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Changes for the Better

Automating the World

MODERN TECHNOLOGIES FOR DATA CENTRE MANAGEMENT

„Data centres are to many industries like the banking system for finance”

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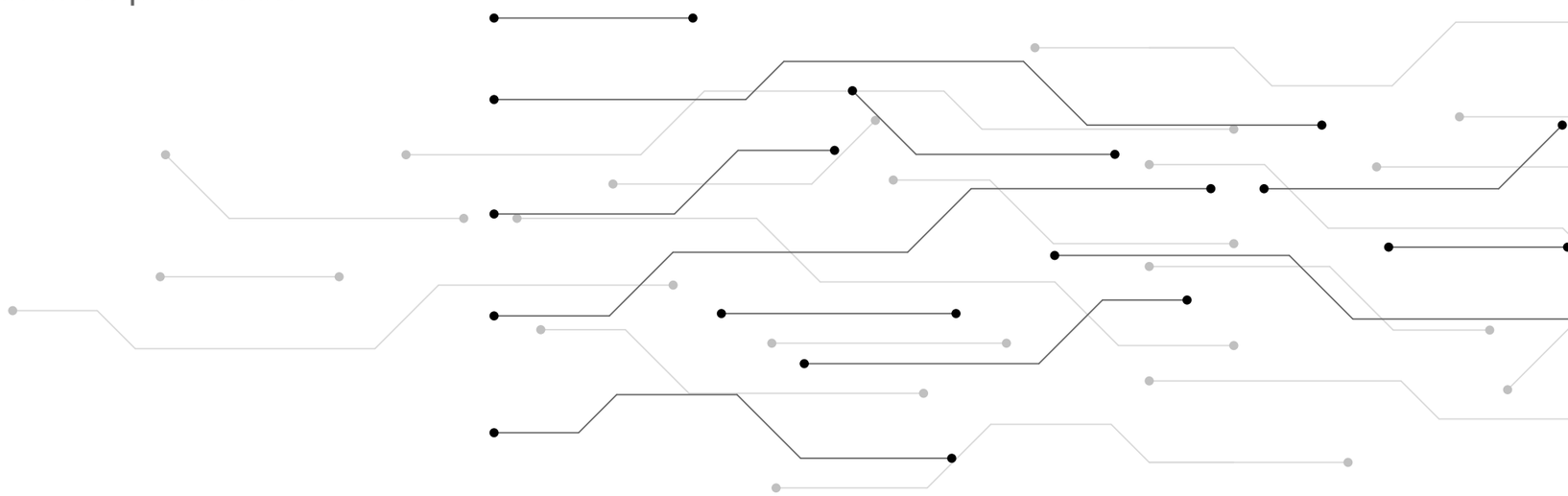

THE MANAGEMENT OF ENERGY IN THE DATA CENTRE

Data centres, consume a great deal of energy, which often makes energy consumption costs the highest part of the operating expense bill – any methods that enables the reduction of energy used results in lower costs.

Data centre operation costs do not only revolve around energy consumption – the environmental footprint and greenhouse gas emissions are just as important, especially in locations where electricity is generated by traditional fossil-fuel power plants. Reducing energy consumption also makes it easier to make the data centre fully self-sufficient – powered by its own renewable energy sources, including wind turbines, solar modules and other solutions.

According to the data released by the **International Energy Agency**, the amount of energy consumed by data centres is growing by 20–40% annually. Total electricity consumption by major companies such as Amazon, Microsoft, Google and Meta more than doubled between 2017 and 2021, reaching 72 terawatt-hours in total. What is more, in 2022, the estimated global electricity consumption by all data centres in the world amounted to 240–340 terawatt-hours – 1–1.3% of the global total demand.

THE MANAGEMENT OF ENERGY IN THE DATA CENTRE

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MITSUBISHI ELECTRIC
ENERGY MANAGEMENT SOLUTIONS

energy-saving inverters

ICONICS Suite™

GENESIS64™

MELSEC iQ-F Series PLCs

MELSEC iQ-R Series industrial PCs

industrial networking equipment

THE MANAGEMENT OF ENERGY IN THE DATA CENTRE

There are numerous solutions that enable optimising energy use in data centres, tailored to the needs of different devices and equipment.

The IT infrastructure – servers, disk arrays, networking equipment and other hardware is what makes a data centre function. Most of these devices run 24/7, and their energy consumption depends on their load.

Some energy is also used by auxiliary systems – these include HVAC, as well as lighting, backup battery charging, fire and intrusion alarm systems and a number of other devices.

Do you want to learn more about data centres? Watch our podcast: **Data Centre: Where data lives?**

THE MANAGEMENT OF ENERGY IN THE DATA CENTRE

Numeral solutions are offered by Mitsubishi Electric to optimise energy usage in data centres, including devices and software for monitoring and managing its use.

These include energy-saving inverters that facilitate achieving optimal performance of electric motors in cooling systems (fans, coolant pumps), MELSEC iQ-F Series PLCs, MELSEC iQ-R Series industrial PCs and industrial networking equipment. Device management is facilitated by SCADA software – ICONICS Suite™ GENESIS64™ – our DCIM solution.

HOW DOES SECURITY AND MANAGEMENT WORK IN A DATA CENTRE

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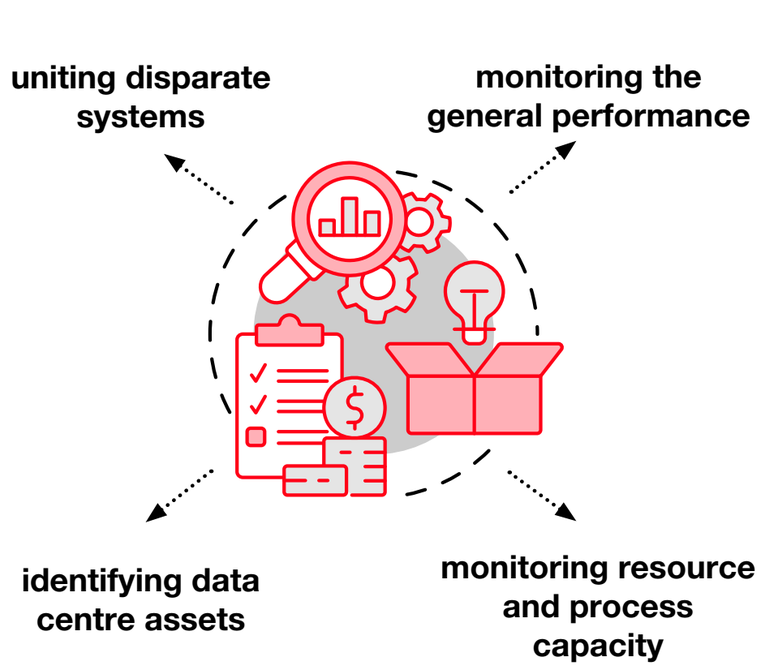
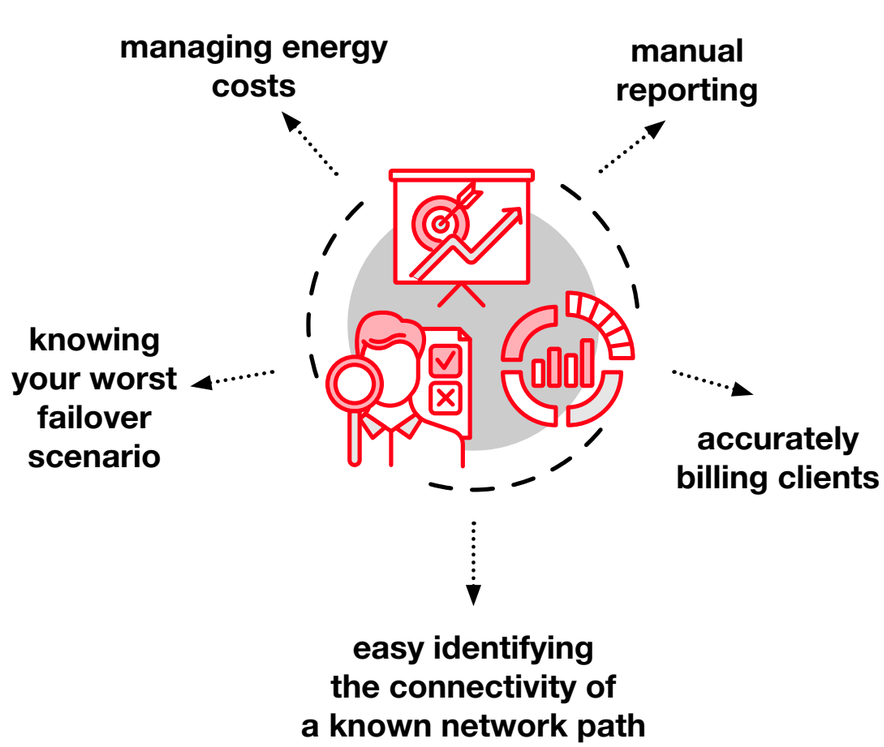
A data centre is a complex environment which is apparent on many levels. IT infrastructure which is the core of every data centre, can be really diverse, similar to client requirements who use data centre services and their technologies, including servers, as well as the software and network stacks.

DATA CENTRE INFRASTRUCTURE MANAGEMENT

MANAGEMENT



COMPETENCY / ANALYTICS



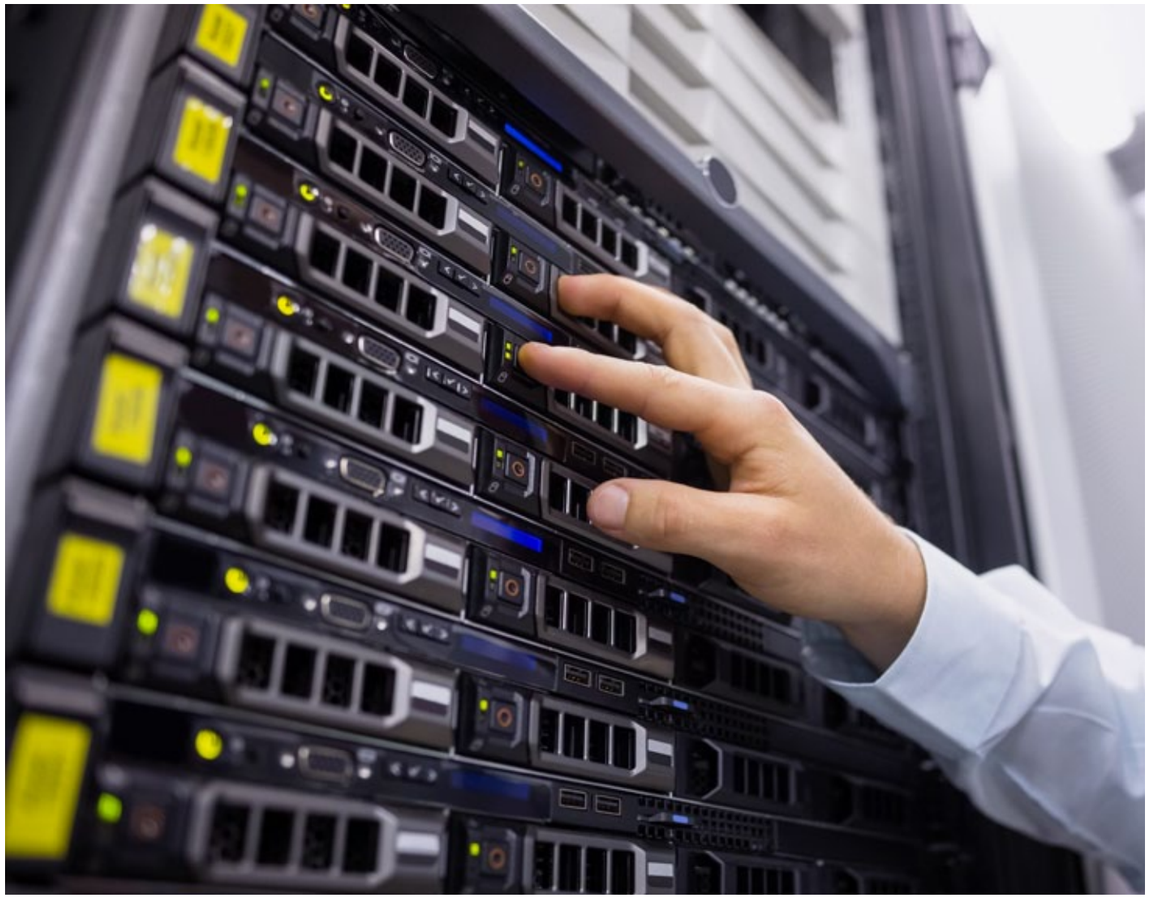
HOW DOES SECURITY AND MANAGEMENT WORK IN A DATA CENTRE

Some solutions need a lot of computing power and quick access to databases stored on disk arrays whereas others need fast and reliable connections to transfer large amounts of data – as is the case for streaming services.

Data centres are expected to ensure reliability and continuous uptime. This is based on four defined tiers:

- **TIER I** offers a minimum uptime of 99.67%,
- **TIER II** raises it to 99.74%,
- **TIER III** goes further to 99.98%,
- **TIER IV** guarantees an uptime of 99.99%.

In reality, this means that top-tier data centres can be unavailable to their users for to 26.3 minutes per year.



ENSURING SUCH RELIABILITY IS ONLY POSSIBLE IF SEVERAL CONDITIONS ARE MET:

- **a good design** that takes redundancy into account and eliminates single points of failure,
- **the highest-quality equipment** and components,
- **a precise monitoring** of the technical condition of all equipment and its major parts.

A condition that meets the above assumptions requires appropriate tools, including software.

SOLUTIONS FOR DATA CENTRES AND ENVIRONMENTAL PROTECTION

Mitsubishi Electric strives to provide integrated and comprehensive solutions for data centres, spanning those systems which form their backbone: those for power distribution, cooling and air conditioning. We pursue to ensure optimal conditions for the operation of modern, efficient and environmentally responsible data centres.

The pursuit of this objective is based on our long-standing experience and expertise in the design and deployment of similar systems in other industries.

Thanks to these, we can participate in the creation of new technologies.

With their growing popularity, in particular in the IT sector, they require more and more energy, which translates into an ever-growing impact on the environment.

SELECTED ENVIRONMENTAL EFFECTS OF DATA PROCESSING*

a single data centre can consume the equivalent electricity of 50,000 homes

the cloud now has a greater carbon footprint than the airline industry

the electricity utilised by data centres account for 0.3 percent of overall carbon emissions

* **Source**: https://thereader.mitpress.mit.edu/the-staggering-ecological-impacts-of-computation-and-the-cloud

SOLUTIONS FOR DATA CENTRES AND ENVIRONMENTAL PROTECTION

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BASED ON COMPATIBLE COMPONENTS

Mitsubishi Electric designs comprehensive solutions tailored to the needs of individual clients, based on the custom-made components and equipment. Thanks to this we are able to guarantee the highest quality of the entire solution, all the while ensuring the uninterrupted availability of each component.

The high quality of our products, coupled with repeatable parameters, ensures higher uptime, lower power usage and improved power quality.

HOW TO REDUCE THE ENERGY USAGE OF DATA CENTRES?

Distributing electricity to IT equipment and its cooling systems are the two key components responsible for the total electricity consumption in data centres. They are essential for keeping the hardware in working order, but their costs lower the viability of projects, which is why it is so important to continuously improve these two processes and strive to reduce their energy intensity.

SOLUTIONS FOR DATA CENTRES AND ENVIRONMENTAL PROTECTION

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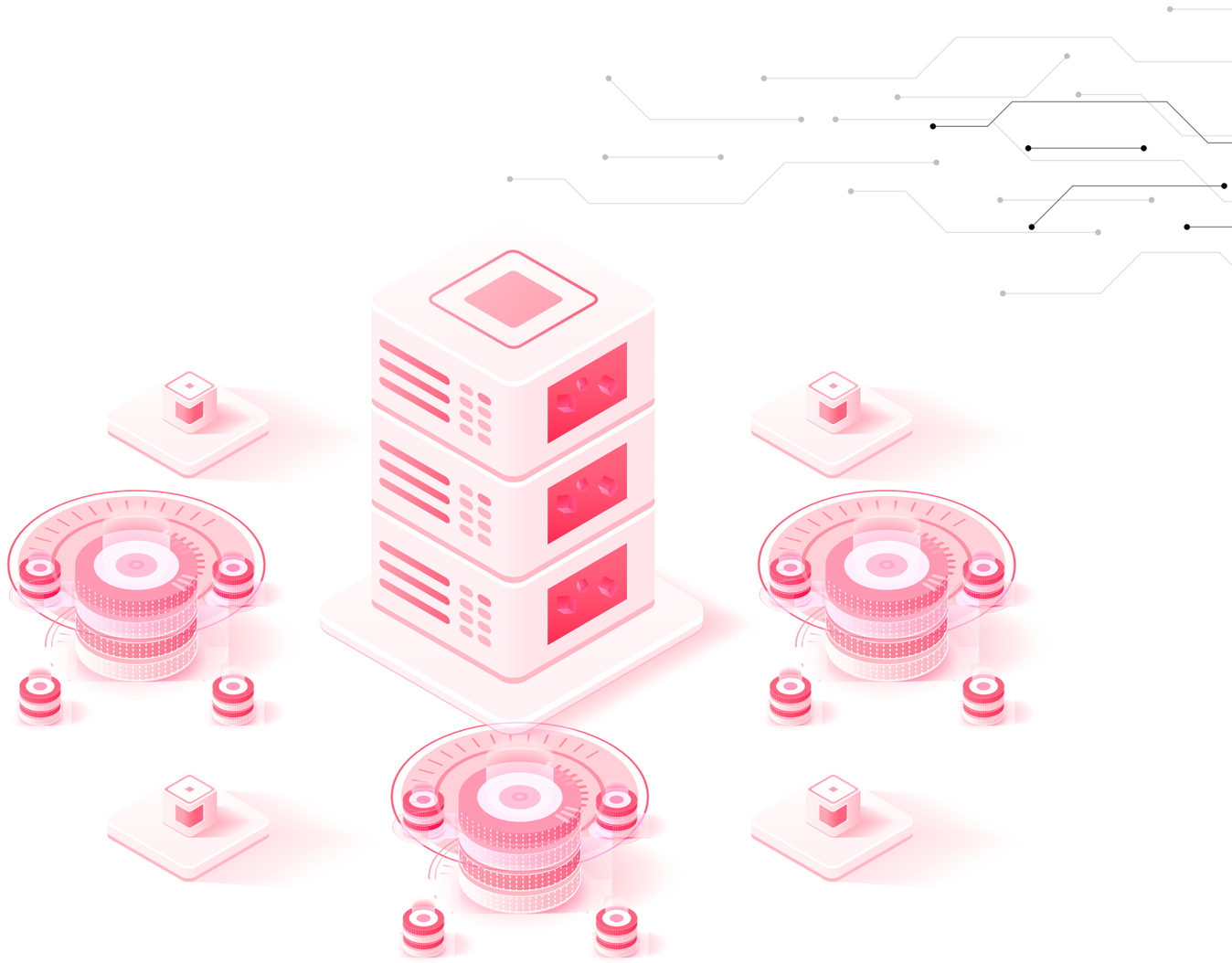
DCIM – INTEGRATED DATA-CENTRE MANAGEMENT SYSTEM

One element connects all of these systems – Data Centre Information Management System (DCIM).

This software solution developed by Mitsubishi Electric was designed to make it as easy as possible to find key information about the status of the entire facility and its energy consumption, as well as the condition of individual components and systems.

It is a one-stop shop for controlling all processes and measuring energy consumption, as well as troubleshooting and fault detection.

What is more, historical data analysis enables the optimisation of energy consumption, as well as the pinpointing of devices with the highest energy consumption, along with their configurations.



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