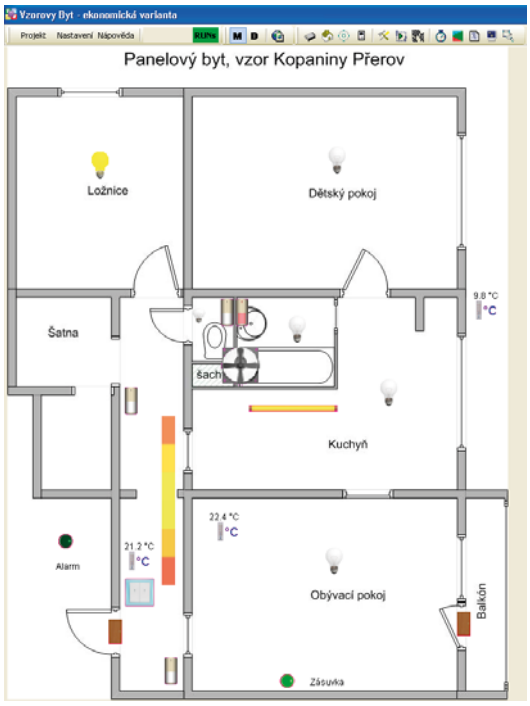
Libraries DMX512Lib and DALIlib allows us controlling the lights (switching, dimming) and light scene creation (RGB, LED belts) with using above mentioned protocols.

Library GIOM3000Lib is determined for connection of meteostation of the same name and send the data from meteostation to the user programm. Library AstroLib calculates the Sun location (azimuth and declination) on the sky for the time and geographical coordinates and time of sunrise and sunset. The last added library is XMLLib determined for data processing in XML files and we may use it for a different communications between device, where we use XML format files. ■



FoxTool – Smart tool for Smart house

In previous articles we showed a lot about advantages of Foxtrot and its function possibilities. To be able to perfectly fit your needs, we have to programm their system well. Only well done programm let the system work right. Teco offers two software for programming the system. First one is software Moisaic, that let you free programm all our systems – Tecomat Foxtrot and Tecomat TC-700 and others. It is a perfect tool for proffesional programmers. On the contrary, sofware FoxTool is determined for non-programmers, users or integrators without experience with programming. With FoxTool it´s possible to create the programm without knowledge of programming languages, but you have to have any basic knowledge about automation.



FoxTool generate programm for central module according to actions and events, defined by user. As a first, in device manager, we specify the hardware configuration of the system (manually or automaticly from central module, if the installation is assembled). After that for each input of any device we define events (push button, reach or reach over the defined temperature, disruption space, guarded by presence sensor, card attached to the card reader etc.). For each event we may in event manager define, what will system do for any event. System may react by setting any outputs and may inform you by SMS message. For each event you may set more commands, so one push button may put down the blinds, switch any light for any level, switch on the TV and set pleasant temperature for relaxing. Time event manager let you to plan the events for the future, Time programm manager let you to automate many functions like automate heating and lights according to any scenario. FoxTool contains Designer. With Designer you may create simple web page of the house for controlling the house. Background of the web page may be plan of your house, that is complete with icons of active elements. The icons shows status of sensors, lights, fans, locks, Windows contacts, values of temperature, selected heating mode etc.

During programm compilation the software creates web pages and save them on memory card. If you connect central module to internet, you may use these web pages not only for visualization of the house, but also for house control from any place. Entry to your web server is secured by user name and password.

FoxTool is determined for central modules CP-1000 and CU2-01M. Other central modules are programmable only through software Mosaic. Right central module you choose in separate window after project opening. Software FoxTool is a new vision of previous software IDM[1]) and is fully compatible with projects from IDM. Software FoxTool is free. ■

[1]) IDM is registered trademark of ELKO EP, s.r.o.

Control and visualization system

of Nicosia and Larnaca (Cyprus) water stations and distribution network

The vision of the customer was to create a modern monitoring network with maximum in time information for controlling the water distribution system. Teco company as a member of WaterSCADA consortium delivered 67 control units Tecomat Foxtrot.

System operator level

Every city has its own central server communicating wirelesly with all stations under its management. For the connection GSM network and GPRS technology is used. The basis of the user application is SCADA Reliance4 including several licences of thin clients. The thin client allows to view a monitoring windows to registered users through standard WEB browser.

Even there is a possibility to view every single station, statement of its device and all present quantities in standard visualization windows, the core of the solution is in generating 105 analythic reports generated by dynamic queries to SQL database where are continuously stored data from all stations. In this case graphs and tables are more important.

So the Water Board Management do not operate the standard monitoring panel with dispatcher but is oriented on short time periods and long time period trends of inflow and flow off the reservoirs and stations of water supply network. Important or exceptional information are distributed to staff by e-mails or SMS messages. These are sent out by monitoring level of SCADA as well as FoxtroT units in the landscape.

Telemetric station

The telemetric station contains from Foxtrot basic module with few expansion modules. It measure basic water industry values water flow, water pressure in front of and behind the valve. The station is placed in switchboard above ground closed to shafts, where are placed the equipments bellow the ground. Some of them are independent with no dependence of electric supply and have its own solar power system. Together with GPRS/EDGE router ER75i from Conel company it makes local LAN network, that is like a tunnel by internet network connected with the central server in Virtual Private Network.

Every station has in Foxtrot its own comfortable maintenance web pages that allow technicians of Water Board Management Access for all parameters and service messages through standard web broker. There is no need to use software Mosaic.

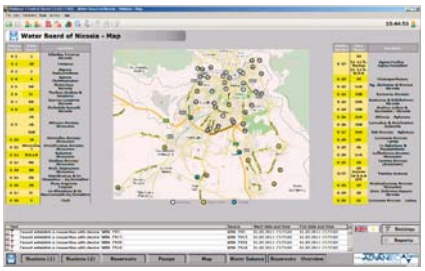
Transmission network, the communication system

Due to the extensive monitored territories we choosen for communication the GPRS network of Cypriot mobile operator. GPRS technology allows continuous connectivity to all stations.

Although all stations are connected via the Internet to a virtual private network, created by tunnel between the corporate LAN in headquarters and the LAN at each station it is necessary to minimize the data flow at every step. The price for the connection is determined by the amount of transmitted data.

To minimize the data flow into the Foxtrot as well as into Reliance was implemented IEC870-5-104 protocol, which transmits only the changes greater than the preset value. Foxtrot preprocesses data and also has a memory that store the information even if there is a interruption of communication from any cause. After the restoration of communication the database automatically fills the missing data. So they captured all the changes in the minimum number of transmitted data.

Virtual Private Network also provides insight into each station through its service websites. But then the volume of traffic data increases significantly. ■



Lighting control system

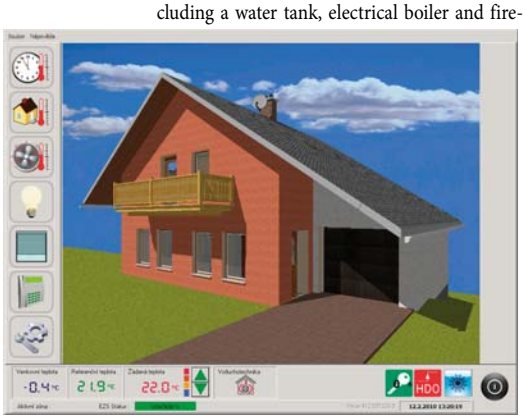
of the stylish restaurant- Nicosia, Cyprus

A stylish and elegant restaurant in Nicosia, located on 38C&D Metochiou Str. near the American Embassy. Rhine Line, Ltd., our distributor on Cyprus is using Foxtrot CP-1014 and is controlling lighting and ambience. Over 40 Inputs/Outputs gave the architect the flexibility required to produce an amazing design product. The interior lighting design was completed using over 40 System Inputs/Outputs featuring seamless fluorescent lighting, LED´s and unique pendant lighting fixtures as well as custom-made recessed spot lights. The system is set for a total load of more than 4000 Watt. A customised application gives the client endless possibilities to create his or her own lighting scenarios. These scenarios shift within seconds by means of a centralised button consol in the reception area.

Complete control system and visualization

of a family house in Hradec Kralove, Czech Republic

At the beginning of the implementation of this project, we faced the problem of how to integrate several different devices in the family house into a Central Control System. We needed to control a hot air heating system based on an ATREA recovery unit and an underfloor heating system including a water tank, electrical boiler and fireplace heat exchanger. It was also necessary to control heating of domestic hot water, including water circulation and purification. On top of that, the owner of the house wanted to install a security system, intelligent lighting system and the system for controlling of the outside sunblinds. After reviewing the situation with the investor, it was decided to discard a number of autonomous regulators and control units from different manufacturers and integrate control of all devices via a central control system. For this purpose we used the Tecomat Foxtrot CP-1005 PLC unit with expansion modules. This PLC unit has a big advantage, it features an intelligent CIB bus, through which we are able to obtain the data from various electric devices installed in the house (e.g. room thermometers, light switches, sunblinds and security system).



The result of this installation was a distribution box containing the Tecomat Foxtrot CP-1005 PLC, which was placed in the basement of the house. This solution allows reliable control of all intelligent devices from one place. There is a 17" control panel with a touch screen installed on the wall in the foyer. This control panel provides visualization and control of all processes and devices installed in the house. This solution has several advantages, for example this solution is energy efficient and user-friendly (the owner of the family house can control all the systems from one place).

The new control system provides control of the following features:

- Automatic light switching at a predefined time
- Automatic light switching when the owners leave the house
- Automatic lowering of outdoor sunblinds after leaving the house
- Automatic water supply heating switching after leaving the house
- Automatic activation of the "Reduced Heating" operation after leaving the house
- Automatic turn-off of the main water line after leaving the house (in case of washing the laundry or dishes, the main water line is turned off immediately after the washing)
- Instant start of the "Occupancy" operation when the owners leave the house

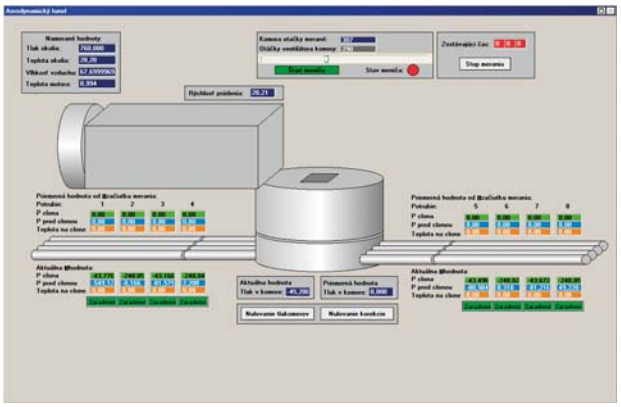
The user has the possibility to control the system by use of SMS messages. Moreover, the Control System can send information messages about specific events to user's cell phone. Users also have the ability to display the visualization screens on a remote computer via the Internet. ■

Control system of air tunnel in certification testing

Company FIRES - Slovak Republic

Slovak company Fires s.r.o. is authorized institution for certification, testing and inspection services for building materials, especially doors and windows. They test products for fire protection. Qualified testing and certification helps to protect lifes and health of end consumer and public, property of people and safety of processes. The company has many customers all around the world. In headquarters of the company our daugthers company SLOVTECO s.r.o. implemented Tecomat Foxtrot system for controlling the technologies of air tunnel. As the core of the system they did choose central module CP-1004 with expand modules IB-1301, OS-1401, 3 x IT-1601 and IT-1602. In air tunnel Foxtrot controls rotation speed of two independent engines that drive propellers for engine in chamber and engine in tunnel. Regulation of rotation speed in tunnel controls speed of air flow, to be measured at tunnel end in 9 points. Regulation of second engine controls the air pressure in chamber.

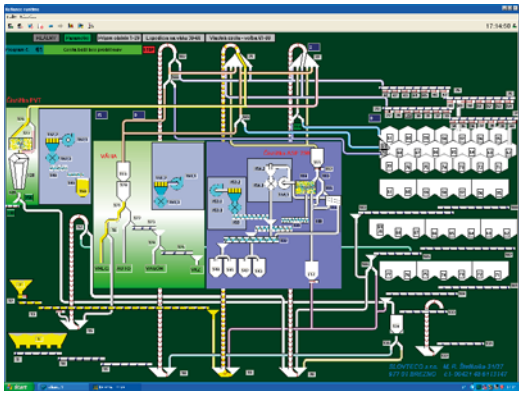
Foxtrot measures surrounding air temperature and air temperature in every pipeline through thermocouple. Measured values are sending from PLC via ethernet interface to dispatching station. Here are visualized with SCADA/HMI system Reliance 4. From measured values the system calculate if the tested product suits or not. ■



According to company Slovteco, s.r.o.

Control and visualization of silos used for grain storage

Rimavska Sobota, Slovak Republic



Control system Tecomat has been implemented in Rimavska Sobota in Slovak Republic as a control system for technologies of grain storage in silos for company GEMERNAKUP a.s.

For grain transport ways control is used Tecomat TC700, for grain temperature metering is used Tecomat TC601, TC631 and 6x XH05. Programming of transport ways is in computer in central control room via service software, created in Reliance SCADA software. New transport way we may create and programm in „create your way" mode regardless running transport ways in silo. After creating new way and saving in memory we may run it at any time. While starting new transport way, control system check a possibility of collision with running way. In case of collision doesn´t run the way and inform the operation person. Checking of error statuses like conveyor belt stop, none overturn flap or closed outputs.

Storage grain temperature metering is through original thermistors. Thermistor resistance value is reading by control system Tecomat TC600 and processed with service software. Service software stores all measured values and in the case of values over the limits inform the operation person. ■

According to company information Slovteco, s.r.o.

Control system of water treatment plant

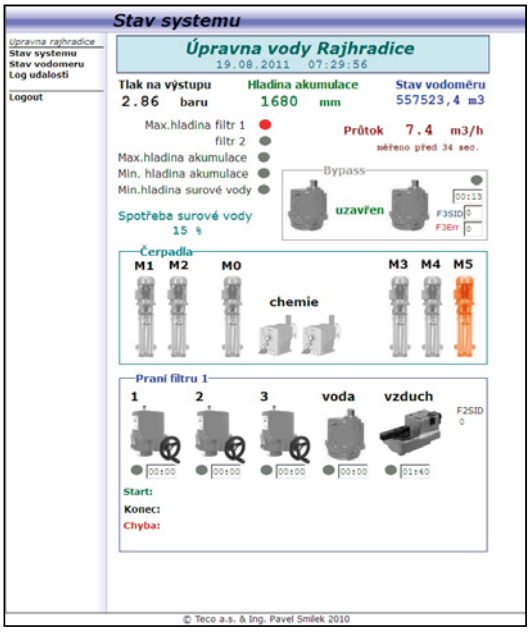
Rajhradice, Czech Republic

The goal of this application was to take over the original semiautomated control system, because it wasn´t able to follow the new standards of control process. That´s why the solution, integration company has found, was to use Tecomat Foxtrot control system. This would enlarge the possibilities of the technology.

A little complication was to run the system without any break time, because the customer of the company needs continuous water supply. That´s why the connection of new control system was done part to part in parralel and programmed too, so some time both control systems did run synchronously and the new one took over the functions gradually. ■

Implemented by

Ing. Pavel Smílek, www.rameco.cz



Control system of self-service beer pubs

Self-Service Beer Bar (2S2B) gives the customer the opportunity and unforgettable experience to tap his own beer and decide how much or less foam head they want - at any time. The sales can be tracked for each person at the table regardless how many guests share the table. Furthermore, any customer can be connected with his friend sitting in the same- or in another 2S2B in another city or country, you can send your friend a message or pay for their beers. Customers are amazed at how it all works. This is the network of 2S2Bs - The Global 2S2B. The connection of information system with our control system Tecomat Foxtrot, controlling the technology of beer distribution, self-tap valves and beer tanks, creates the new quality of experiences for pub visitors.

2S2B Concept was developed in Pilsen, the World Capital of the Beer, in the year 2005. As a revolutionary product in the beer market, 2S2B immediately became extremely popular. Breweries like Pilsner Urquell, Heineken and others understood that it was something they were looking for in the beer innovation area. Currently breweries are supporting this concept and 2S2B has great advantages for the customers and concessionaires, as well as the breweries. The system is implemented in 13 pubs in Czech Republic and others are worldwide. See www.thepub.cz.

MCAT AUTOMATION gained a very prestigious credit in The No. 1 Journal for The Sport & Entertainment Facility Industry Worldwide, PanStadia Magazine, for the Central Beer Distribution Control System, realized for the O2 Arena Prague (formerly Sazka Arena). ■

According to MCAT AUTOMATION s.r.o.

Control system of heating system for aquarium fish wholesaler

Company Tommi CZ is active more then 20 years on field of manufacturing and distribution of home breeders needs and feed for pets. Control system Tecomat Foxtrot has been choosen as a control system for aquarium fish wholesale storage. There is a need to control heating system of the building and the water temperature in tens of water tanks with exotic fish. The system has been implemented by company EVP (www.evp.cz), that has a lot of succesful implementations in building management systems and measurement and control and remote control of heating systems in boiler rooms, exchange stations, farmer stations and water plants. Control system contains of central module CP-1015, operator panel ID-14 and expand modules IB-1301, OS-1401 and 2 x IT-1601.

PLC Foxtrot controls operation of gas boiler room, floor and desk radiator and heating of water for tanks with aquariumfish. It monitor error statuses as well. ■

Control of energy production processes

Veprek Solar Park, Czech Republic

On September the 8, 2010, the grand opening of the largest (at its time) photovoltaic power plant in the Czech Republic took place in the village of Veprek in the Melnik District. It is also one of the largest photovoltaic power plants in the world. Its output is 35 MWp. The power plant is situated north of the villages of Veprek and Mlcechvosty.

The foundation stone for the plant was laid in the spring of 2010. To cover the costs, it was necessary to invest more than CZK 2 billion. The main investor of the project was DECCI, the Czech joint-stock company. Its photovoltaic power plants are registered under the brand FVE CZECH. The entire power plant's construction used up 186 960 PhonoSolar photovoltaic panels 185 and 190 Wp. The new power plant stretches over an area of 82.5 ha, which is an area the size of more than a hundred football fields. The power plant's output 35 MWp should cover the energy consumption for about ten thousand households.

The control system consists of 26 Tecomat Foxtrot CP-1004 PLCs installed in separate blocks. One PLC was installed in the main substation. This controller is designed to protect the photovoltaic power plant and send SMS messages regarding alarms. All the PLCs are interconnected via the Ethernet network (optical fiber). The main control room is fitted with a PC containing the Reliance 4 Control Server software. In the main station's switchboard box, a touchscreen with the Reliance 4 Control software is installed. This touchscreen is connected to the main control room PC.

The power plant can be controlled using the main visualization window, on which the current states of all protection systems and blocks (on/off), current status of the SMS gateway, current power output, and possible alarms are displayed. It also allows the operator to display details on each part of the power plant and set the plant's modes. An alarm is indicated by the "Alarm" text displayed on a red background. ■

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