

ISKRAEMECO MAGAZINE

engage

ISSUE 8

IN THE SPOTLIGHT

Symbiot Twinner – AI powered
grid digitalization platform

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SHAPING THE FUTURE

Azure Landing Zone project enables
a strong foundation for Iskraemeco's
future SMaaS projects

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Editorial

Reflecting on 2023 and looking forward to opportunities in 2024

Dear esteemed colleagues, customers, and partners.

As we approach the end of the year and close the holiday season, it is traditional for us to reflect on the previous year and plan our course for the coming one. I would like to take this opportunity to thank you for your constant commitment and dedication throughout 2023.

The preceding months have been both exciting and challenging. Despite a year without COVID regulations, several regions faced financial instability, increasing inflation, and escalating conflicts. In this difficult environment, Iskraemeco remained committed to its growth strategy, striving to increase market share, enhance technology offerings, provide superior services and maintain profitability.

Navigating these waters was no simple task, especially given the ongoing supply chain issues. We have been compelled to make organizational changes in order to narrow our focus on key objectives. To effectively maintain production capabilities and honor our obligations, we needed to work together, and many of our colleagues went the extra mile.



This dedication was not unnoticed on the market, and it is reflected in the significant sales opportunities that await us in 2024.

Looking ahead to 2024, we are given an exceptional chance to build on the foundation created in 2023. However, it is critical to recognize the unpredictability of events that may occur. As a consequence, we must maintain our flexibility, agility, and creativity in our approach. I am convinced that Iskraemeco, with its preparedness and resilience, will successfully handle any challenges of 2024 and beyond.



Finally, I want to wish each of you a wonderful holiday season, a Merry Christmas, and a prosperous and healthy New Year 2024.

Best wishes,
Luis Goncalves
Chief Executive Officer
of Iskraemeco Group



ELUMIA – Smart lighting management system

Illuminate your world the smart way

Tomaž Dostal and Smilja Dolgan Paternoster

Cities are shaped by the triumvirate of safety, economic vibrancy, and quality of life, all of which are profoundly influenced by street lighting. The company has recently launched Elumia, the Iskraemeco smart lighting management system, which is designed to maximize energy savings and build contemporary smart cities. This smartlighting management system offers a cost-effective and reliable lighting control solution that caters to all forms of public lighting.

Based on a globally patented technology, the system can detect broken luminaires in real-time without requiring a sophisticated and costly communication infrastructure. Using a cloud-based management system, a smart meter with added EDGE compute capabilities, and standard LED lighting, the solution provides by far the most reliable application with the Total Cost of Ownership (TCO) that far outperforms all other solutions currently available on the market. Elumia additionally enables retrofitting the existing luminaire base without replacing the bulb. Cities can remotely control, evaluate, and manage the lighting on roads, streets, parks, and other public spaces using a single dashboard.

Elumia makes a lighting system fully digitized, all while maintaining the lowest TCO on the market. We provide the dependable technology needed to enable smart street lighting solutions that elevate living standards, boost the economy, and lower energy consumption, costs, and carbon footprints in urban environments.



SYMBIOT
Elumia

Utilities have the potential to fully modernize their methods of controlling city lights by utilizing our innovative cloud-based technology. Through a single dashboard, Symbiot Elumia enables secure remote control and instant insights into the status of every streetlight in the city. Real-time identification of faulty luminaires ensures quick and cost-effective repair while minimizing TCO.

Benefits of smart street lighting

Smart lighting management systems offer cities a multitude of advantages. Today's public lighting systems go beyond illumination, offering a wide array of services thanks to smart lighting technology. Streetlights have evolved into connected devices within the Internet of Things (IoT) framework. They collect and transmit data through smart metering devices, thereby contributing to the creation of smart cities.



Lower investment costs

- At least 25% savings compared to other IoT solutions.
- Eliminates the need for additional electronics and sensors in each street luminaire.
- Streamlines street control cabinets, requiring only an electricity meter.



Reduced monitoring and maintenance costs

- Requires no site inspections.
- Automatically detects broken luminaires in real-time, eliminating the need for manual inspections.
- Provides comprehensive energy consumption supervision and anomaly detection.



Dynamic street light operation

- Automatic on-off schedules based on geographical location and time of year.
- Supports external on-off control.



Advanced energy management

- Real-time monitoring of power consumption for each streetlight, per phase, and per street.
- Theft detection capabilities.
- Remote power control is based on calendar schedules.
- Protects the grid and luminaires from inrush current.
- Centralized street light management system based on Geographic Information Systems (GIS).
- Significant reduction in energy consumption and CO₂ footprint.



Freedom from vendor lock-in for streetlights

- Compatible with various luminaire vendors.



Elevated security standards

We have meticulously crafted Elumia with the latest in cutting-edge security technologies and industry best practices to protect customer data and prevent cyber threats. Elumia provides a comprehensive set of security features to protect data during transfer, storage, and use. It employs a variety of encryption techniques, including AES-256 encryption, to ensure that data remains impervious to unauthorized access. It also includes role-based access control, an audit logging system, and an intrusion detection system, ensuring your data remains secure and untampered. Our devices undergo rigorous penetration testing so that we can provide our clients with the ultimate assurance of cyber resilience.

Why is Elumia unique?

1. World-wide patented technology of sequential measurement of street lightning.
2. No Radio Frequency (RF) technology.
3. Compatible with all existing luminaires, both LED and other legacy technologies.
4. Investments are much lower (at least 25%) compared to existing IoT solutions.



Mastering the art of efficient execution

The CLSM algorithm and the Elumia solution revolutionize street lighting, ensuring efficiency, reliability, and precision in every aspect.

CLSM algorithm

The CLSM algorithm operates by sequentially activating luminaires and monitoring their power consumption. When a luminaire is in good condition, its power consumption increases upon activation, while a faulty luminaire's power remains unchanged. By observing the power profiles over time, the system can accurately and cost-effectively identify malfunctioning luminaires.

Measurement

Elumia relies on the IE.5 smart meter, which is MID certified and serves as a dependable data source for energy inspection without the need for additional external devices.



Elumia components

The Elumia solution requires three essential components:

Luminaire with delayed ON capability

- We offer flexibility with a choice of standard luminaires from various vendors.
- Optimal efficiency is achieved if the luminaire's power supply supports initial delay and power control, enabling seamless integration with the CLSM algorithm.
- For luminaires without this capability, external sequencers can be used to introduce necessary delays in the power supply, ensuring compliance with the CLSM algorithm. These sequencers can also retrofit existing installations for the CLSM functionality.

Elumia lighting controller

The Elumia lighting controller is the central component of the Elumia solution, offering a range of features:

- Power measurement
- Street lighting control
- Built on IE.5 meter and enhanced with EDGE compute capability
- Plug-and-play installation with zero configuration connectivity

Elumia's comprehensive functionalities include:

- Metering
- Street lighting control
- Detection algorithm
- Communications
- Security

Symbiot Elumia cloud-based software solution

- Symbiot Elumia software suite acts as a central access point for all Elumia lighting controllers.
- It provides connectivity and security services, data analytics, street lighting project design, and user-friendly interface.
- Offers a simple GIS with graphical representation of luminaire statuses and seamless integration with external software systems.



Digital grid

Holistic digital grid control

Goran Šnajdar and Nina Merše

Adapting to market dynamics: addressing the increasing pressure on the electrical grid

As the electrical grid evolves, there's a rising number of devices ranging from household appliances to renewable energy resources, climate control systems, and electric vehicle infrastructure. This expansion places significant pressure on the grid, intensifying the complexity of maintaining a stable supply and increasing the risk of instability.

In response to these challenges, Iskraemeco has developed a Digital grid solution equipped with advanced monitoring systems, real-time data analytics, and efficient energy management to ensure grid stability and optimal resource utilization.

Our solution harnesses smart meters with edge computing capabilities, utilizing a variety of communication protocols for data transfer. The Symbiot platform is at the forefront of our data management strategy, while the Symbiot Twinner provides a comprehensive and real-time virtual model of the physical grid.

The core operations focus on monitoring, control, and communication within the energy supply chain, aiming to enhance efficiency, reduce energy losses, optimize energy supply and generation, lower costs, and improve reliability.

Our Digital grid is designed for automatic and dynamic control of the electrical grid. Specializing in harmonizing electricity generation with consumption, we manage the delicate balance required for efficient grid operation. Our advanced systems are engineered to prevent grid overload and seamlessly meet peak power demands, ensuring a reliable and uninterrupted energy supply, and paving the way for a sustainable energy future.



01 Grid monitoring

Grid monitoring

Iskraemeco's Grid monitoring (GM) system is designed to monitor critical grid parameters such as current, voltage, power, and frequency. These parameters are central to the stability of utility operations and are monitored to ensure they remain within the set ranges.

The Grid monitoring application is a comprehensive solution for maintaining grid health. It minimizes the need for extensive data transfer and provides in-depth insights into grid performance. Customization is at the core of our offering, ensuring that our solutions are not merely tools but integral components of a robust grid management infrastructure.

- Smart meter integration
- Configurability and adaptability
- Data presentation and management
- Alarm systems

02 Grid observability

Grid observability

Centralized observability systems frequently struggle with the required agility to respond to fluctuating consumption patterns across the network. Iskraemeco's grid observability application is engineered to navigate these complexities, employing cutting-edge technologies that enhance responsiveness and reliability.

Iskraemeco's grid observability application is the cornerstone of modern power grids, ensuring they are not only more reliable and efficient but also primed for the dynamic demands of the future.

- Near real-time grid observation
- Minute-based data reading
- Decentralized control systems

03 Grid flexibility

Grid flexibility

Our grid flexibility solution advocates for a user-centric approach over costly infrastructure overhauls, engaging both residential and public sectors in peak demand management. Demand response serves as a key enabler of grid flexibility, providing a responsive mechanism to align electricity consumption with the ever-changing dynamics of energy supply and demand.

Smart meters on low-voltage networks are leveraged to mitigate the impacts of PVs, EV-chargers, and heat pumps, benefiting both utility providers and consumers. In essence, Iskraemeco's Grid flexibility application is a harmonious blend of technology and user engagement, creating a dynamic grid ecosystem that is both robust and responsive to the evolving demands of modern energy grids.

- Active load control
- Enhancing renewable integration
- Centralized data processing and decentralized control
- Real-time grid monitoring
- Connection to energy market

04 Grid topology

Grid topology

Grid topology is based by real-time data from meters, extends beyond mapping to become a vital component in grid management, supporting a variety of end applications and functionalities:

- Network configuration analysis
- Fault detection and isolation
- Load balancing
- Path calculation for electricity flow
- Management of independent grid sections (Islanding)
- Integration with phasor measurement units (PMUs)

Applications relying on Grid topology:

- Symbiot Twinner
- Energy market analysis
- Distributed resource management
- Maintenance and strategic planning

05 Digital twin

Digital twin

Incorporated within Iskraemeco's Digital grid solution, the Symbiot Twinner is not just an application; it is a leap towards a more sustainable and efficient energy future. It empowers DSOs to operate, maintain, and plan their grids with unprecedented efficacy, readying them for the challenges of a rapidly digitalizing world. Symbiot Twinner creates a digital twin of the entire grid, driven by smart metering data, which is continuously updated in near real-time. This digital twin serves as a crucial decision-support tool for various DSO departments, enabling the following key functionalities:

- Individualized consumer insights
- Proactive grid management
- Advanced grid simulation
- Custom load simulation
- Smart decision-making

The Symbiot Twinner is built upon a unique combination of graph and time-series database engine, scaling effortlessly to manage millions of grid elements and billions of metering point measurements annually. This capability positions it as a powerful tool in grid digitalization, enhancing the efficiency and resilience of energy networks.

Symbiot Twinner transforms grid management by offering:

- Data cleaning and consistency
- Strategic investment arbitration
- Reduction of non-technical losses
- Optimization of network capacity
- Streamlined planning process
- Enhanced grid observability



Demand response as a new business model of smart meters and energy applications

Klemen Belec

The modern electricity grid faces numerous challenges, from increasing demand to the integration of distributed renewable energy sources connecting at various locations to the electricity grid. In this complex landscape, demand response emerges as a crucial tool to balance the supply-demand equation.

At the heart of this transformation is the integration of smart meters, which play a pivotal role in enabling and enhancing demand response mechanisms. The European Union is running a heated discussion on standards that are expected to bring a structured approach to this evolving field. EUDSO Entity and ENTSO-E have already created a Proposal for a Network Code on Demand Response.

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There is clearly a space for Iskraemeco in this equation and a great potential we deserve to claim and unlock.



What is demand response?

Demand response is a dynamic approach to managing electricity consumption in real-time. It is driven by the need to balance the supply-demand equation within the grid. At its core, demand response involves modifying energy consumption patterns in response to external signals, such as price fluctuations or grid conditions. The latter is indeed becoming an issue and DSOs are under increasing pressure to keep the power grid stable and balanced while ensuring adequate supply to its users. Adaptability is instrumental in achieving grid flexibility and is a crucial aspect of modern grid management.

What is grid flexibility?

Grid flexibility refers to the grid's ability to promptly adjust to changing conditions, ensuring a stable and reliable supply of electricity. Demand response acts as a cornerstone in achieving grid flexibility by unlocking the modulation of electricity consumption in real-time. When demand exceeds supply or grid stability is at risk, demand response mechanisms kick in, enabling a swift reduction in overall demand. This flexibility is vital in accommodating the intermittent nature of renewable energy sources and addressing unforeseen challenges that could otherwise strain the grid. Indeed, in the past, during the era of large, centralized electricity generators, such challenges were less prevalent, thanks to the significant inertia momentum maintained by those energy plants. We are now witnessing a new phenomenon emerging with the introduction of non-stable energy generation, such as wind or solar power.

How does the smart meter fit into this?

Smart meters are advanced devices that record energy consumption in real-time and communicate this data to consumers, utility companies and other stakeholders of energy marketplace e.g. aggregators and retailers. These meters form the foundation of demand response by providing accurate, timely information about electricity usage. The connection between smart meters and demand response is twofold: first, smart meters enable granular data collection, and second, they facilitate communication between end-users and the central applications managing the grid. We can say that they represent an important part of the grid's backbone for demand response.

Types of demand response

Demand response comes in various forms, adapting to the diverse needs of both consumers and the grid. The most common categories include price-based, incentive-based, and reliability-based response. Price-based demand response refers to consumers adjusting their electricity consumption in response to pricing signals. Incentive-based models reward users for reducing demand during peak periods. Reliability-based demand response focuses on ensuring grid stability during emergencies or unforeseen events. In fact, this type of demand response will become vital for day-to-day low voltage grid operation.

Demand response needs data

Smart meters act as a large data generator and exchange in demand response scenarios. The real-time information they gather is transmitted to central applications that analyze and manage grid dynamics. This data flow empowers utilities to make informed decisions, optimizing grid performance and enhancing overall efficiency. In a way, smart meters are the 'eyes' of utilities, especially in the low voltage part of the networks. As it is, the majority of dynamics and anomalies happen in this part of the electricity grid.

New market roles with demand response

The rise of demand response is introducing novel market roles. Aggregators, responsible for bundling and selling demand response capacity, are emerging as key players. Additionally, demand response service providers are bridging the gap between consumers and the grid, facilitating seamless participation in demand response programs.



Industrial and residential demand response

Demand response strategies differ between industrial and residential. Industrial demand response often involves curtailing or shifting production during peak demand periods. In contrast, residential demand response focuses on adjusting individual energy consumption, such as modifying thermostat settings or delaying non-essential appliance use. Iskraemeco must have a high ambition to further develop RSM (residential smart metering) and C&I+G (small commercial, industrial and grid metering) segment in this direction.

Edge computing

Edge computing, which can also be implemented in smart meters, assists with addressing challenges at the local grid level. These modules create the environment and processing power for applications such as local flexibility management, real-time grid monitoring, power quality grid analysis and anomaly detection. Edge computing can also be used in seemingly non-related applications such as the street lightning management application. These edge applications are particularly crucial at low voltage grid levels as they empower utilities to respond swiftly to grid irregularities, ensuring stability and reliability solving the problem deep into the low voltage grid where problem occurred without the unnecessary loading the central network control. As infrastructure becomes more and more complex, more data is generated, and this data needs to be processed at its origin because there is no way that it could all be transferred, digested and processed by central systems and applications.

Redefining the business model

In conclusion, demand response, fueled by the capabilities of smart meters, stands as a linchpin in the evolution of the electricity grid. With diverse strategies catering to different needs, demand response not only optimizes energy consumption but also introduces new market dynamics. The integration of edge computing modules into smart meters further fortifies the grid, ensuring adaptability in the face of evolving energy challenges. We just need to bear in mind that the meter itself will not be enough and that revenue generation is shifting towards energy applications.

As we chart the course for the future of our company, the centrality of smart meter data cannot be overstated. Our imperative now is a laser-focused commitment to advancing sophisticated models specific to smart meter data and crafting purpose-built applications for market stakeholders. The synergy between cutting-edge smart meter and tailored applications must serve us as the catalyst for unleashing the unbridled potential of new energy era.



Energy and climate monitoring solution for buildings

Unleashing efficiency in every building

Christian Buehler and Mariia Iglova Andreuzzi

The need for advanced energy monitoring

Energy and facility managers are faced with the complex challenge of needing to minimize energy costs while doing their best to preserve the optimal climate in buildings.

Iskraemeco's Energy and climate monitoring solution addresses these challenges by offering precise monitoring of indoor and outdoor temperature, humidity, pressure, and dew point. Customers who decide for an extended basic package can also benefit from the energy consumption metering function.

This solution lays the groundwork for optimizing heating and energy costs, reducing their CO₂ footprints, and safeguarding buildings and their interiors from climate-related damage.



Technical specifications and operational details

Iskraemeco's Energy and climate monitoring solution enhances energy management and building infrastructure maintenance by providing detailed insights into indoor and outdoor environmental conditions.

By monitoring energy, temperature, humidity, pressure, and dewpoint data, our solution provides users with the critical insights needed to make well-informed decisions, thereby optimizing resource use.

Our system diligently records and transmits data in 15-minute intervals, ensuring consistent and reliable monitoring. This level of precision is crucial for identifying areas where resources are being inefficiently used and for optimizing energy consumption in administrative and commercial buildings.

What sets our solution apart is its ease of installation and intuitive operation. It is specifically designed to seamlessly integrate into the existing infrastructure, offering a straightforward and effective approach to energy monitoring. This ease of use ensures that customers can effortlessly track and manage their buildings' energy performance, not only maintaining ideal environmental conditions but also driving energy efficiency and sustainability initiatives forward.

The solution package includes:

- 3 indoor sensors
- 1 outdoor sensor
- 1 wM-Bus gateway
- Symbiot software suite

Sensors

Our sensors are engineered to measure temperature, humidity, and pressure. They communicate via wM-Bus with our gateway, which then transmits data via mobile to the cloud application every 15 minutes. These sensors and the wM-Bus gateway can be easily installed using adhesive strips or screws. The gateway only requires a power connection. Upon activation, the gateway instantly establishes a radio connection to the sensors, transmitting data to the Symbiot dashboard at regular intervals.

Symbiot software suite

Symbiot software suite is a versatile platform designed for efficient, secure, and automated energy management. It supports near real-time data processing, promoting energy efficiency and reducing total ownership costs.

The user interface is highly customizable, using the 'click & drop' functionality. It displays 15-minute values for individual sensors and graphical representations of the dew point. Users can view individual recording periods in various graphs and set alarms for exceeded threshold values.

The system is scalable, allowing for additional installations and a comprehensive admin view with benchmark functions.

Economic and operational excellence

- **Climate monitoring in buildings:** Utilizing indoor and outdoor sensors, our solution monitors temperature, humidity, pressure, and dew point, ensuring a comprehensive understanding of the building's climate. This not only aids in maintaining optimal environmental conditions but also plays a crucial role in protecting buildings and their interiors from climate-related damage.
- **Easy installation and operation:** The preconfigured sensors and gateway can be easily installed without specialist expertise, offering a "Plug & Play" experience.
- **Intuitive user interface:** The user interface is adjustable with a 'click & drop' functionality, displaying real-time data and allowing for easy management.
- **Real-time alerts and reports:** Set alerts for threshold values and receive regular reports, enabling proactive management of building environments.
- **Flexible and scalable:** Our solution is designed to be flexible, catering to various industry needs and scalable for future expansions, including additional sensors for more comprehensive monitoring.
- **One-stop-shop advantage:** Iskraemeco delivers an integrated approach where all solution components are produced in-house. This ensures unparalleled quality, interoperability, and customization options, as we have complete control over the production, management, and maintenance of our equipment.



Key features

- **Modular design:** Easy customization and scalability.
- **User-friendly interface:** The 'click & drop' functionality makes it simple to navigate and adjust settings.
- **Advanced dashboards:** Detailed dashboards displaying 15-minute sensor values.
- **Cost-effective and simple installation:** Symbiot is designed for straightforward implementation.
- **Integration with legacy systems:** The software is capable of integrating seamlessly with existing legacy systems.
- **Real-time data acquisition:** Up-to-date information from the associated sensors.
- **Web application:** Symbiot is accessible as a web application.
- **SaaS-solution:** Hosted by Iskraemeco in a secured cloud, requiring no customer IT resources.
- **Alerts functions:** Users can set alerts for exceeded threshold values.
- **Benchmarking and reports:** Customers can set reports and compare values with other buildings in their system.



Symbiot Twinner

AI powered grid digitalization platform

Aleš Glavina

The ongoing energy transition, fueled by the integration of renewable energy sources, a growing fleet of electric vehicles, and the shift from fossil-fuel-based heating to electric heat pumps, is exerting tremendous pressure on today's electrical grids.

This pressure is especially pronounced on low-voltage grids, which are at the forefront of the energy transition. The management and effective distribution of energy in the face of these challenges are becoming increasingly complex. This underscores the critical necessity of transitioning to a smarter, more efficient, and more reliable smart grid for tomorrow. At the heart of this transformation lies the growing digital revolution, where data assumes paramount importance and modern information and communication technology converges with operational technology.

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This integration is what will ultimately empower the smart grid to truly become smart.



SYMBIOT Twinner



Introducing Symbiot Twinner

Symbiot Twinner, AI powered grid digitalization platform, is a revolutionary solution developed in close collaboration with Distribution System Operators (DSOs) and AI experts. The SYMBIOT Twinner features a digital twin of the entire grid, driven by smart metering data. These digital replicas of the physical grid can be continuously trained in near real-time, assimilating a constantly increasing volume of data. They serve as invaluable decision-support tools for various departments within DSOs. Symbiot Twinner excels at aggregating, visualizing, analyzing, and learning from data derived from diverse legacy systems, such as EAM, GIS, ERP, AML, real-time sensors, and more. Notably, Symbiot Twinner is built upon a unique combination of graph and time-series database engine, allowing it to scale effortlessly to encompass millions of grid elements and billions of metering point measurements annually. This versatility positions Symbiot Twinner also as a robust data lake solution.

Revolutionizing the smart grid for DSOs

In a world undergoing rapid digital transformation, Symbiot Twinner, an AI powered grid digitalization platform, enables DSOs to capitalize on the full potential of their networks. Symbiot Twinner profiles each asset individually based on the data they generate, addressing the critical challenges encountered by DSOs in the most effective way. This ensures data cleaning and consistency, improved argumentation for investments, reduction of non-technical losses, optimization of network capacity, streamlining of the planning process, and enhancements of grid observability.

- **Data cleaning and consistency: The single source of truth**

In an era where data is becoming more and more indispensable to the pilot of the energy transition occurring on the low-voltage (LV) grid, having precise and comprehensive information is of the utmost importance. Symbiot Twinner meticulously detects and enables DSOs to rectify and complete information from GIS (Geographical Information System) and ERP/EAM (Enterprise Asset Management), including details from substations, cables, LV feeders, distribution cabinets and network topology. This singular source of truth facilitates the cohesive operation of the entire network, allowing DSOs to make informed decisions and strategically plan their operations.

- **Better argumentation of investments: A strategic approach**

As the demand for electricity grows, DSOs must wisely allocate funds to investments that generate the highest rewards. Symbiot Twinner aids in reallocating funds for investments, enabling DSOs to formulate rational investment proposals and pricing towards the energy regulator. This strategic approach ensures that investments are channeled towards areas that require immediate attention and will have the most significant impact.

- **Decreased non-technical losses: A smarter way to operate**

Minimizing non-technical losses improves operational efficiency and ensures access to electricity for all consumers. Today, electricity theft and metering inaccuracies present a significant challenge for DSOs. In this regard, Symbiot Twinner advanced algorithms facilitate the calculations and detection of non-metered energy, assisting DSOs to identify and address these losses.

- **Optimization of network capacity: Maximizing the potential**

The rising adoption of electric vehicles and renewable energy sources such as photovoltaic (PV) systems necessitate the optimization of network capacity. Symbiot Twinner aids grid operators in different calculations for power flow, voltage profiles, and hosting capacity, ensuring the network can accommodate the increasing demand. This optimization not only ensures a stable supply of electricity but also enables DSOs to effectively plan and implement the integration of renewable energy sources.

- **Streamlining the planning process: Accelerating connection approvals and enabling future-proof grid planning**

The integration of new connections, such as PV and e-charging stations, necessitates a thorough and expedited planning process. Symbiot Twinner facilitates fast connection studies and approvals, speeding up the integration of these essential services into the network. This streamlined process enables DSOs to meet the increasing demand for renewable energy and electric vehicle charging stations, contributing to a greener and more sustainable future.

- **Improved grid observability: A holistic view of the network**

Symbiot Twinner provides a comprehensive view of the network, including voltage profiles, power loads, cable, and transformer overloading (past, present, and future), load monitoring and forecasting, and rebalancing plans to mitigate voltage drops and technical losses. This holistic observability enables DSOs to proactively address issues before they escalate, ensuring the stability and reliability of the electricity supply.

Ready to supercharge grid operations? Get in touch to explore how Symbiot Twinner can help you operate and plan your grid with unmatched efficacy.

Benefits

Symbiot Twinner is not just a solution; it is a transformative leap toward a more sustainable, efficient, and resilient energy future. Symbiot Twinner empowers DSOs to efficiently operate, maintain and plan their grids. Here are some of the key benefits:

Individualized consumer insights: Symbiot Twinner utilizes state-of-the-art machine learning to predict and understand the consumption behavior of each consumer individually.

Proactive grid management: With its built-in power flow calculations, Symbiot Twinner can predict and alert grid operators about potential overloads and other critical grid issues.

Advanced grid simulation: The solution employs advanced simulation methods to evaluate grid reconfigurations, aiding in the planning of maintenance actions and anticipating their impacts on cable load, voltage, and more.

Custom load simulation: Symbiot Twinner supports grid planning activities by enabling the simulation of custom loads (like heat pumps and electric cars) at any point within the grid.

Smart decision-making: Symbiot Twinner can even suggest countermeasures to address grid issues and recommend the optimal timing for surrounding grid capacity adjustments.

Accelerating energy transition through network digitalization and AI innovation

Key highlights:

- **Real-time grid insight:** Experience AI powered grid digitalization platform.
- **Streamlined connectivity:** We are standardizing grid connection processes and simplifying operations for seamless integration.
- **Future-proof planning:** Our solutions ensure that grid planning remains sustainable, adapting to the constantly evolving energy landscape.
- **Optimized operations:** Make grid management more effective and adaptable to changing demand.
- **Collaboration made easy:** Facilitate precise cross-departmental collaboration, fostering synergy within the organization.



Iskraemeco partners with DataThings to drive digitalization and the energy transition

Peter Kobal and Anja Babič

In a significant leap towards the digitalization and energy transition, Iskraemeco forged a strategic partnership with DataThings, a tech company specializing in AI-powered digital grid platform. This collaboration marks a crucial milestone in the ongoing effort to revolutionize the energy sector and create a more sustainable future.

Iskraemeco is no stranger to innovation, having established itself as a global leader in smart metering solutions and advanced energy management.

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Now, in the partnership with DataThings, Iskraemeco aims to further enhance its digital platforms portfolio with AI technology that promises to redefine the way of managing the energy and electricity grids.



New addition to Iskraemeco's digital offering

Symbiot Twinner leverages the artificial intelligence (AI) & machine-learning (ML) technology developed by DataThings. It allows distribution system operators to monitor and get insights into the state of their grids. It serves as operational decision helper as it aggregates, visualizes, analyzes, and learns from data from various systems, e.g., geographical information systems, enterprise resource planning systems, metering infrastructures, real-time sensors, and much more. The new addition will complement Iskraemeco's Symbiot software platform that facilitates data-driven energy management. This improves energy efficiency, boosts business performance, and saves money, time, and resources.

Digital solutions to address the growing complexity of energy grids

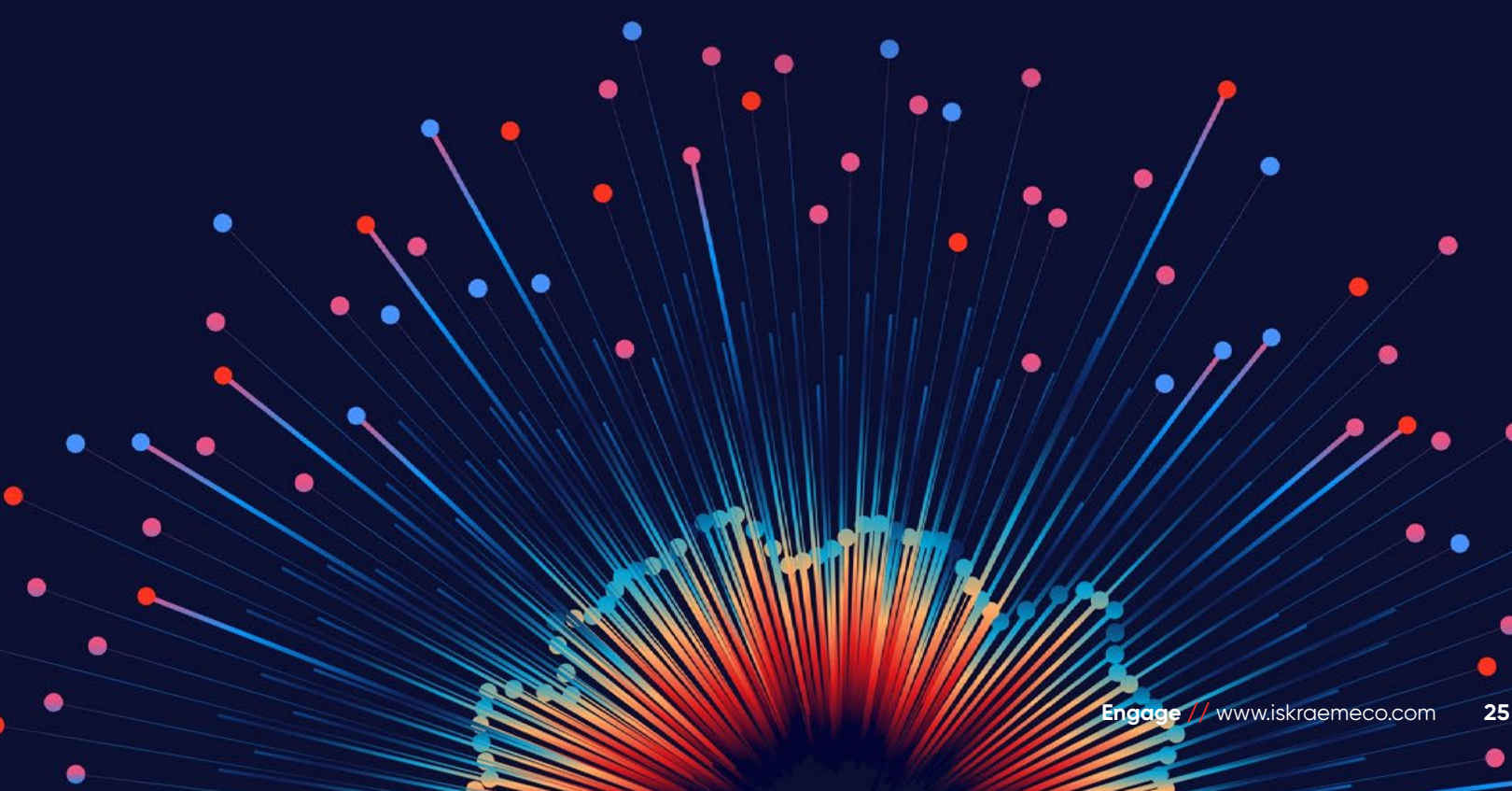
The imperative to incorporate renewable energy sources like solar panels and wind power, accommodate the growing number of electric vehicles, and adopt energy-efficient technologies like heat pumps have made the energy transition a pressing global challenge. This transition places a growing burden on today's electrical grids, particularly the low-voltage grids. Managing and ensuring effective energy distribution in this context has become increasingly complex.

To address these challenges, the move towards a smarter, more efficient, and more reliable smart grid is imperative. Central to this effort is the digital transformation, where data takes center stage, and modern information and communication technology merge with operational technology. The partnership between Iskraemeco and DataThings represents a major step forward in this transformation journey.

Partnerships for smarter energy future

The partnership was announced at a press conference where DataThings also celebrated a significant achievement. The company has established a collaboration with Creos, Luxembourg's leading Distribution System Operator (DSO), who successfully deployed the digital twin tool. This is an important step towards a resilient and sustainable energy distribution future in Luxembourg. The Energy Minister of Luxembourg, Claude Turmes, also emphasized the role of smaller EU countries working together towards developing and providing innovative solutions to the rest of Europe and world.

As we navigate the complexities of the energy transition, collaborations like this one remind us that innovation and technology will play pivotal roles in creating a sustainable and resilient energy landscape for the future. Iskraemeco holds great promise in driving this crucial change. The journey towards a greener, smarter, and more efficient future has just taken a significant stride forward.





7 factors to consider when selecting energy management software for utilities

Aleš Glavina and Anja Babič

Selecting the right energy management software (EMS) is crucial for utilities looking to optimize energy usage and improve efficiency. Management softwares have become indispensable tools, providing increased visibility, proactive decision-making capabilities, and streamlined maintenance practices.

These systems enable utilities to optimize operations, reduce costs, enhance customer satisfaction, and work towards a more sustainable energy future. By harnessing the power of real-time data and proactive alerts, utilities can make informed decisions, drive operational efficiency, and deliver reliable services.

First things first – what is an energy management software (EMS)?

Energy management software is a specialized application that helps track, analyze, and manage energy consumption. It integrates with various systems to collect data and offers features like real-time monitoring, energy forecasting, and reporting. The software enables users to visualize energy patterns, identify waste, and implement efficiency measures. It aids in reducing energy usage, costs, and carbon emissions, helping organizations and individuals achieve their energy efficiency goals.



When choosing an energy management system for your utility, consider the following tips:

1. Clear goals

Clearly define your objectives and priorities. Outline your objectives and priorities in detail. Identify the specific issues you wish to address, such as optimizing energy efficiency, reducing costs, or integrating renewable energy. Understanding your objectives will allow you to concentrate on the functionalities and features that meet the requirements of your utility.

2. Scalability and flexibility

Consider your future plans and select a system that can scale with the expansion of your utility and adapt to future demands. Consider the system's ability to introduce new features and integrate with other systems. Choose an EMS provider with scalability and adaptability, allowing for seamless expansion and customization as your utility grows or changes.

3. Comprehensive functionalities

Ensure that the energy management system provides a comprehensive set of features to cover all aspects of utility operations, such as data acquisition, analysis, reporting, and real-time monitoring. A comprehensive EMS should equip you with the means to monitor energy consumption, identify areas for improvement, and generate insights for decision-making. Choose a system with an intuitive and user-friendly interface. This will facilitate ease of use and adoption by your utility's staff, allowing for efficient operation and utilization of its capabilities.

4. Integration capabilities

Choose an energy management system with standardized interface that facilitates interoperability and simplifies the integration process within complex energy ecosystems.

5. Data security and privacy

Data security and confidentiality are of the utmost importance when dealing with energy consumption data. Ensure that the EMS provider incorporates robust safeguards to protect sensitive utility data. Consider features such as encryption protocols, access controls, and industry standard compliance. Evaluate the provider's commitment to data security, which should include regular updates and maintenance to resolve new threats and vulnerabilities.

6. Vendor reputation and support

Investigate the reputation and track record of the provider of the energy management system. Ensure that they provide dependable customer service, regular updates, and ongoing maintenance to resolve any potential issues or concerns.

7. Return on Investment (ROI)

Evaluate the potential return on investment offered by the EMS. Consider cost savings, energy efficiency improvements, and the creation of long-term value. Evaluate the system's prospective rate of return on investment. Consider cost savings, energy efficiency improvements, and the creation of long-term value for your utility.



Overcoming water utility challenges: achieving efficiency and sustainability

Peter Cheung and Anja Babič

Water utilities play a crucial role in ensuring the availability and conservation of water resources. They are responsible for the water infrastructure maintenance, operation and interventions that are needed to cope with the population and economy growth and guarantee environmental protection. In addition, water utilities are vital for protecting public health by providing safe and reliable drinking water to communities.

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However, water utilities are facing multiple challenges such as improving their operational efficiency, protecting the revenue, balancing financial and economic aspects, and achieving sustainability-related goals.



It is crucial for water utilities to embrace technology and sustainable practices to achieve efficiency and sustainability in their operations, ensuring the availability and conservation of water resources for the benefit of all.

Digitalized water solutions based on the Internet of Things (IoT) provide the necessary tools to address the most important challenges facing modern water utilities. To maintain a sustainable technical and financial operation of water utilities, we offer a variety of technological components and services tailored to the needs of today's and tomorrow's utility industry. Utilizing digital technology and data-driven solutions has redefined business procedures and processes. On the water market, the adoption of data-driven solutions is influenced by three factors: increasing efficiency, reducing costs, and complying with regulations.

To create value for utilities, our digital solutions focus on two main areas: operational efficiency and revenue protection.

1.

Operational visibility

Water utilities often struggle with limited visibility into their operational data, which makes it difficult for them to effectively manage their water networks. The lack of real-time insights can lead to increased downtime, maintenance costs, and non-revenue water losses.

To address this issue, integrated visualization solutions offer comprehensive surveillance of water network operations, enabling utilities to view their networks and assets in a holistic manner. By utilizing advanced digital technologies associated with system-based sensor deployment allows automated calculations, e.g. IWA Water Balance, and enables utilities to measure losses, monitor non-revenue water, make data-driven decisions to optimize operations, reduce labor costs, and enhance asset management.

2.

Leak management: Proactively detecting and mitigating leaks

The combination of aging water infrastructure, adverse operational conditions and extreme weather conditions and events encourage water utilities in improving their approach to better managing leakage. Traditional methods of leak detection can be time-consuming and costly.

Using Geospatial AI-powered solutions, however, provides a distinct advantage as it remotely identifies potential breach areas before failures occur. By gaining insights into the condition of the entire network, utilities can proactively reduce non-revenue water losses, optimize maintenance and modernization efforts, and minimize the time and expense required to locate leaks.

This method enables utilities to be proactive in preserving precious water resources and cutting costs.

3.

Pressure management

Pressure management is an operational daily routine for water utilities. Maintaining optimal water pressure throughout the distribution network is a complex and challenging task. On the one hand, low pressure may be a result of aging infrastructure and system inefficiencies. On the other, high water pressure occurs due to network topography, pumping or some water distribution conception. The excessive pressure can put addition stress on the pipes, joints, and fittings, leading to higher leakage rates. These variations may strain the water infrastructure, leading to leaks, bursts and increased maintenance requirements. In addition, excessive pressure in the distribution system also translates into increased energy consumption. Inconsistent or inadequate water pressure can lead to customer dissatisfaction.

4.

Smart pumping optimization: enhancing energy efficiency

The pumping operation of water utilities is also up against multiple challenges that can impact efficiency, reliability, and overall water system performance. The most pressing challenges include: energy consumption cost, variable demand, aging infrastructure, system hydraulics and pressure management, emergency response and resilience.

Smart pumping optimization is a technique that utilizes advanced technologies and data analytics to optimize the operation of pumping systems in water utilities. It involves the integration of real-time sensors, data and software interaction, as well as control algorithms needed to dynamically manage pumping operations. Traditional approaches based on reservoir water levels or network pressure may not be adequate for optimizing efficiency.

By continuously monitoring and adjusting pump performance, utilities can minimize energy consumption, lower maintenance costs, and comply with environmental regulations.

This approach not only improves operational efficiency but also contributes to global efforts in reducing greenhouse gas emissions.

5.

Billing support for increasing customer satisfaction

Effective billing processes are crucial for water utilities to accurately measure and charge for water usage, recover costs, and maintain financial sustainability. Additionally, clear and transparent billing practices enhance satisfaction and trust in the utility's services.

Metering, meter reading, consumption calculations, bill generation, payment collection are one of the common activities related to water billing. Nowadays, water utilities are looking for the adoption of digital technologies to improve the customer services and to protect and monitor the revenue of water utilities.

To address these challenges, utilities will need to adopt a customer-centric approach, invest in reliable invoicing systems, implement effective communication strategies, and promote ongoing enhancement of customer service processes. By prioritizing customer satisfaction and addressing billing issues, water utilities can improve customer relationships and service quality across their entire range of operations.



Water management in Egypt

Peter Cheung

Water management is a critical issue for Egypt, a country that depends heavily on the Nile River for its water supply. The Nile is the primary source of water for Egypt, providing about 97% of the country's water needs. The remaining 3% comes from groundwater and other sources.

To address these challenges, Egypt has implemented various water management strategies, including:

- 1. **Developing new water sources:** Egypt has constructed desalination plants to provide drinking water and reduce pressure on the Nile. The country is also exploring other alternative sources of water such as wastewater treatment and reuse.
- 2. **Improving irrigation techniques:** the government has invested in modernizing the irrigation systems and promoting the use of efficient irrigation techniques to reduce water waste in agriculture, which accounts for about 85% of the country's water consumption.
- 3. **Water conservation measures:** Egypt has launched campaigns to raise awareness about water conservation and encourage citizens to adopt water-saving practices, such as fixing leaks and reducing water consumption at home.
- 4. **International cooperation:** Egypt has been involved in negotiations with Ethiopia and Sudan to reach an agreement on the management of the Nile waters and GERD. The country has also collaborated with other countries, such as Israel, to share its expertise in water management.



National water resources plan for Egypt (2017–2037)

The National water resources plan for Egypt for the period 2017–2037 (NWRP 2037) is a comprehensive strategy developed by the Egyptian government to manage the country's water resources in a sustainable and equitable manner. The plan aims to ensure the availability of water resources for various uses, including domestic, agricultural, and industrial, while protecting the environment and ensuring the long-term sustainability of water resources.

Overall, the NWRP 2037 is a comprehensive strategy that recognizes the challenges of managing water resources in Egypt and sets out a roadmap for sustainable and equitable water management. The successful implementation of the plan requires the cooperation and participation of all stakeholders, including the government, private sector, and civil society.

Water utilities in Egypt

In Egypt, water utilities are responsible for managing, treating, and distributing water to households, businesses, and industries. There are several water utilities in Egypt that operate at different levels, including national, regional, and local.

The national water utility in Egypt is the Holding Company for Water and Wastewater (HCWW), which oversees and manages the operations of 25 regional water and wastewater companies across the country. The HCWW is responsible for ensuring the provision of safe drinking water and treating wastewater in Egypt.

At the regional level, the water and wastewater companies are responsible for managing the water supply and wastewater treatment in their respective regions. They operate and maintain water treatment plants, pipelines and distribution networks, and wastewater treatment facilities. At the local level, there are small water and wastewater companies and cooperatives operating in rural areas where water supply and wastewater treatment infrastructure is less developed.

In recent years, the Egyptian government has been investing in upgrading the water infrastructure and improving the efficiency of water utilities. This includes expanding water treatment and distribution networks, upgrading wastewater treatment facilities, and promoting the use of modern technologies to improve water resource management.

However, despite these efforts, the water sector in Egypt continues to be faced with multiple challenges, including water scarcity, aging infrastructure, and inadequate investment in water and wastewater treatment facilities. These challenges have contributed to the poor quality of water supply and sanitation services in some, mainly rural, areas.

In summary, water utilities play a critical role in ensuring access to safe and reliable water supply and sanitation services in Egypt. The government's efforts to upgrade the water infrastructure and improve the efficiency of water utilities are essential to meeting the growing demand for water and addressing the challenges facing the water sector in the country.

Iskraemeco water solutions

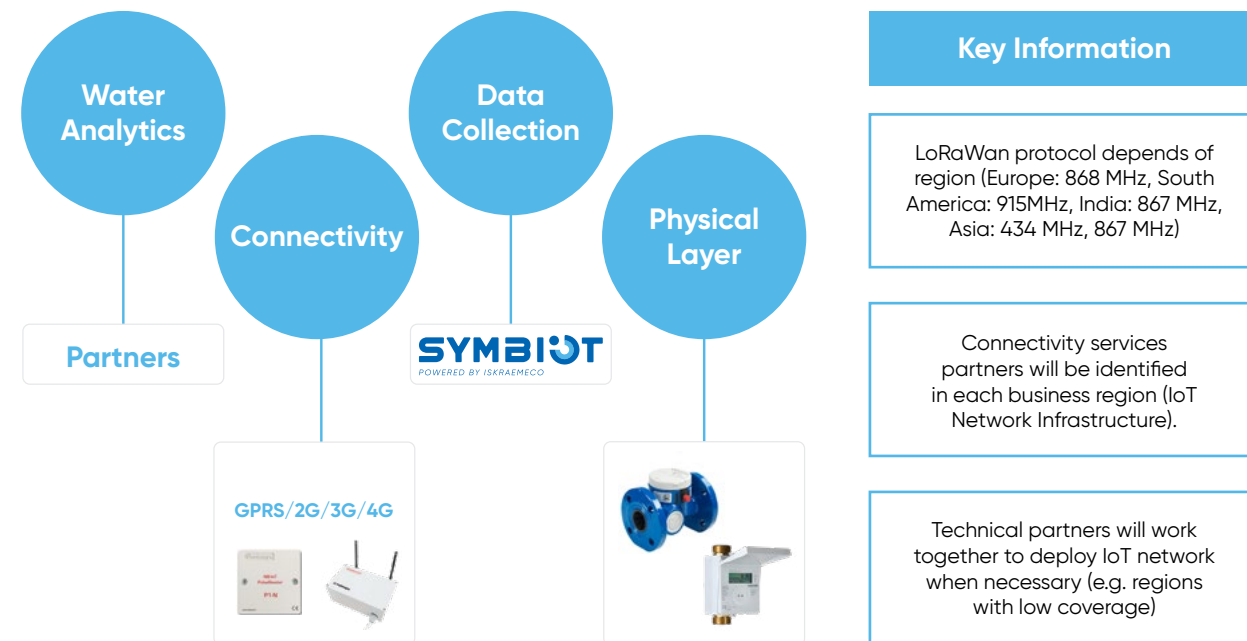
Faced with growing challenges of aging infrastructure, increasing demand, and climate change, water utilities are looking for ways to stay at the cutting edge and evaluate innovative ways to prioritize and optimize resource activities and investments in their water pipeline network. Iskraemeco could help water utilities transition water distribution systems to smart meter technology.

The use of digital solutions and data-driven technologies has revolutionized business operations and processes. In the water market, three factors are relevant to the adoption of data-driven solutions: efficiency, costs and regulations.

Iskraemeco's digital water solutions deliver the following objectives:

- Create automatic (daily, weekly, or monthly) calculation and visual presentation of water balance, as recommended by IWA (International Water Association), using digital information already available from existing customer's systems.
- Build a data driven digital risk profile of the entire network incorporating likelihood of failure.
- Mitigate risk and reduce costs by presenting pipeline risk across the entire network.
- Prioritize team and technology deployment by targeting key areas of focus.

General architecture

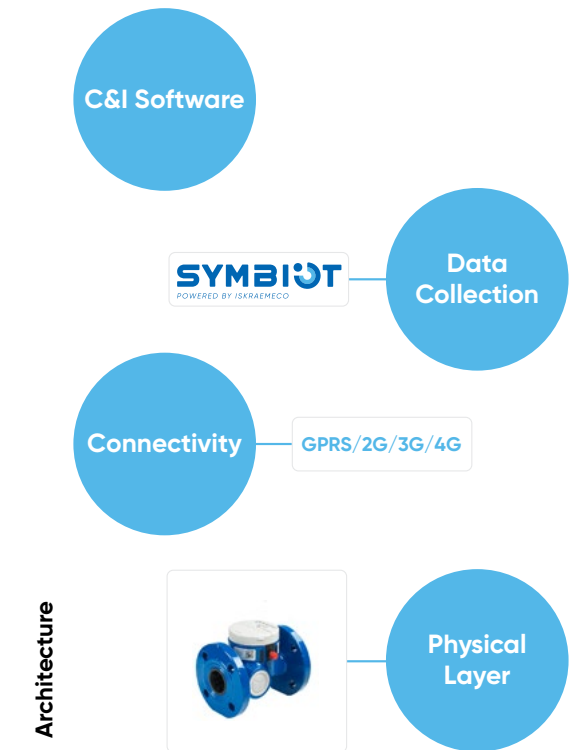


Use case #1

Monitoring key customers

Problem:

- Large consumers represent a huge portion of water utility revenue
- Bulk meter consumption profile needs to be continuously monitored
- Commercial and industrial consumers require more attention (e.g. industry leakage may consume high volumes and therefore significantly impact water distribution)

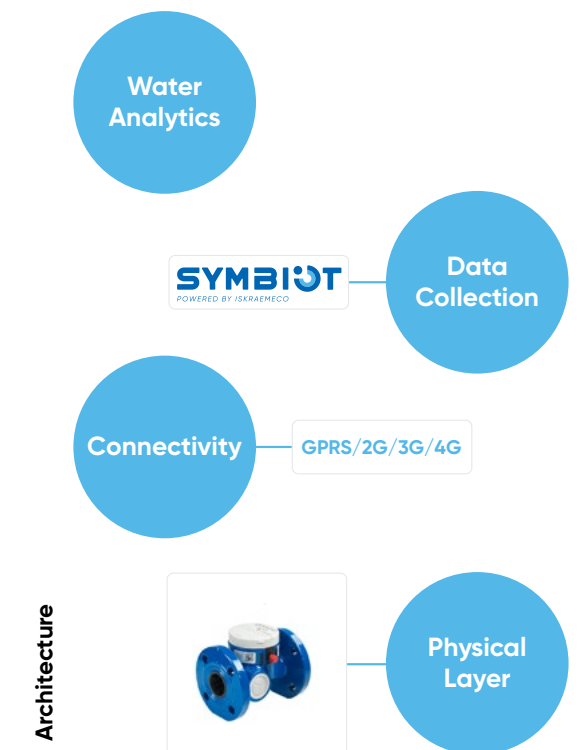


Use case #2

DMA monitoring

Problem:

- DMA needs to be monitored to control NRW
- IoT Flow and Pressure sensing integrated in a platform is a challenge
- Workers take a long time to consolidate numbers and information
- Daily Automatic Water Balance remains a big challenge for utilities

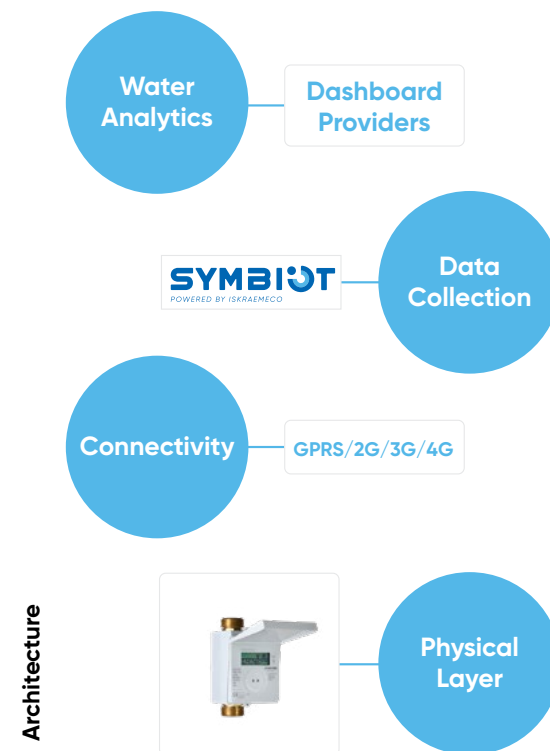


Use case #3

Estimation of billed consumption in water distribution sectors

Problem:

- Once utility has a flowmeter (nearly real time) for monitoring input volume in a water distribution sector, billed consumption volume is obtained from monthly readings.
- Assuming the normal scenario, water balance calculation takes 1 or 2 weeks to be consolidated once the monthly reading process is concluded.



Architecture

Pipeline network

Minimum requirement: Accurate pipeline locations (GIS polyline format).

Desirable attributes: Pipe diameter, length, age, material, pressure, depth, slope. Any additional spatial data for the network is also valuable for classifying pipeline sections (e.g., locations of valves, meters, hydrants, outflows etc.).

Historic incidents

Minimum requirement: Incident locations (GIS point format).

Desirable attributes: Incident type (leak, collapse, etc.), date (reported and repaired), leakage rate.

All data provided by the customer should be provided with accompanying metadata that explains any named attributes and coded values (e.g. material types).

Water balance calculation

One of the most important components of a water loss program is to assess and understand the components of water loss. However, it is equally important to understand that the accuracy of any calculated water loss volume depends on the accuracy and quality of the data used for the calculations.

The first step in this analytical process of evaluating and calculating the volume of real and apparent losses is to perform an IWA/AWWA recommended standardized top-down water balance.

For this purpose, it would be highly recommended to connect to all systems that collect and monitor data in the water distribution system, e.g. SCADA Data, Flow and Pressure and Tank Level from telemetry system. Once data are integrated, they will be saved in a reliable and secure data lake.

To function, the software requires a set of data created by other modules:

- Data about network from Geodetic module
- GIS – SCADA link
- GIS – Billing link

The software warns (via alarm and notifications) possible leaks in the water supply system. It tracks data about:

- Hourly balance
- Daily balance
- Minimum night inflow
- Real losses according to IWA recommendation
- Cost – benefit effectiveness
- Apparent losses



Iskraemeco in a new era of digital water metering

Product launch of Iskrasonic IW

Henrique Gustavo da Costa

Water meters are essential devices used to measure the quantity of water consumption in residential, commercial, and industrial settings. They play a crucial role in managing water resources efficiently and in ensuring that customers are accurately billed for their water usage. Water meters installed on the supply lines provide data on the consumption of water, which is normally measured in cubic meters or gallons.

Mechanical water meters, also known as traditional or analog meters, have been widely used for many decades to measure water consumption.

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These meters rely on mechanical components to measure the flow of water through a pipeline and are still in use today, though they are gradually being replaced by ultrasonic meters due to their mechanical limitations.

The technology behind mechanical water meters has been in use for decades and has played a crucial role in accurate water consumption metering. These devices typically rely on a turbine or oscillating piston to measure the flow of water through a system. While they have served their purpose well, their constraints are becoming increasingly apparent.

The transition from mechanical water meters to smart electronic water meters marks a major technological shift in the utility industry. This transformation has been driven by the need for greater accuracy, efficiency, and reliability in measuring water consumption.

Iskraemeco has established itself as a major player in the market for innovative water metering technologies. The company is at the forefront of the development of smart electronic water meters that go beyond the capabilities of traditional meters thanks to the use of advanced technologies. These technologies not only enable precise measurements, but also improved efficiency and reliability in monitoring water consumption. Iskraemeco's achievements shed light on the ongoing transformation in the utility industry that is shaping the future of water management through the use of electronic smart water meters.



Benefits of smart electronic water meters

The transition to ultrasonic water meters provides several benefits to utilities and consumers:

- Improved accuracy:** Ultrasonic meters offer more precise measurements, reducing non-revenue due to inaccuracies and improving billing transparency.
- Longevity:** The non-mechanical design of ultrasonic water meters increases their lifespan, reducing replacement and maintenance costs.
- Data connectivity:** Many ultrasonic meters provide data connectivity options, allowing for real-time data collection and remote monitoring.
- Conservation:** The enhanced accuracy and ability to measure low flow rates support water conservation efforts, which is increasingly important in regions facing water scarcity.

Smart electronic water meters are flow meters that use ultrasonic technology to measure the velocity of water flow. There are several different ultrasonic water meter technologies, each with its own advantages and applications. Here are some of the most common types:

1.

Transit time ultrasonic meters

How they work: Transit time ultrasonic meters use two ultrasonic transducers, typically placed at an angle to each other, to send and receive ultrasonic signals. The difference in the time it takes for the signal to travel upstream and downstream is used to calculate the velocity of the water flow.

Advantages: Transit time meters are highly accurate and work well for a wide range of pipe sizes and flow rates. They are suitable for both clean and slightly dirty water.

2.

Doppler ultrasonic meters

How they work: Doppler ultrasonic meters emit an ultrasonic signal that reflects off particles or bubbles in the water. These meters can determine flow velocity by measuring the change in frequency (Doppler effect) of the reflected signal.

Advantages: Doppler meters are well-suited for applications with dirty or aerated water, but they may not provide high accuracy in quantifying clean water. They are often used in wastewater or slurry applications.

3.

Hybrid ultrasonic meters

How they work: Hybrid ultrasonic meters combine both transit time and Doppler technologies to provide accurate measurements in a wide range of flow conditions. They can automatically switch between the two methods based on the fluid's characteristics.

Advantages: Hybrid meters offer versatility and can handle various types of water and flow conditions, making them suitable for a broad range of applications.

4.

Clamp-on ultrasonic meters

How they work: Clamp-on ultrasonic meters are non-invasive and do not require cutting into the pipe. They use transducers attached to the exterior of the pipe to measure flow by sending and receiving ultrasonic signals through the pipe wall.

Advantages: Clamp-on meters are ideal for retrofitting existing piping systems without disrupting the flow. They are particularly useful in situations where pipe cutting is difficult.

5.

Bulk acoustic wave (BAW) ultrasonic meters

How they work: BAW ultrasonic meters use the interaction of acoustic waves within the fluid to measure flow velocity. They operate at a single frequency and monitor the change in wave propagation time.

Advantages: BAW meters offer high accuracy and can handle a wide range of fluid types. They are particularly suitable for applications requiring precise measurements.

6.

Surface acoustic wave (SAW) ultrasonic meters

How they work: SAW ultrasonic meters use surface acoustic waves to measure the flow rate. These meters are based on the interaction of surface waves with the fluid's flow.

Advantages: SAW meters are known for their compact design and energy efficiency. They are suitable for small pipe sizes and applications with limited space.

Iskraemeco launching the new family of residential water meters called Iskrasonic IW

Each type of ultrasonic water meter technology has its strengths and weaknesses, which makes it important to choose the right technology for a specific application. Factors such as the type of fluid, pipe size, flow rate, and environmental conditions will influence the choice of ultrasonic meter technology to ensure accurate and reliable flow measurements.

For our smart electronic residential meter portfolio, we selected the Bulk Acoustic Wave. The result is a high-precision meter (R1000 ratio performance – it means the meter measures 1 liter per hour) characterized by innovative and revolutionary features.

Features

- Increased metrology accuracy and repeatability.
- Has a high measurement performance index.
- No decrease in IDM as a function of time.
- IP68 protection.
- Unaffected by sand or other particles in water.
- Battery lifetime up to 15 years and 1 year in stock time.
- Ideal for implementation in smart cities.
- Suitable for measuring treated water.
- Measurement of water temperature
- Capable of covering an extensive measurement range.
- Low pressure drop.
- Support horizontal and vertical installation methods.



The shift from mechanical water meters to smart electronic ultrasonic water meters with embedded data reading functionalities represents a significant technological advancement in the water utility industry. Ultrasonic meters offer improved accuracy, longevity, and data connectivity, which makes them a valuable investment for utility companies and a positive development for consumers and the environment. While the transition may bring certain initial challenges, the long-term benefits make it a worthwhile endeavor that supports the utility industry's continued pursuit of innovation and progress.

Benefits

Emission Of Alarms

Issue of various alerts such as leakage, overflow, attempted fraud, meter functions, among others.

Leakage

The flow rate never falls below a certain threshold and number of days with leakage is recorded.

Index

Tracks the total amount of water consumed.

Backflow

The total volume measured during backflow is recorded.

Event log

The most recent critical alarms are date engraved.

Meter disrupted

If no consumption is recorded over a configurable time period, an alarm is triggered.

Does not measure the air

Using the ultrasonic metering principle, the meter does not measure the air present in the pipe.

Time synchronization

Fixed network: daily clock re-synchronization.

Immediate flow rate

Calculates current flow rate over the last minute.

Remote read

Water meter equipped for remote reading as an option at the customer's choice.

Alarm water temperature

Setup of low and high temperature alarms.

Flow distribution

The real flow rate is recorded based on operational segments.

High durability

As it contains no moving parts, the meter maintains calibration errors similar to factory equipment for its lifetime.

Broken pipe rescue

Flow rate reaches abnormal flow rate for a short period of time.

Data security

Robust and efficient system that guarantees the security and privacy of data and information.



PublicBox: Second generation

Domenico Lamparelli and Nina Merše

Iskraemeco's mission is to provide comprehensive solutions that drive the future of electric transportation, contributing to a more sustainable and connected future. With a long history of innovation and a strong commitment to sustainability, the company positioned itself as an innovator in advancing the technology that underpins the electric vehicle ecosystem.

Taking a holistic approach to e-mobility, we are actively involved in the development and deployment of smart grid solutions, energy management systems, and advanced metering infrastructure seamlessly integrated with electric vehicle charging infrastructure.

As we are developing smart grid technologies that enable efficient energy distribution and management, e-mobility solutions play a central role in optimizing the charging process, ensuring grid stability, and promoting the widespread adoption of electric vehicles.

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In order to cater to the increasing popularity of EVs, Iskraemeco is working with other companies, utilities, and governments to develop comprehensive e-mobility infrastructures. Our solutions aim to ease the transition to electric transportation by providing a seamless experience for end-users while supporting the sustainability goals of communities and businesses.

Advancing electric vehicle charging infrastructure

GL Charge, a company that has been part of Iskraemeco since 2022, specializes in the development of advanced e-charging stations. The company is primarily focused on using environmentally friendly materials and improving energy efficiency.

PublicBox, GL Charge's flagship product, represents a significant leap forward in the evolution of EV charging infrastructure. This AC charger is intended for public use and is positioned at parking lots, shopping malls, restaurants, highway service areas and other similar locations. It is equipped with two Type-2 sockets and can provide up to 22 kW per socket. It also meets all safety and security requirements.

The PublicBox smart charger uses the OCPP 1.6j protocol, which enables seamless communication with eMobility software systems via Ethernet or 4G connections and local authentication based on RFID cards.

EV chargers fall within the category of connected devices that present a significant cybersecurity risk. As EV chargers become more sophisticated and connected, they also become more vulnerable to cyberattacks. PublicBox was developed with the intention of meeting the specific cybersecurity requirements of individual customers.

The smart charger supports the Dynamic Load Management function that allows the charging station to adjust the power supply for each connected EV based on the available power and the demand of the EVs. The function ensures that all EVs are charged efficiently and that the station's total power consumption does not exceed the available capacity.

In addition to the possibility of connecting the systems of an EMSP (eMobility Service Provider) systems, PublicBox can optionally be equipped with a second communication channel that provides GL Charge with an engineering access to the charging stations for the purpose of providing preventive maintenance, enabling us to detect and fix potential issues in almost real time.



Key features of the new PublicBox

Today's edition of PublicBox delivers a brand-new design with a clean appearance by incorporating the basic features of the previous version, e.g. front glass display, rounded edges, and front LED lights.

The new hardware is robust and resilient, ensuring that PublicBox will continue to function uncompromisingly in winter and icy conditions, as well as in summer and in the desert. PublicBox is designed to perform for years in any type of environment.

The new housing consists of two parts: a fixed base panel that contains all the electrical components, and a removable cover that facilitates access to the electronics inside for easier installation and maintenance.

The housing of the back side is in dark gray color, and it blends with neutral color that works well with the overall color spectrum of the front side. The new version of PublicBox is available in the 'canvas' option, in which the large area otherwise reserved for the front glass panel can be used for advertising purposes. The white labeling service can be offered and the new PublicBox may be customized to display the company's colors and logo. Additionally, the charger itself can be fitted with LED lights to illuminate the station's surroundings and increase its visibility in any environment.

The new PublicBox retains all the technical characteristics of the previous version. Customers have the option of either purchasing the product with two Type-2 sockets or alternatively with two Type-2 sockets already built in cables.

The ISO-15118 protocol is an international standard that establishes a communication interface between electric vehicles and their supply equipment - the charging station. One of the features available is Plug & Charge. This feature allows electrical vehicles to conduct automatic authentication with PublicBox, without the driver having to intervene.

In certain circumstances, end users require information that goes beyond the status of the charger. In addition to the LED display, the new PublicBox can be equipped with a display that shows present information about the details of the session, energy consumption, and charging time.

In line with the dynamic landscape of e-mobility, Iskraemeco and GL Charge are actively engaged in shaping comprehensive solutions that extend beyond charging stations. As electric vehicles gain popularity, the collaboration aims to contribute to the development of comprehensive e-mobility infrastructures in cooperation with companies, utilities, and governments.

The latest iteration of PublicBox reflects an innovative design as well as a commitment to durability across diverse environments. Its adaptability is showcased in its two-part housing, robust hardware, and customization options, including a canvas for advertising and LED lights for ambient awareness. As Iskraemeco and GL Charge continue their journey in the e-mobility sector, the vision is clear—to provide solutions that not only meet the needs of today but anticipate the challenges and opportunities of tomorrow. With a focus on sustainability, connectivity, and user experience, this collaboration is poised to play a pivotal role in shaping the future of electric transportation on a global scale.



Connecting smart EV charging stations into a pilot system for flexible power consumption

Klemen Žbontar

The installation of smart electric vehicle charging stations at a pilot site in Lenart was part of a collaboration under an EU-funded project called Bright. Installation connects charging stations into an advanced flexibility system for electricity consumption.

The pilot project, located in a retirement home in Lenart, includes all the elements of a flexible network; photovoltaic power generation, storage of excess energy in battery storage units, and smart and flexible regulation of daily power consumption by heat pumps and charging stations. Two other Slovenian companies, Sonce and Comsensus, are involved in the project. The first manages everything related to PV generation, as well as energy trading and electricity price forecasting. The second is responsible for developing the flexibility algorithm that manages smart loads with the aim of optimizing electricity consumption and cost optimization. To achieve this, the company processes various data such as weather forecasts, future electricity prices and current electricity consumption. The latter is achieved by combining the AM550 energy consumption meter with an in-house developed eloT Edge Compute modul. The Edge module is suitable for high-performance data processing at the meter level and enables various communication channels as well as security functions. The Edge module processes the data generated by the meter and sends it to a cloud for further use.



The installed charging stations are a hybrid between GL Charge's and Iskraemeco's knowledge. They are based on GL Charge's standard PublicBox, complemented by a solution developed by Iskraemeco, which is a combination of our three-phase IE.5 energy meter and the eloT Edge compute modul. The meter is primarily used for certified energy metering and billing during EV charging. The eloT Edge compute modul houses the control algorithms that range from the operation of the charging station to the integration of the charging station into the smart flexible energy consumption system (display of dynamic charging prices based on energy exchange, processing of the meter data and regulation of the charging power based on the external signals received). Each charging station has two charging points, providing a total of four individually regulated and operated 22-kW charging points.

The implemented project serves as an excellent test polygon that can be used to develop and test advanced, innovative solutions to make the best use of the existing electric power infrastructure. This is and will be extremely important in the rapidly approaching times of exponential EV penetration, localized power generation, and overall increase in electrical energy consumption. Iskraemeco is ideally positioned at the intersection of energy generation and consumption, which gives us a unique overview of the aforementioned issues. This is an exceptional, once-in-a-lifetime opportunity to leverage and showcase our competencies to develop solutions that will position the company among the global leaders in this field.

Azure Landing Zone project enables a strong foundation for Iskraemeco's future SMaaS projects

Anže Štular

Iskraemeco has successfully completed the Azure Landing Zone project. This is an important milestone for future digital services projects. The project was completed on time and within budget.

Early beginnings

In 2021 Iskraemeco signed a contract with a Slovenian utility company for the supply of 22.000 smart water meters including a modern end-to-end software solution based on our smart software suite Symbiot. The whole solution was built on top of Microsoft Azure cloud and offered to the customer as a SMaaS solution, which was an important milestone for Iskraemeco, providing the first public cloud based digital service to our customers. The Iskraemeco cloud journey has begun.

What is Azure Landing Zone?

Iskraemeco has high hopes for Smart Metering as a Service (SMaaS), that is why we invested a lot of our effort and knowledge into preparation of an Azure Landing Zone. Azure Landing Zone is an implementation and configuration of a virtual datacenter within Microsoft Azure cloud platform, a platform for hosting application services, both internal as well as external facing. Moving IT infrastructure to a well-established public cloud platform increases agility in IT department and, in many cases, shortens time to market for business services. On the other hand, cloud platform provides a possibility to consolidate its resources and enable information sharing when required, while providing support services for operations, governance, and security as natively built-in services.

Azure Landing Zone could also be described as a well-managed cloud environment, that enables quick deployment of workloads and applications with confidence in security. For Iskraemeco, Azure Landing Zone will provide a consistent and scalable way to deploy resources for our customers. Azure Landing Zone is an important building block for the future. Iskraemeco Azure Landing Zone was built using the experience that we gained from the Komunala Kranj project.



What is SMaaS?

Smart Metering as a Service (SMaaS) is an evolved version of Advanced Metering Infrastructure (AMI) technologies that enables customers to gain insights about their utility consumption patterns for water, electricity, and gas. SMaaS is based on a Software-as-a-service (SaaS) model, delivering software applications over the internet, rather than installing and maintaining them on-premises. Businesses are moving towards SaaS model for various reasons, such as:

- Cost savings: eliminates the need for upfront capital expenditure on software licenses, hardware, and infrastructure.
- Flexibility and agility allow businesses to access software applications from any device, anywhere, and anytime.
- Innovation and competitiveness enable businesses to leverage the latest technologies and best practices from the software providers, without having to invest in research and development.

First Azure Landing Zone residents

Azure Landing Zone provides Symbiot resources for energy and water management for different utilities. Currently our customers are from Europe only, but we will shortly add others from Middle East, Latin America, South Asia, and India.

Future advantages

SMaaS solutions will become one of the strategic orientations of Iskraemeco in the future. We expect that SMaaS will become the most common way of doing business in various markets. Instead of having to install, and maintain software, customers can simply connect to the application (Symbiot) over the Internet, freeing themselves from complex software and hardware management. The biggest benefits for utilities are low setup and infrastructure cost, accessibility from any device, anywhere in the world, scalability, service levels agreements for uptime and performance, and highest-level security. SMaaS can benefit businesses of any size, from cost-effective outsourcing for small utilities to holistic big-picture solutions. By taking advantage of Microsoft Azure best practices in the form of Azure Landing Zone Iskraemeco has built a strong foundation for future SMaaS projects.

Information security in Azure Landing Zone

Information security is built in the Azure Landing Zone by design, offering both, our customers, as well as Iskrameco, a robust, secure and resilient environment, protected against known security threats. Additionally, the Azure Landing Zone, where SMaaS solutions are hosted, passed the certification for ISO 27017 and ISO 27018 standards in October 2023, assuring policies, processes and procedures to support a wide range of compliance, regulatory and customer related requirements, raising both the maturity level and trust of SMaaS solutions.

Iskraemeco secures Croatian smart meter tender with advanced multi-communication capability

Drago Hafner and Mariia Iglova Andreuzzi

Leveraging our extensive experience and ongoing market analysis, coupled with partner feedback, we ensure that Iskraemeco's smart meters are continually enhanced to meet customer needs, even in the most demanding projects.

The IE.5 meters are the third generation of smart metering in Iskraemeco, has been instrumental in this achievement, showcasing significant improvements based on continuous market observation and partners input.

Multi-communication support as the strategic advantage of IE.5 meter

In the Croatian tender, which entails the rollout of over 200,000 Iskraemeco meters over an 18-month period, the IE.5 meter's multi-communication technology was a key differentiator. This technology integrates both LTE and G3-PLC within a single unit, enhanced by the Iskraemeco data concentrator AC750. The AC750 is crucial to the solution, expertly managing network connectivity and monitoring connected devices. It performs essential functions such as collecting data from meters, storing it, and ensuring its delivery to the head-end system. With the introduction of new firmware functionalities and improvements in G3-PLC, communication with the meters has become even more reliable.

The dual-communication feature provided the utility with the flexibility to select the most appropriate communication channel for their infrastructure needs and to switch between them as required, facilitating a more efficient data transmission process.

The LTE and G3-PLC technologies are selected by utility based on its grid requirements, including coverage, data rate needs, and existing infrastructure. LTE is utilized for its high data rates in areas with cellular coverage, while G3-PLC is leveraged in regions where power lines offer a more consistent communication channel.

A notable upgrade with G3-PLC communication technology

A notable improvement of the IE.5 meter is its G3-PLC communication, which monitors the success rate of transmissions. The communication protocol in our meters is initially configured to a default setting – point-to-point communication, but can be adjusted to another communication if needed. Special attention has been given to the G3-PLC functionality: once activated, the meters begin to monitor the efficacy of the communication channel. If any disruptions are detected, the system automatically reverts to the LTE channel to maintain a consistent data transmission. This ensures a seamless flow of information and enhances the reliability of data collection.

This feature not only provides a more robust communication channel, but also reduces the need for additional infrastructure, thereby optimizing capital and operational costs.

With deployment of our smart meters with multi communication capabilities, utilities adopt a system that offers enhanced flexibility, improved robustness, and increased frequency of data transmission.

Iskraemeco as a partner of choice for partners looking to upgrade their metering infrastructure with a reliable, future-proof solution.



Expanding horizons: Iskraemeco's manufacturing excellence

Mirko Šalej and Smilja Dolgan Paternoster

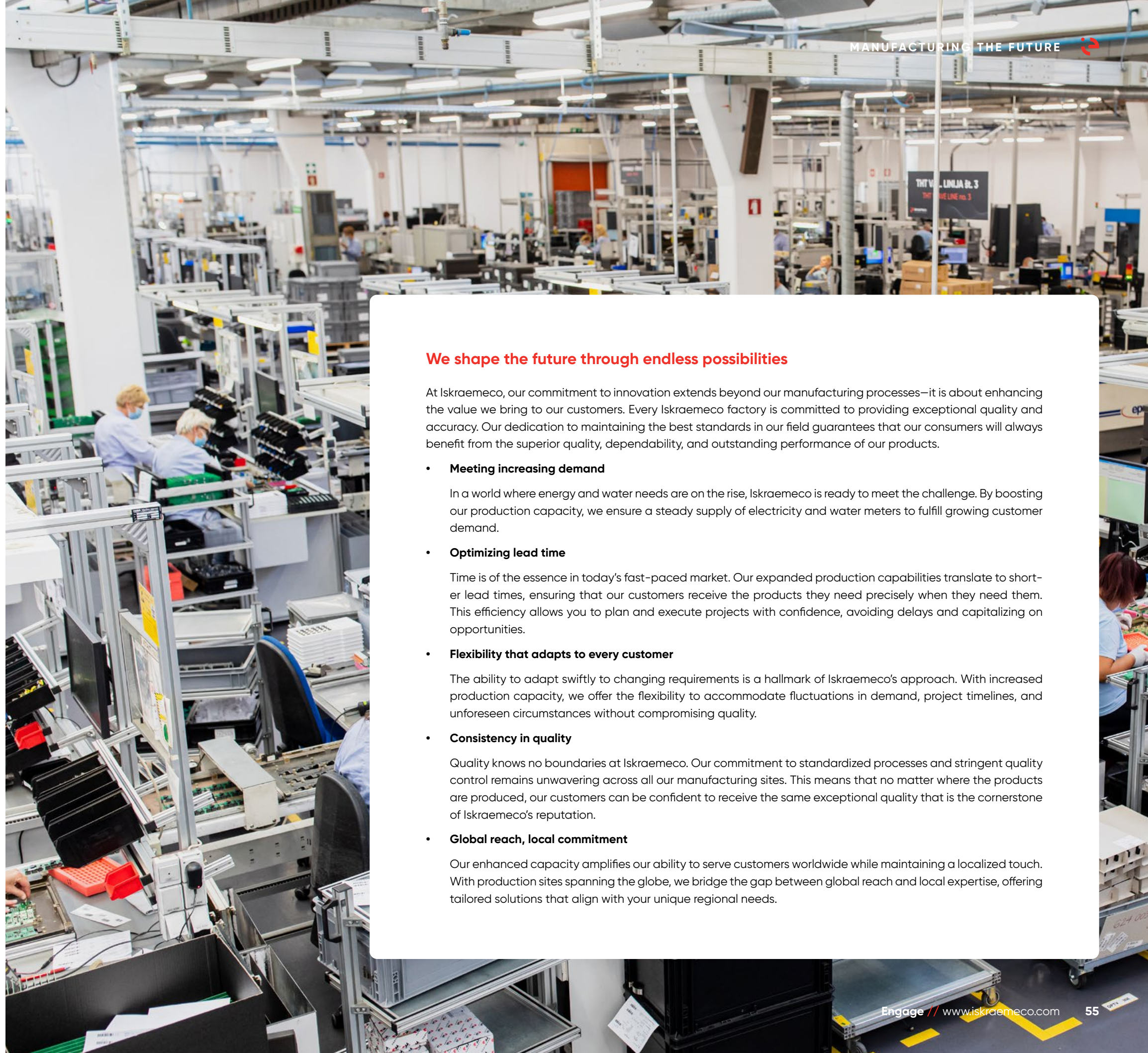
We are committed to embracing new opportunities and challenges and diligently strive to support the new era of growth and innovation while exceeding customers' expectations. By leveraging years of knowledge, experience, and boundless inventiveness, we created an agile, high-quality global manufacturing ecosystem focused on flexibility, growth, and supply continuity. As a global leader in the production of electricity and water meters, we are certified to a range of industry standards, which demonstrates our dedication to quality and continuous improvement.

Having employed a forward-thinking strategy, Iskraemeco has achieved exceptional efficiency and become a champion of environmental sustainability through technology. We constantly optimize our efforts to achieve operational excellence and accelerate our transition to smart manufacturing through AUTOMATION, DIGITIZATION, SUPPLY CHAIN ALIGNMENT, LEAN MANUFACTURING and SUSTAINABLE PRACTICES.

With an annual production capacity of 11 million electricity and water meters worldwide and a vast production and storage area spanning 100,000 square meters, our footprint extends across continents. From Slovenia to Egypt, India to Malaysia, Argentina to Bosnia and Herzegovina, Nigeria to Zambia, and Tanzania, we deliver excellence worldwide. Iskraemeco proudly hosts the largest and most advanced smart solution production facilities in Europe, Africa, and the Middle East. Our standardized manufacturing approach enables us to provide consistent levels of service and product quality from any location, guaranteeing customer satisfaction.

By localizing production, we are able to increase our flexibility, react swiftly, guarantee fast delivery times, and offer local customer support. We offer highly customized products designed, developed, and manufactured in-house, with an emphasis on end-to-end production capabilities.

We utilize emerging technologies to automate processes and share data. From Big Data analytics, cloud computing, IoT environments, advanced robotics, 3D printing, and a modern testing lab to computer vision technology and mixed reality, we are redefining the customer experience and boosting productivity.



We shape the future through endless possibilities

At Iskraemeco, our commitment to innovation extends beyond our manufacturing processes—it is about enhancing the value we bring to our customers. Every Iskraemeco factory is committed to providing exceptional quality and accuracy. Our dedication to maintaining the best standards in our field guarantees that our consumers will always benefit from the superior quality, dependability, and outstanding performance of our products.

- **Meeting increasing demand**

In a world where energy and water needs are on the rise, Iskraemeco is ready to meet the challenge. By boosting our production capacity, we ensure a steady supply of electricity and water meters to fulfill growing customer demand.

- **Optimizing lead time**

Time is of the essence in today's fast-paced market. Our expanded production capabilities translate to shorter lead times, ensuring that our customers receive the products they need precisely when they need them. This efficiency allows you to plan and execute projects with confidence, avoiding delays and capitalizing on opportunities.

- **Flexibility that adapts to every customer**

The ability to adapt swiftly to changing requirements is a hallmark of Iskraemeco's approach. With increased production capacity, we offer the flexibility to accommodate fluctuations in demand, project timelines, and unforeseen circumstances without compromising quality.

- **Consistency in quality**

Quality knows no boundaries at Iskraemeco. Our commitment to standardized processes and stringent quality control remains unwavering across all our manufacturing sites. This means that no matter where the products are produced, our customers can be confident to receive the same exceptional quality that is the cornerstone of Iskraemeco's reputation.

- **Global reach, local commitment**

Our enhanced capacity amplifies our ability to serve customers worldwide while maintaining a localized touch. With production sites spanning the globe, we bridge the gap between global reach and local expertise, offering tailored solutions that align with your unique regional needs.

Pioneering technology and seamless integration

Through the harmonization of technology, production processes, ERP systems, and a centralized Production Information System (PIS), the Iskraemeco Group ensures uniform manufacturing processes and unwavering quality across all our production sites. We take pride in delivering unparalleled excellence and consistency to our valued customers.

At Iskraemeco, we believe that our people are our main asset, so continuous learning and people development are our priorities. The team combines a wide range of knowledge and skills, from Lean Manufacturing, Six Sigma methodology, on-time supply chain, PTB approvals, to other much-needed soft skills. We are proud to have many team members who hold the prestigious titles of Six Sigma Black Belts or Master Black Belts.

Achievements

Our recent manufacturing improvements and the positive changes have taken place within our company. Over the past few months, our dedication and collective effort have produced remarkable results and transformative projects. The focus of these initiatives has been on enhancing our manufacturing operations to ensure higher quality, reliability, and efficiency in our products, as well as to increase the satisfaction level and wellbeing of our employees.

Our primary focus has revolved around optimizing our manufacturing operations. One of our current key projects is centered around reducing defects and rework, with the aim of simplifying work processes for our employees. We have actively involved representatives from various departments, including production, maintenance, engineering, technology design center, and quality, to collaborate and ensure the success of this endeavor.

As part of our commitment to continuous improvement, we are in the final stages of setting up a specialized production training room. This facility will empower employees to acquire the skills necessary to work independently on complex operations.



Slovenia

- Full energy portfolio manufacturing
- EV charging production
- Validation testing laboratory
- Acceptance test laboratory
- ISO Certificates 9001, 14001, 27001, 45001, 17020, 17025, 33061, MID, IRAM, PTB



Egypt

- Full energy and water portfolio manufacturing
- Plastic production
- Acceptance test laboratory
- ISO Certificates 9001, 14001, 27001, 45001, 17025, IRAM, STS, MID, PTB



Argentina

- Full energy portfolio
- Assembly line for customization and configuration of meters
- Acceptance test laboratory



India

- Smart meters production
- Acceptance test laboratory
- ISO Certificates 9001, 14001, 45001, 17025, 27001



Malaysia

- Smart meters production
- Acceptance test laboratory
- ISO Certificates 17025, 9001, SIRIM, COI for RF Communication from Trilliant



Bosnia and Herzegovina

- Electricity meters production
- ISO Certificates 17020, 9001



Tanzania

- Smart prepayment meters production



Zambia

- Smart prepayment meters production



Nigeria

- Smart prepayment meters production



Customer experience

Michael van den Bogaerd, SQA Specialist at Alliander N.V.

My overall experience with the Iskraemeco factory in Egypt has been very positive. The factory's commitment to quality and professionalism is commendable. The IE Egypt team demonstrated exceptional professionalism, quality, and a proactive approach to collaboration. Their efficiency, dedication to safety, and willingness to accommodate customer needs make them a standout partner. I look forward to potential future collaborations, as I believe the factory's mindset and capabilities are assets to any project.

At Alliander we have decided to source subassemblies for Iskraemeco smart meters, originally manufactured in Slovenia. The Iskraemeco Egypt team delivered quality products that met our expectations and requirements precisely, and they aligned perfectly with the needs of our project and the high standards we uphold. This level of quality was consistent across all aspects, meeting both our immediate expectations and long-term requirements.

The team's attitude was not only professional but also welcoming, fostering an open atmosphere. One aspect that stood out to me was the team's openness and receptiveness to feedback, as they showed a genuine willingness to learn, improve, and adapt, which greatly contributed to our collaborative efforts. As an SQA auditor, I found it a pleasure to work with the Egypt team.

The factory itself demonstrated its ability to meet agreed-upon timeframes without any issues.

The efficiency of their processes was superb, reflecting a well-thought-out and meticulously set-up system. This level of professionalism and attention to detail permeates the entire company culture, showcasing their commitment to excellence.

During our contract engagement, I noticed that the factory valued the voice of the customer greatly. They were responsive to our recommendations and suggestions, taking concrete steps to implement improvements, which is truly commendable and indicative of their commitment to providing exceptional service.

Safety is of utmost importance to Iskraemeco Egypt, and this commitment is not just theoretical. The factory's awareness of safety standards is tangible on the shop floor, reflecting a true dedication to regulatory compliance and the well-being of all stakeholders involved.

Understanding product sustainability: The Environmental product declaration

Lara Šarabon Štojs

At Iskraemeco, we are committed to environmental stewardship, social responsibility, and economic sustainability. We believe in creating a better future for all by embracing sustainable practices in our operations, products, and interactions with our community and stakeholders. Sustainable development is embedded in our company strategy.

One of our ongoing sustainable initiatives involves acquiring an Environmental Product Declaration (EPD) for the MT880 meter. We aim to extend this effort to encompass all our products in the future.

Greenwashing has become a prevalent concern in recent times. It is a deceptive marketing practice in which a company or organization exaggerates or falsely claims to be environmentally friendly or socially responsible in its products, services, or overall business practices. A provisional agreement has been reached between the EU Parliament and EU Council to introduce new regulations that will prohibit deceptive advertisements and enhance the quality of product information available to consumers and other stakeholders in the future.

Without reliable state-of-the-art life cycle assessments, companies are not able to make the right decision to improve their environmental performance. The Environmental Product Declaration offers transparency, objective and scientific data which are prepared based on life cycle assessment.

What is EPD?

An Environmental Product Declaration transparently reports objective, comparable, and third-party verified data about products and services' environmental performances from a life cycle perspective.

EPDs represent a manufacturer's dedication to quantifying and mitigating the environmental impact of their products and services, and they transparently disclose these effects. Through an EPD, manufacturers provide verifiable, unbiased data, verified by third-party entities, revealing both positive and negative aspects of their products' environmental performance.

While the EPD serves as the ultimate report, a life cycle assessment (LCA) is the foundation of any EPD. LCA enables us to assess our product's environmental impact throughout its entire life cycle, encompassing our entire value chain.

The outcomes are presented succinctly via various environmental indicators, including metrics like carbon dioxide emissions and Global Warming Potential per unit of declared product.

EPDs are created by adhering to Product Category Rules (PCRs), which are specific requirements for conducting life cycle assessments and disclosing the results. PCRs facilitate product comparisons within their respective categories. Our EPD was developed in accordance with the following PCRs: PCR EPDIItaly 007 for electronic and electrical products and systems (Revision 3 dated 13/01/2023) and PCR EPDIItaly 011 for electronic and electrical products and systems, specifically meters (Revision 0 dated 16/03/2020).

Verification process

An independent third party must conduct a verification process on the EPD before it becomes publishable. Accredited certification bodies are exclusively responsible for conducting these verifications and ensuring consistency in their methods. Publishing the EPD enables companies to transparently communicate the environmental effects of a product or service to the market.

Advantages of the EPD

- Optimizing the production processes and minimizing expenses and waste within the organization, while continuously tracking the enhancement of the ecological efficiency of products and services.
- Clearly, objectively, and transparently communicating the environmental performance across the entire production chain of a product or service.
- Elevating the corporate brand by embracing transparency towards stakeholders.
- Facilitating the exchange of information to support environmentally responsible purchases.

What is the LCA?

Life Cycle Assessment (LCA) is a systematic and comprehensive methodology used to evaluate the environmental impacts of a product, process, or activity throughout its entire life cycle, from the extraction of raw materials to its end-of-life disposal.

LCA assesses various environmental aspects, such as energy use, resource consumption, emissions, and waste generation, to provide a holistic understanding of the environmental consequences associated with a particular product. It helps in identifying areas for improvement and guiding sustainable decision-making by quantifying the environmental burdens and benefits at each stage of the life cycle. LCA is a valuable tool for promoting environmentally responsible practices and making informed decisions to minimize the environmental footprint of products and processes.

Advantages of the LCA

LCA provides significant benefits for the producers and also for customers and society.

- **Holistic perspective** – LCA takes into account all stages of a product's life cycle, including raw material extraction, manufacturing, transportation, use, and end-of-life disposal.
- **Comparative analysis** – LCA enables the comparison of different products, processes, or design alternatives to determine the most environmentally friendly options. This information is valuable for decision-making and sustainable product development.
- **Data-driven decision making** – LCA is based on scientific data and analysis, which provides a strong foundation for decision-making. It helps organizations and individuals make informed choices about how to reduce environmental impacts.
- **Reduced environmental footprint** – By identifying and addressing the areas with the most significant environmental impacts, LCA can help reduce the overall environmental footprint of a product or process. This can lead to resource savings and lower emissions.
- **Resource efficiency** – LCA can help identify inefficiencies in resource use and energy consumption, leading to resource and cost savings.
- **Transparency** – LCA results can be communicated to stakeholders, increasing transparency and trust. LCA can be used for eco-labeling and marketing products with low environmental impacts.



While preparing the LCA and the EPD, we acquired significant insights that will be invaluable in guiding our future decision-making processes. We eagerly anticipate future projects aimed at obtaining EPDs for all our products.

Supporting cities on their journey towards sustainable and prosperous future

Anja Babič and Lara Šarabon Štojs

At Iskraemeco, our commitment lies in the development of innovative solutions aimed at addressing these urban challenges head-on. The economic development of the urban areas goes hand in hand with tackling the environmental issues in the cities across the world. The surge in urbanization has brought forth a plethora of challenges. Estimates indicate that cities are accountable for over 70 percent of worldwide CO₂ emissions, with transportation and buildings ranking among the primary contributors.

Supporting cities on their decarbonization journey

At Iskraemeco, we are dedicated to build innovative solutions that help cities on their green transition journey. We develop tools that provide opportunities for digitization of the city, introduction of advanced smart city infrastructure, raising the quality of living by improving security of the people and infrastructure, optimizing the consumption of resources, increasing sustainable water consumption, and minimizing the emissions.

Iskraemeco's smart city approach is an ecosystem of solutions that integrates smart devices, digital technology, services, and people into complex networks that interacts with one another and utilizes data to deliver new value. With solutions for environmentally-friendly transport in our eMobility portfolio, as well as efficient energy and water management, connected in digital platforms, we build solutions that are the backbone of greener infrastructure.

As the demand for smart grid infrastructure continues to rise, we have already provided extensive support to numerous partners, cities, municipalities, and utilities in their efforts to modernize their infrastructure and networks. Our involvement spans a wide range of projects, including contributions to Egypt's New Republic and the transformation of electricity grids in Zambia and Austria. Our global presence extends to projects in diverse corners of the world.

Inspired by the vision of a greener and more resilient urban future, Iskraemeco continues to collaborate with cities and partners around the world. Together, we are working towards creating cities that are not only economic powerhouses but also sustainable havens for generations to come. Let us remember that the path to progress lies in our collective actions and dedication to building better, more sustainable cities.

Sources:
United Nations, <https://www.un.org/en/observances/habitat-day>
United Nations Environment Programme <https://www.unep.org/explore-topics/resource-efficiency/what-we-do/cities/cities-and-climate-change>

Green Penguin's global mission for sustainable education

Mateja Kuralt and Mojca Volf

In the ever-evolving landscape of smart city solutions, the Green Penguin project stands as a symbol of innovation, education and environmental awareness. The project is dedicated to educating and engaging students towards a more sustainable lifestyle, and supporting communities on their journey to carbon neutrality. Sustainability is being integrated into the fabric of our cities through the use of smart digital technologies, gamification and quantification methods.

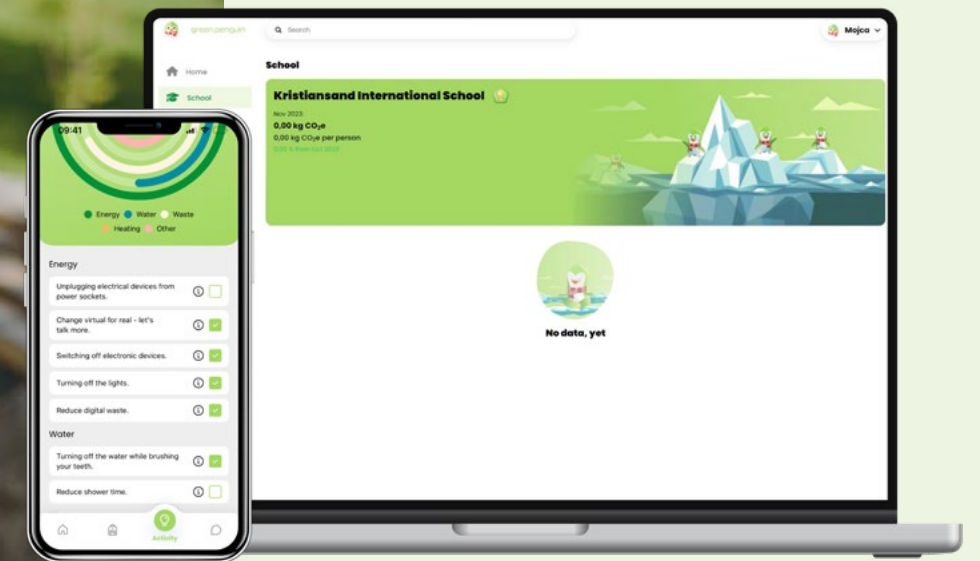
Over the past year, the Green Penguin team has been developing the Green Penguin application. They are now testing the application with different target groups to gain further insights that will help them with further developments and improvements. In addition, the team has been involved in a number of initiatives ranging from preparing presentations of the application at the pilot schools to engaging activities at different events with an aim to help promote the application, raise awareness of sustainable lifestyles and educate people about the importance of their actions for the environment.

One of these events was the Children's Bazaar, in Ljubljana, Slovenia. At this event, the Green Penguin team presented a diverse range of sustainable initiatives to visitors of all ages. The project also took center stage at the Olympic Festival, where the team assessed and educated children about sustainability.

On the international scale, the Green Penguin team visited Kristiansand, Norway, which is home to one of the pilot schools testing the new Green Penguin application. This visit emphasized the global significance of sustainable practices, education, and raising awareness about an individual's impact on the environment.

Recognizing the vital link between sustainable education and digital competencies, the Green Penguin team actively participated in the Digitrajni Učitelj (Digital and Sustainable Teacher) conference held in Portorož, Slovenia. This event provided an ideal platform for the team to showcase its innovative approach to sustainable education and the integration of technology in teaching.

These events, and many others, represent just a glimpse of the Green Penguin team's proactive approach to spreading awareness and teaching about the project's purposes. Beyond these highlights, the team remains committed to engaging schools and communities, fostering sustainability, and instilling the understanding that every individual, equipped with knowledge and information, can indeed make a lasting impact on the environment.



Green Penguin's ongoing impact

Today, the Green Penguin project is being implemented by a consortium of organizations, namely us, the City of Kranj, the City of Ljubljana, the Association DOVES-FEE Slovenia and FEE Norway, which are implementing the international Eco-Schools program. The project is co-financed by the Norwegian Financial Mechanism and Ministry of Cohesion and Regional Development. The Norwegian Financial Mechanism stands for Norway's contribution to a green, competitive and inclusive Europe.

This evolving partnership is not confined to mere collaboration on paper; it represents a shared journey toward a greener, more competitive, and inclusive future for communities, both locally and internationally. The Green Penguin project is also not just about technological innovation; it is a transformative force for all the communities it touches, generating benefits that impact individuals as well as the collective community.

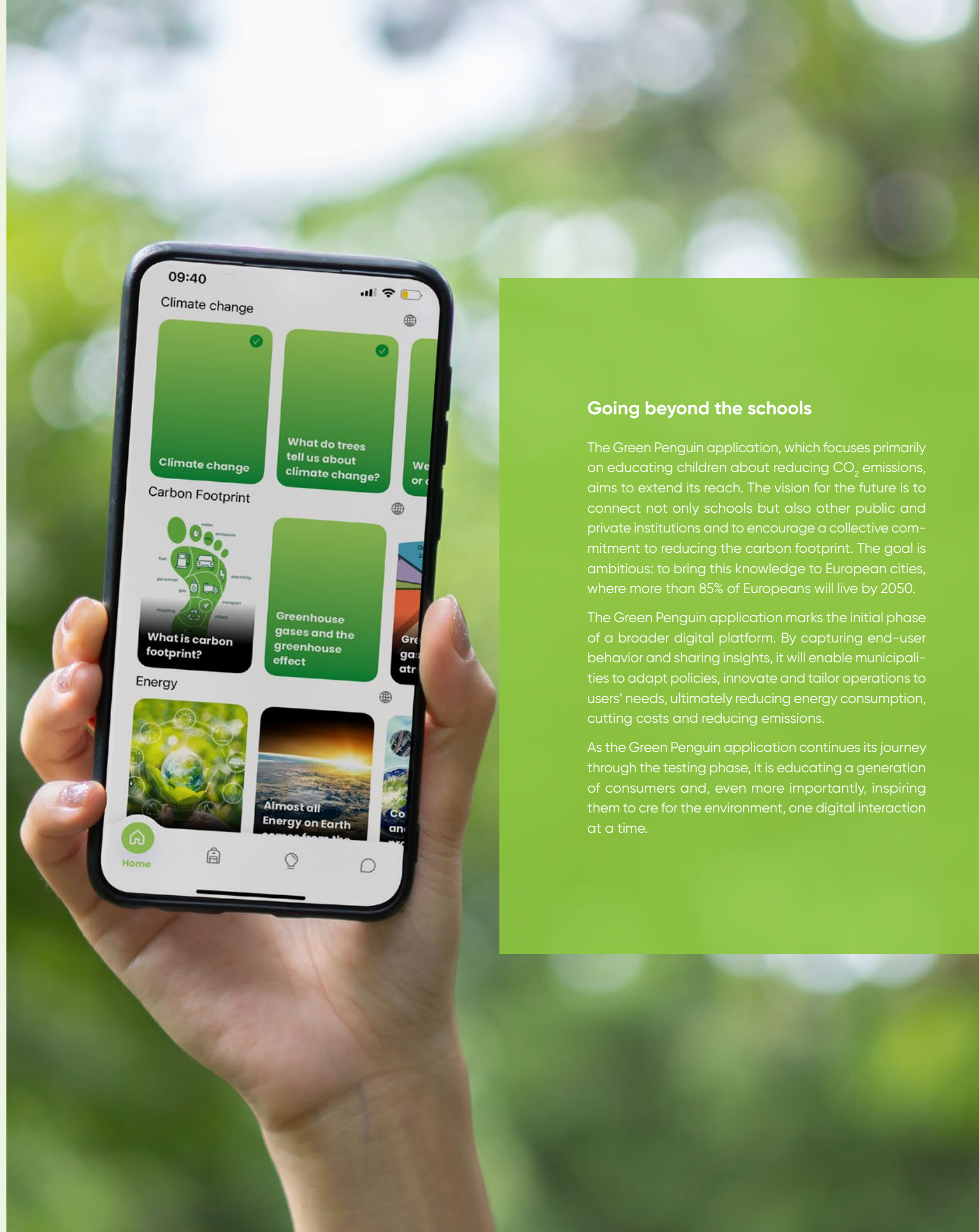
As the project fosters a community-wide commitment to sustainable practices, it leads to a tangible reduction in carbon footprint. Children, students, and residents are gaining practical knowledge about sustainable living, which fosters a sense of environmental responsibility. This encourages community members to embrace informed and sustainable choices in their daily lives. By bridging the gap between sustainable education and digital competencies, the project also equips community members, especially the younger generation, with the skills required for a rapidly evolving world.

Overall, we see that the Green Penguin project is not just an initiative; it is a transformative journey towards a greener, more conscious future. And as the journey continues, the Green Penguin's wings are wide open, ready to soar into new territories of sustainable education and global impact.

Green learning with Green Penguin

Having explored the Green Penguin team's commitment to spreading environmental awareness and fostering sustainability education, it is now time to take a closer look at the innovative digital world they have created – the Green Penguin application. This application, available on both mobile and desktop platforms, goes beyond traditional educational ways to provide users with an engaging and interactive experience.

The application is not just another tool or a game, but a comprehensive learning platform. Users dive into educational content that explains the complexity of CO₂ emissions and sheds light on the path to a sustainable future. A unique feature is the incorporation of quizzes and tasks where users collect points to "save" trees based on their sustainable activities and thus actively contribute to the well-being of our planet.



Going beyond the schools

The Green Penguin application, which focuses primarily on educating children about reducing CO₂ emissions, aims to extend its reach. The vision for the future is to connect not only schools but also other public and private institutions and to encourage a collective commitment to reducing the carbon footprint. The goal is ambitious: to bring this knowledge to European cities, where more than 85% of Europeans will live by 2050.

The Green Penguin application marks the initial phase of a broader digital platform. By capturing end-user behavior and sharing insights, it will enable municipalities to adapt policies, innovate and tailor operations to users' needs, ultimately reducing energy consumption, cutting costs and reducing emissions.

As the Green Penguin application continues its journey through the testing phase, it is educating a generation of consumers and, even more importantly, inspiring them to cre for the environment, one digital interaction at a time.

The application is designed to connect schools and students and promote healthy competition between them. Each school can track and compare their energy, heating and biological waste saving efforts, which creates a friendly competition that motivates students and teachers alike. At the same time, users gain an insight into their individual contributions and can observe the tangible impact of their environmentally conscious choices.

The Green Penguin application goes beyond conventional learning with interactive "chat rooms". Here, users can exchange ideas and broaden their perspectives. This virtual space strengthens the sense of community and promotes joint efforts to create a greener world.

The Green Penguin application is currently in the testing phase and is being used by seven pilot schools. In particular, Hinko Smrekar Primary School, Šmartno pod Šmarno goro Primary School, Jože Moškrič Primary School, Predoslje Primary School, Stane Žagar Primary School, France Prešeren Primary School, and Kristiansand International School (KIS) are actively contributing to the refinement of the application. Their participation is valuable feedback that ensures that the Green Penguin application evolves to meet the dynamic needs of educational institutions.

Mark Benjamin Case, headmaster at KIS, believes that there are several benefits in being part of the project: "It gives our students valuable knowledge about the environment and climate, and it helps to strengthen their digital competences. Students are actively exposed to advanced digital technologies, which gives them skills how to effectively use modern tools and educational platforms. My hope is that the students get a realistic demonstration that small changes can make a big difference over time. I believe that the learning platform will provide better and more relevant teaching on climate and environmental topics than what we get in traditional classroom teaching. I hope the students will be able to leave school knowing that they can take action at a level that is manageable for them, but which will also make a difference. The goal is for our students to learn environmentally friendly ways to navigate life."

"It is exciting to take part in the testing," says 15-year-old Ceridwen Irwin, student at KIS. "We've been waiting for a while to test the app, so it's fun that it's finally ready, she says." José Sangesland (15) also thinks it's great to get started with the testing: "I imagine that the application will make a difference in the environmental fight. I believe it will help young generations to see the climate impact their actions have and give them hope and knowledge about how it is possible to reduce emissions. I also imagine that the young people will be able to influence their parents, so that they will also be more concerned about this."

Elevating quality, security and data protection: Iskraemeco's latest certifications ISO 27017, ISO 27018, and ISO 33061

Anže Zaletel and Anja Babič

In a SIQ audit, Iskraemeco recently obtained new certifications that further demonstrate our dedication to quality, security, and data protection. These certifications have a significant impact on our portfolio and give customers and partners the assurance of the highest security standards.

An audit by SIQ presents a systematic and professional assessment of technical and organizational processes and controls in the organization's information systems. Its purpose is to verify compliance with the rules, standards, and good practices.

DATA PROTECTION

Dedicated to providing secure and reliable solutions

We have broadened our compliance with international standards by incorporating ISO 27017, ISO 27018, and ISO 33061 into our portfolio. These standards focus on cloud security and data privacy protection, reflecting Iskraemeco's dedication to providing secure and reliable solutions in the evolving landscape of data management.

- ISO 27017 offers security guidelines for organizations using cloud services, aiding cloud service providers in implementing appropriate security controls. It provides specific guidance and controls for cloud services, promoting security alignment across cloud, virtual, and physical networks.
- ISO 27018 is the global standard for safeguarding personally identifiable information (PII) in cloud storage. It provides extra protection guidance for public cloud environments.
- ISO 33061 is an international technical specification that defines a process assessment model for software life cycle processes. The process assessment model is a valuable tool for organizations that want to improve the quality of their software development processes and deliver high-quality software to their customers.

Year by year, cybersecurity threats targeting the energy industry are on the rise. Given that the energy sector is an integral part of critical infrastructure, increasing the cyber resilience of data and systems is crucial to maintaining the continuous delivery of essential energy services.

Extended certifications for the water portfolio

Additionally, Iskraemeco has extended its existing certifications, including ISO 9001, ISO 45001, ISO 14001, ISO 50001, and ISO 27001, to cover its range of water meters. This expansion ensures that the same high standards of quality and performance that customers have come to expect from Iskraemeco's energy management solutions are now also applied to their water metering products.

Ensuring the highest level of safety and security

Iskraemeco's dedication to quality, safety, environmental responsibility, and data security continues to be a driving force behind its innovations in energy and water management, as well as software solutions. With these new certifications, we are well-positioned to meet the evolving needs of our customers and to ensure the highest level of performance and security across our product range.

Reaching Europe and Australia

Elsewedy Electric, a leading player in the electrical products industry, continues to make waves globally with its advanced range of transformers. With successful ventures in Denmark, Germany and Australia, the company is solidifying Egypt's presence on the world stage while showcasing its engineering expertise. In Denmark, Elsewedy Electric for Electric Products (EEEP) has written another success story in the export field by supplying Oil Distribution Transformers of various ratings to a utility company.

ELSEWEDY
ELECTRIC

The previously supplied transformers have demonstrated exceptional performance and met the requirements of one of Scandinavia's most stable networks. This achievement further enhances EEEP's presence in the European distribution market. Meanwhile, in Germany, EEEP fulfilled an order for 150 transformers that are now prepared for transportation after successfully passing Factory Acceptance Testing (FAT). This milestone not only demonstrates Elsewedy Electric's ability to meet international standards but also strengthens its foothold within the German market. Taking innovation even further afield, Elsewedy Electric entered the Australian market with its solid dry-cast resin transformers. In an unprecedented move that revitalized Egypt's former leadership in the global industry scene, 20 dry transformers were delivered to Australia's West Gate Tunnel project. These cutting-edge transformers boast rated powers ranging from 3000 kVA down to 500 kVA and were certified by KEMA Labs, a quality that sets them apart from their European counterparts.

With production taking place at one of the Middle East's largest transformer manufacturing facilities, Elsewedy Electric showcases its commitment to delivering high-quality products on a global scale. The Elsewedy Electric factory boasts an impressive production capacity of 250 transformers per month with power capacities reaching up to 15/20 MVA. With a solid presence in Germany, Denmark, and Australia, Elsewedy Electric's manufacturing reach shines brightly on the international stage. As they continue their journey of innovation and expansion, expect more groundbreaking achievements that will further strengthen Egypt's position as an industry leader.



Elsewedy Industrial Development and BASF Partner to Establish Green Logistics Hub SOKHNA360

Development and BASF Partner to Establish Green Logistics Hub SOKHNA360

Elsewedy Industrial Development, a subsidiary of Elsewedy Electric, recently signed a Memorandum of Understanding (MoU) with BASF, the world's largest chemical producer and a German multinational corporation, with an intent to construct a major green logistics hub in SOKHNA360. The venture is part of the company's larger efforts to push towards establishing a network of green cities, making an impact on the environment and improving sustainability. As part of a comprehensive strategy to create an ecofriendly logistics hub that meets the highest standards of green infrastructure, the project also utilizes cutting-edge technology and innovative solutions to ensure that the logistics processes are as efficient as possible. Such initiatives are integral in building a cleaner future, and Elsewedy Industrial Development is proud to be a part of the movement.



The agreement between Elsewedy Industrial Development and BASF comprises the concept of the green logistics hub and a built-to-suit model, which is the most beneficial conceptualization of the tenant's specifications. Located just 15 kilometers from Ain El Sokhna Port, this strategic location is situated on a major trade route along the Suez Canal, providing BASF with access to Africa's key sea routes. By building the hub at SOKHNA360, BASF is better positioned to contribute to greener and ecologically friendly solutions throughout the area. As SOKHNA360 is offering excellent incentives, which include 100% foreign ownership of enterprises, 100% foreign control of import and export activities, and 100% exemption from custom charges and sales tax, the city is anticipated to draw significant amounts of foreign investment.

It is remarkable that SOKHNA360 has been set up on approximately 10 million square meters, with an industrial zone occupying a substantial 60% of the project area and green areas of approximately 700,000 square meters. The company has enhanced its commitment to sustainability by allocating a significant portion of its total space for eco-friendly areas. Furthermore, SOKHNA360 is powered by green energy sources which reflects the company's desire to create a viable and efficient industrial sector, providing a long-term source of sustainability for the project. Such a move speaks to the company's foresight and dedication to creating a successful, self-sustaining venture.



The Egypt Water Waste Infrastructure (EWI) event

The Egypt Water Waste Infrastructure (EWI) event was a great get-together where we got to meet with various European and African utilities and enterprises. While showcasing our latest smart water solutions, we also had the opportunity to discuss potential collaborations with Eng. Mamdouh Raslan, Chairman of Holding Company for Drinking Water & Sanitation Egypt, and Dr. Sayed Ismail, Deputy Minister for Infrastructure, Ministry of Housing, Utilities & Urban Communities, Egypt.



Iskraemeco is now powered by renewables

In order to move from words to actions, we have installed 1,904 solar panels on our production facilities in Kranj, Slovenia. These solar panels are projected to generate a stunning 920 MWh annually. Not only will this move significantly reduce our energy costs, but it will also contribute to reducing our carbon footprint by around 450 t/year.



Beginning of interesting school year for first graders

In September, when the school bells rang for the first time after the summer holidays, we surprised the first graders of our employees with a special little gift as they embarked on their educational journey.

Iskraemeco at Slovenia's biggest technological-business event

The participants of the NT Conference 2023 had the opportunity to gain valuable insights into the digital twin implementation in production processes. Aleš Tancer, Iskraemeco's Director of IT, and Marko Škufca, Business Solutions Director at ADD d.o.o., provided a comprehensive overview of the challenges, prerequisites, and advantages associated with this implementation.



Green Penguin is making its way into the promotion of sustainable lifestyle

We had the opportunity to present our project at the Children's Bazaar in Ljubljana, Slovenia. At the event, Green Penguin educated visitors through an interactive quiz about the importance of environmental protection and the small steps each individual can take to create a better world.



Audience was eager to learn about the most recent innovations

Iskraemeco recently participated in a seminar series organized by the Elsewedy Electric unit in Sharm el-Sheikh, where industry leaders united to explore cutting-edge electric technology. Abdelrahman Nasr, head of the private sector at Iskraemeco in Egypt, introduced our most recent smart metering systems for water and electric solutions and gave insight into the complete software suite.



We held the eMobility Day from our eMobility business unit, featuring GL Charge

During the event, we explored the world of eMobility, from innovative solutions that are shaping the future of eMobility to a behind-the-scenes look at our charging stations in action. Our visitors had the opportunity to get a firsthand look into the operation of home charging stations, like the GlowBox and portable GoBox, business and public charging stations, like the PublicBox and HyperBox, and the powerful Spectre eMobility backend system.

Presenting the Green Penguin project in Norway

The Green Penguin team visited the city of Kristiansand, Norway, which is also home to one of the pilot schools testing the new Green Penguin app. This study visit demonstrated the importance of sustainable practices, education, and raising awareness of individuals' impact on the environment to create a better future for ourselves and future generations. The visit also has broader significance for building bilateral cooperation within the Green Penguin project, as well as for continuing cooperation after its completion.



Our runners at the Ljubljana Marathon

Iskraemeco employees took part in the largest sports and recreational event in Slovenia - Volkswagen's 27th Ljubljana Marathon. A total of 19,100 active participants from 68 countries took part in the event, including 24 of runners from Iskraemeco. Congratulations to all Iskraemeco's marathon runners on their excellent results!



In today's dynamic business world, continuous learning is a must

We recently had the privilege of hosting Walid Tayel, Global Chief HR Officer of Elsewedy Electric Group, at an insightful leadership workshop. Diverse leaders and professionals came together to explore evolving leadership styles, adapting to team needs, and maximizing efficiency and happiness. Tayel emphasized coaching and emotional intelligence as key tools for effective leadership, drawing from his experience leading a global HR organization. Our participants left the workshop inspired and motivated, ready to level up their leadership game and make a positive impact on their teams and beyond. This workshop highlighted our commitment to growth and development in leadership, paving the way for success in our roles and organizations.



Linking sustainable education and digital competences with Green Penguin

At a conference that promoted the concept of digitally-savvy and sustainable teachers in Slovenia, we presented our innovative approach to sustainable education and the use of technology with the help of Green Penguin. The conference held to train teachers to become 'greentech teachers' was attended by professionals and leaders in the field of education. Its goal was to achieve a digital, sustainable and financial transformation of the education system by training more than 20,000 'greentech teachers'.



Insightful presentation at the Infosek conference

IT technology and security principles are converging in a world of constant change and digital transformation. At Iskraemeco, we have transformed our business landscape through the utilization of Microsoft Security Solutions. At an insightful presentation given at the Infosek conference in Nova Gorica, Slovenia our colleague Anže Zaletel, Information Security Officer, shared his insights on how to defeat threats with Microsoft XDR.

Silver medal ranking by EcoVadis

We are delighted to announce that Iskraemeco has achieved the EcoVadis Silver medal ranking, placing us within the top nine percent of companies in the metering industry. This recognition comes after a thorough assessment of our performance in Environmental, Social, and Governance (ESG) areas.

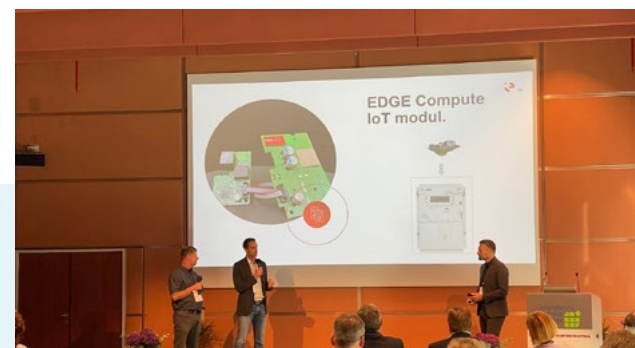


Our colleagues at Metering Days 2023

At the exhibition, we presented the possibilities and opportunities offered by the development of new products and solutions in the field of smart metering to the participants. Iskraemeco focused on the presentation of smart solutions developed specifically for the German market, the development of smart energy solutions, grid control infrastructure and the Digital Twin project.

Day of Slovenian Electro Industry organized by the Chamber of Commerce and Industry of Slovenia was a complete success

We dove deep into the world of innovation in the electro industry in Slovenia and discussed what the future might hold. The event highlighted the incredible growth of innovative companies and reminded us that the spirit of innovation is alive and thriving. Our colleagues Klemen Belec, Global Product Portfolio Director, and Tomaž Dostal, Head of Innovations Sector, also presented how Iskraemeco teams innovate and elaborated on one of our latest innovations, which also received an Innovation award – the eIoT Edge compute platform.



The latest solutions at Enlit Asia

Iskraemeco's team went to the Enlit Asia fair in Indonesia, where we presented our latest solutions. At our booth, participants learned about solutions aimed at improving the efficiency and stability of the network, introducing the latest edge computing technologies and water management solutions, as well as many other projects.



Shaping the energy landscape on Enlit Europe 2023

Our team was there to showcase our future-proof solutions in a variety of areas, from monitoring and flexibility solutions, the Elumia street lighting management system, Symbiot Twinner the AI-powered grid digitalization platform and edge compute technologies to e-mobility and water solutions. We have demonstrated our commitment to motivating and supporting our customers on their journey to a better future.



Iskraemeco part of the first hackathon in the Gorenjska region

'Gorenjski hekaton', as the event was called, offered the participants an opportunity to develop their innovative ideas, collaborate with companies and learn from experienced mentors, while the companies benefitted from a fresh perspective on the challenges presented and an insight into the range of promising young people from the local area. During the day, the participants attempted to resolve selected challenges, and the mentors guided them through brainstorming, researching the problem, preparing solutions and visual presentations, and finally preparing the pitch. The event also brought opportunities for networking and exchanging experiences with experts from participating companies, including our colleagues.



Innovating
for **Life.**

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