NEWS LETTER

Autumn 2023

Energy under control

Dear customers and business partners,

we welcome you to the pages of the new edition of our company newsletter, full of important news and current information regarding our software and hardware products.

During the past months, we have worked intensively on innovations so that we can better assist you in handling your projects and prepare you for the challenges that the demanding months will bring to all of us, not only at the end of the year. Your satisfaction and success are our driving force, and we believe that our news will help you achieve your goals more efficiently and better.

Thank you again for your loyalty and we look forward to further steps together.

Domat Control System team

Merbon family is changing to DOMAT SOFTWARE: Innovation for your needs

Innovation is not limited to the hardware of our products. In the coming years, we will focus on significantly strengthening our own software development, which will bring the next generation of these tools. With this opportunity, we decided to rename our software line from Merbon to **DOMAT SOFTWARE**, further connecting our product solution with our company name, while increasing our brand awareness. **DOMAT SOFTWARE** opens a new era in the field of software solutions for building automation. With this step, we express our will to invest in innovation and moving forward in the field of software development. We want to bring to the market not only powerful hardware, but also comprehensive, flexible and user-friendly software that will allow you to achieve maximum efficiency and optimization when writing software on your projects.

The new generation of software tools will be introduced to the market gradually. We start with renaming our software tools Domat IDE, Domat Runtime, Domat Web, Domat Visual, Domat Proxy, Domat OPC, and Domat Symbols. The new product names Merbon SCADA, Merbon DATABASE and Merbon CONTPORT will come with their new generation, which is already in preparation.

And whats new...?

Communication .NET drivers support

Platforms with .NET drivers, i.e. markMXL and mark520, bring a Text Parser (similar to a File Driver, i.e. the possibility to read the value of a variable using regular expressions from a web page or from a text file) and communication drivers for Daikin iTC and Hauser. There are also two new Ethernet ports for the markMX.3, which allow the connection of the HT200 terminal or service PC directly in the switchboard without the use of a switch, or „line" topology.

Security of control systems

A fundamental new function is support for TLS communication, i.e. the possibility of encrypted data transfer. This is now a necessary condition for deployment by some users, but especially for sending alarm e-mails and web access - most web browsers already block web servers without https:// communication as suspicious. We will cover encrypted communication in more detailed articles and tutorials; however, its deployment also involves the need to understand and solve the security policy

of the building management system as a whole, especially in cooperation with the designer and the operator. Follow the new section Security of control systems in the FAQ on the Domat website.

Try new version of Domat IDE already at the beginning of October!

The Domat IDE development environment mainly brings improvements for easier editing and commissioning. There is, for example, a Watch window for monitoring the online values of selected variables, mass writing of values to the default values of variables, support for structures in the Modbus server (this will allow multiple Modbus registers to be mass populated with a single variable of the type, e.g. a field), remote playback of the configuration via the Proxy server, or automatic generating a text menu for the operator (which facilitates the creation of user documentation). Some parameters, such as the communication parameters of channels or devices, can now also be changed from the HMI device – this is made possible by so-called dynamic changes. They will be especially appreciated by the authors of OEM applications: the parameters can be changed by the user during commissioning, it is not necessary to edit, compile and play the entire program for the change.

New graphic display options

The HMI editor contains new objects: alarm point, web link, pop-up window, progress bar and slider (setting the desired value with a „pull potentiometer"). For digital indicators, we can now use the masking function, which can simplify work with variables – the relevant bits for status indication are set directly in the graphic object, similar to Rcware Vision.

Improved BACnet

The BACnet client now writes and reads multiple properties, but the export of the EDE file at the BACnet server will be more interesting. The exported file enables standardized transfer of variables and import in client programs such as foreign visualizations. For more complex data collection systems, the possibility of writing into history with a user time stamp can be useful: the sample does not have to have assigned the current PLC time at the time of recording, but the time from another variable. This can be used, for example, for asynchronous readings from electricity meters or data loggers and transfer to the Merbon Database.

You can find more news in the release notes for Domat IDE and, of course, in the help for the program.

Redesign of the MARK PLC.2/LX series

As part of the redesign of the MARK series controller, which was necessary due to the availability of components for production, the most of the PLCs in this series have had their 2nd generation. The change involved PLC mark320LX, mark220LX, mark130.2, markMX.3, ICIO205.2, IMIO105.2, IMIO110.2. It was an opportunity to focus on the new features of these controllers while completely changing the printed circuit board. A major change was made to the PLCs IMIO105.2/IMIO110.2, mark130.2 and ICIO205.2, where the original processor was replaced by a more powerful one, which enables the use of the Linux operating system. This made it possible to compare the performance of our PLCs to a higher level. Another new feature is a dual Ethernet port, which can be useful when a graphic terminal has to be connected to the PLC and remote access to the PLC via web or SCADA from another network shall be available at the same time.
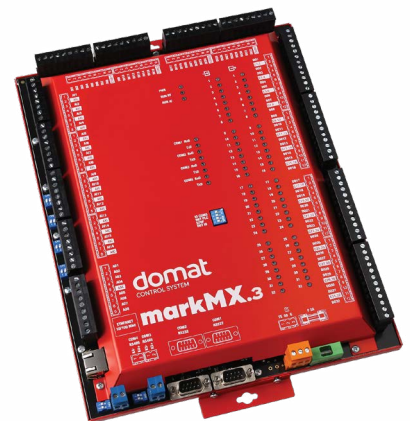
Compact PLC w751-9301: new platform of the WALL series

As part of the expansion of the hardware platform of the WALL series, which is advantageous for its flexibility (card system), a small powerful compact with 8 DI, 4 DO, 4 AI, 2 AO is now available.

It also contains a RS485 serial interface, two Ethernet interfaces and support for Modbus and BACnet protocols. The WALL series system is an attractive solution especially for applications such as home heat recovery units, air handling units or compact heat exchangers. The advantage is remote management via Domat WEB, Domat Visual or SCADA control panel. Mutual compatibility with the HT200 panel. Expect the launching in autumn 2023 with the release of a **new version of Domat IDE**.

More powerful platforms in the WALL and MARK series

We have expanded both our WALL and MARK series with new, more powerful processor variants. In the MARK series this is the mark520, which includes 2x RS485, Ethernet, 2x RS232, display with buttons, and the markMXL, which includes 88 inputs and outputs, 2x RS485, 2x Ethernet and 2x RS232. In the WALL series, this is the w750-8212 processor. All of these controllers feature larger RAM and flash memory. This enables .NET driver support on these processor units. These .NET drivers will also be supported by w751-9301.

ARTICLES

Although Modbus was defined more than 40 years ago, the protocol still provides reliable and fast communication between programmable logic controllers, sensors, thermostats, frequency converters, etc. So it is definitely worth learning to work with it. Our articles and tips could help you with this:

- **Modbus Communication Protocol**
- **Modbus Routing – part 1**
- **Modbus Routing – part 2**
- **Modbus and Analog Values**

Last but not least, we will focus on Modbus and bit decomposition

The authors of modbus tables often use sixteen-bit registers not only for the transfer of analog values, but also for the transfer of binary signals, such as information about the status of the device (run / stop), faults (OK / alarm) and the like. When integrating these signals into the PLC, we have several options to read, write and process the data. We should always choose the simplest and most understandable one, even considering, for example, those who will work with our program in a few years in the role of service technicians.

Wall process stations and I/O cards assembly

When designing and installing I/O cards considering wall process stations, we must take into account some restrictions. A detailed description is given in the WAGO I/O System 750 Design Guidelines. In particular, the following rules apply:

- A maximum of 64 I/O cards with a width of 12 mm can be connected to one processor module.
- One processor module can be connected to approx. 300 – 400 inputs or outputs.
- Cards with a maximum total consumption of 1650 mA can be connected to one processor or power supply module.
- For communication cards 750-652, we have to calculate integrated variables into data points.
- When expanding the number of I/Os, new cards are always added to the end of the assembly.
- The DIN rail on which the modules are installed must be properly fixed and secured against bending.
- Sufficient space for heat dissipation must remain around the assembly.
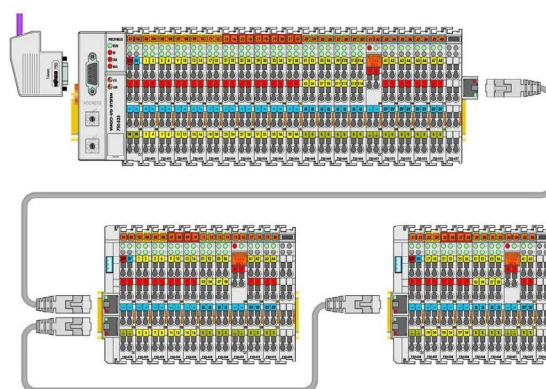
MEET UP enJOY your building: investment to savings

Tomáš Chadim, the business director of our company, has been working in the field of energy with a focus on energy savings and energy management for 20 years. That is why he became one of the speakers at the „enJOY your building: Investing in savings" meeting, which took place on May 31, 2023 at the offices of CAPEXUS.

Why is quality building revitalization the key to sustainable operation and cost savings? Representatives of 6 strong companies, together with Tomáš Chadim, answered exactly this question: Erika Bohatá from CAPEXUS, Daniel Žáček from ENESA, Lukáš Pavlák from AZ KLIMA, Jiří Vrbicky from HORMEN CE, Vladimír Zadina from KART. Based on a case study of a mixed-use building and other examples that have already been implemented, they discussed how to comprehensively approach revitalization and what is actually the key to sustainable operation and significant cost savings.

ISO/IEC 27001:2014, 9001:2016 and 14001:2016 certification

This May, we successfully passed ISO/IEC 27001:2014, ISO 9001:2016 and ISO 14001:2016 recertification.
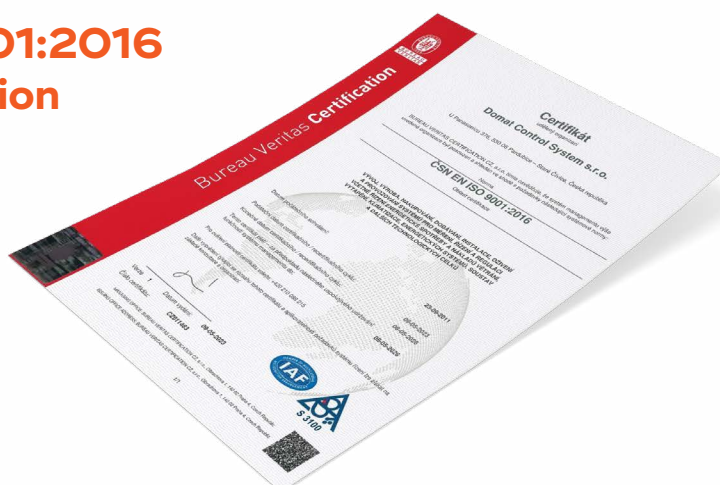
All areas of activity and certificates can be viewed on our **website**.

Spring ČEZ ESCO GRADUATION in Domat

ESCO graduation is a three-day internship for students of CEZ Group's partner secondary schools focused on modern energy, which takes place every two years in the spring.

The goal is to introduce our field to pre-matriculation students, let them see under the hood how things really work in selected subsidiaries, familiarize them with practice and, last but not least, offer opportunities for applying either current or future.

In this year's spring round, in cooperation with ENESA, we presented ourselves to 20 students from five secondary schools in Pardubice. The main topics were EPC projects, energy management and control and automation of intelligent buildings. Our colleagues Karel Vytřísal, Jakub Goga and Jan Vidim prepared for them theoretical lectures from the field as well as a practical opportunity to commision our PLC.

ENESY colleagues took students to their largest EPC project at Prague's Czech Technical University. At the subsequent workshop, students could try to design and calculate energy-saving measures based on real data about their school. They were convinced that savings could be made in a number of objects already now, by means of relatively simple measures with a quick payback, such as lighting modernization, installation of water saving measures and others.

The last day ended with a final test with a selection of questions from the previous days. Patrik Mašín coped best with him, who took home the title of King of the ESCO graduation. Congratulations not only to him, but also to all other students. We firmly believe that this event opened the door to possible collaboration for them, showed them what theory looks like connected to proven practice, and maybe even gave some a hint about where to go after high school.

We thank our colleagues from **ČEZ ESCO** and **ENESA** who participated in the entire organization and program, and we look forward to the next years!

The new look of our branch in Klecany

In today's era, when the first impression and the environment play a key role in relation to clients and employees, it is essential to have a space that not only corresponds to the corporate identity, but also creates a pleasant, inspiring and presentable work and business environment. We are very happy that our sister company **Capexus** decided to take this task on its shoulders and created a completely new interior of our branch in Klecany near Prague. Project manager Jan Miletín, project coordinator Tereza Nováková, PM electrical Marek Štěrba, PM HVAC Petr Bruckner, architect Jakub Chaloupek, price appraiser Veronika Neradová and everyone else who participated in this project created for us not only an aesthetically pleasing but also a functional environment. We believe that this new look will help us improve the working atmosphere for our employees and clients. Thank you!
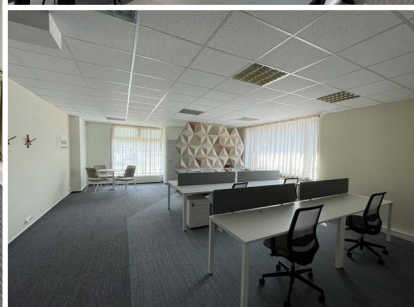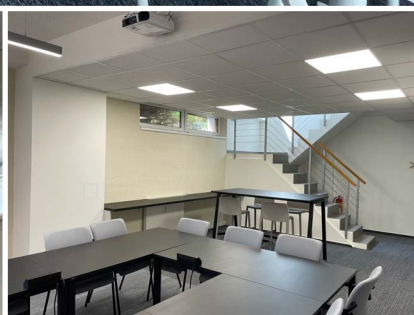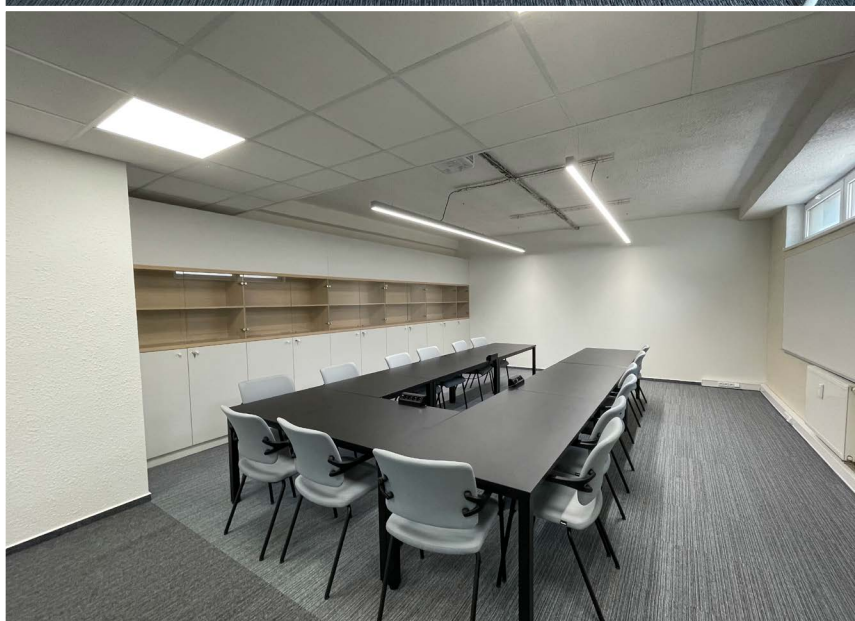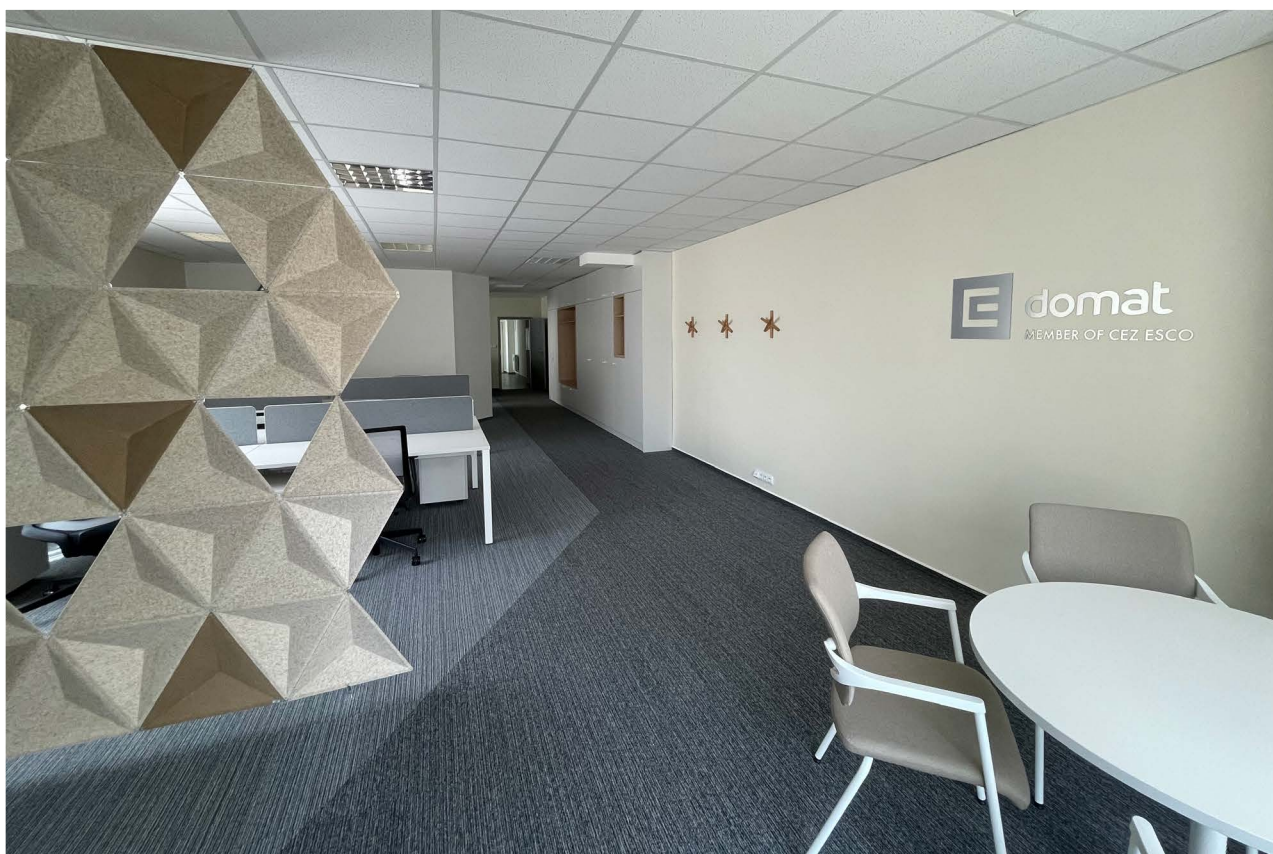
REFERENCES

Cogeneration units, Kostelec na Hané

Brno company **RAYO Engineering** is one of the customers who use Domat components for monitoring and control of energy units. At its headquarters, it operates a central dispatch center based on Merbon SCADA, which currently manages five sites with cogeneration units and the use of waste heat for heating greenhouses.

Some locations (e.g. Velké Němčice, Agro Haná) are also connected to Domat ContPort, an energy management system that allows owners a quick but detailed overview of all important energy parameters.

So far, the most recently implemented installation is a pair of cogeneration units in Kostelec na Hané. This installation is particularly interesting because one CHP unit is owned by the customer, while the other is half owned by the customer and RAYO. The boiler room and storage is also owned by the customer. Therefore, energy and gas taken are measured for each CHP separately. Cogeneration units have their own control systems, Domat coordinates resources and ensures comprehensive supervision of energy production and consumption. One installation contains about 100 physical data points.

In general, a CHP with a nominal output of 1 MW produces 1 MW of electricity and 2.6 MW of heat. Electric energy is produced both for power balance services and for the needs of the daily and spot markets. The produced heat is continuously stored in the storage part and is used for heating the greenhouse, the needs of which are independent of the operation of the CHP. Modified carbon dioxide is also used, which is consumed in the greenhouse - it improves the conditions for plant growth. For some installations, CHP also supplies energy to grow lighting.

Units with a nominal output of 1 MW and 2 MW are installed in Kostelec na Hané. In a greenhouse with an area of approx. Tomatoes are now grown on 150,000 m^2, but also cucumbers or houseplants in other locations. For interest: at the one-megawatt KGJ, 2,356 MWh of electricity and 11,550 GJ of heat were produced during operation in the period from September 2022 to May 2023, with the consumption of 550,000 Nm^3 of gas.

A control system with a clear display of current and historical data is a basic condition for successful commissioning and long-term regulation. Each installation is tuned for at least one winter season, but data from several years of operation is required to evaluate the long-term economics of operation and payback period. This is exactly what ContPort is for, which, together with the visualization of process data, is a powerful tool for diagnosing errors, preventing malfunctions and evaluating possible suggestions for improving the function, because each technology is unique in its own way and requires feedback and occasional corrective measures for optimal operation.

TRAININGS

After the renovation of our offices in Klecany, we will alternately hold the training dates again in Pardubice and near Prague:

13. 9. 2023 – Training for MaR designers, Klecany

21. 9. 2023 – Merbon SCADA, Klecany

5. 10. 2023 – Domat IDE for beginners, Klecany

12. 10. 2023 – Domat IDE for beginners, Bratislava

12. 10. 2023 – Modbus Communication, Klecany

19. 10. 2023 – Advanced Domat IDE, Pardubice

26. 10. 2023 – Training for MaR designers, Klecany

2. 11. 2023 – Merbon SCADA, Klecany

9. 11. 2023 – Domat IDE for beginners, Pardubice

16. 11. 2023 – Modbus Communication, Pardubice

23. 11. 2023 – Advanced Domat IDE, Klecany

30. 11. 2023 – Training for MaR designers, Pardubice

7. 12. 2023 – Merbon SCADA, Pardubice

14. 12. 2023 – Modbus Communication, Klecany

21. 12. 2023 – Domat IDE for beginners, Pardubice

Programs of individual trainings can be found **HERE**.

Please register at **skoleni@domat.cz**.

Also follow our **news** and **calendar of events**, where we will inform you in time about any changes or newly announced dates. News regarding not only training can also be found on our social networks:

DOMAT SUPPORT ON WHATSAPP

Customer support is important to us and we try to constantly improve it and adapt it to your requirements. To make it even easier for you to communicate with our technical support, we have set up **WhatsApp: +420 732 806 418.**

YOUTUBE TUTORIALS AND FAQ

The technical support section on our website is regularly updated with new articles and instructions. The same goes for our **Youtube channel**, which we are also trying to expand with new tutorials. If you are solving a certain problem and you are looking for a specific solution, don't forget to study our FAQ and videos.

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Energy under control