

IQRF®

**Wireless technology for IoT
&
Smart solutions for energy and cost savings**

Where reliability is a must!

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IQRF® Smarter Wireless. Mesh!

Smart heating in detail...AUSTYN INTERNATIONAL

„Energy at the right time in the right amount in the right place,,



AUSTYN
INTERNATIONAL Ltd.

ENERGY SAVING SOLUTION

Agenda

- Briefly about the IQRF technology
- Use cases
- Smart regulation of heating in detail



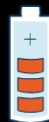
What is IQRF® ?

Reliable Wireless Mesh Technology

Simply connecting devices to IoT



Industrial reliability



Low power

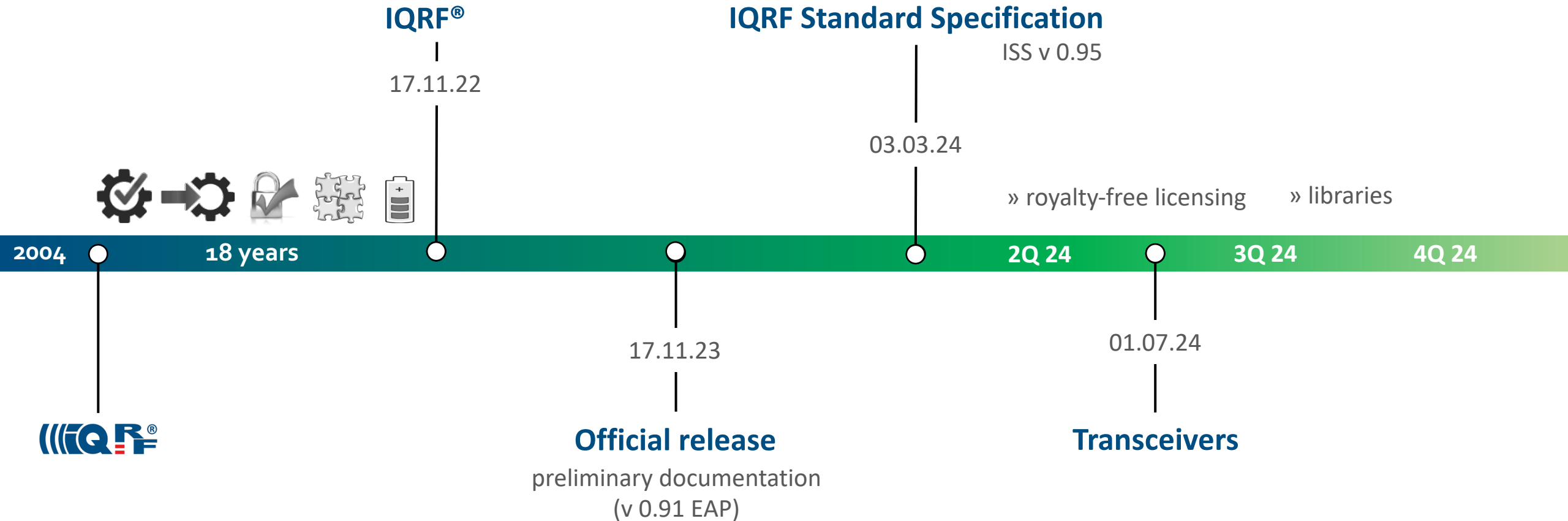


Simple integration

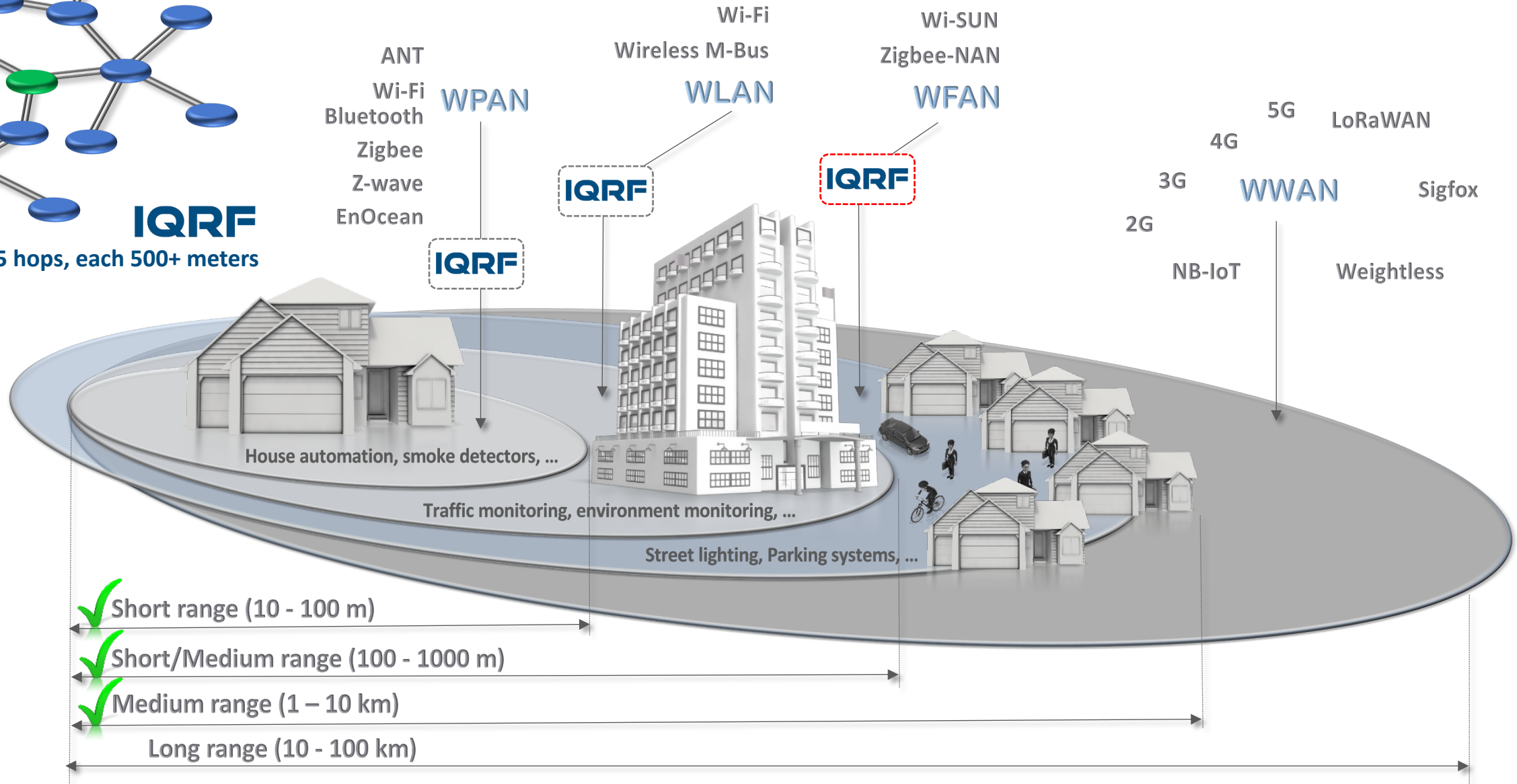
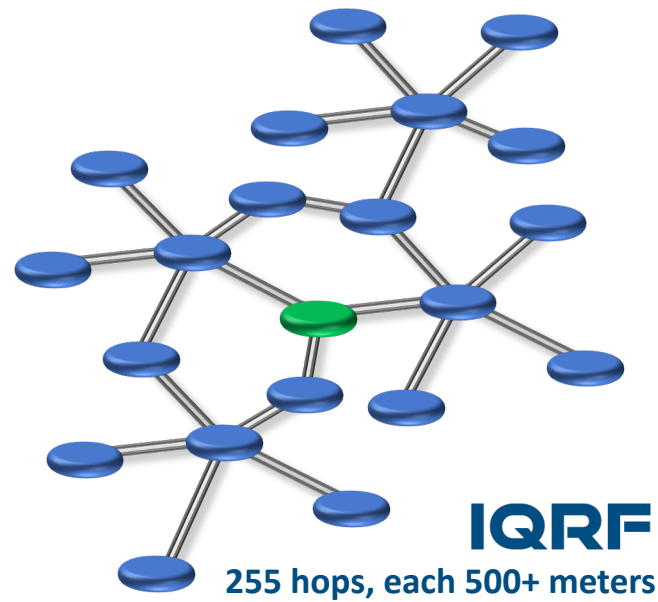


Open Standard

20 years of evolution to IQRF Standard rollout

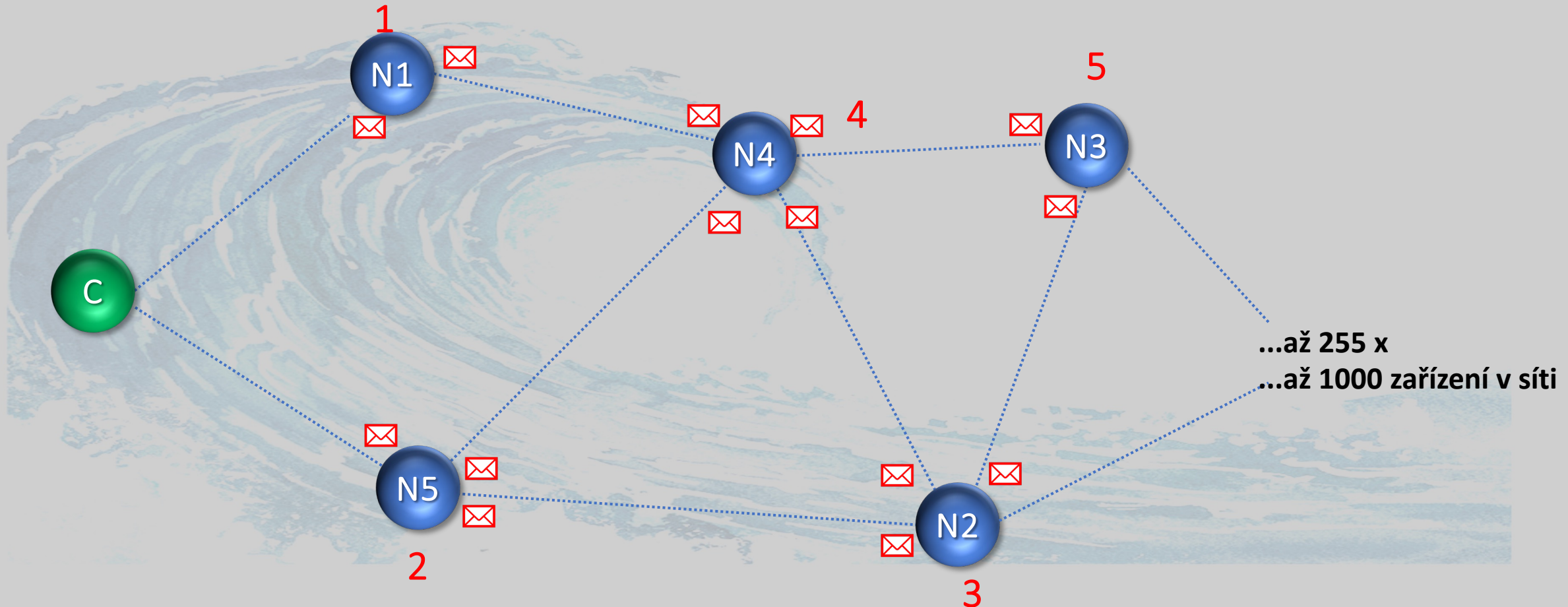


What is the IQRF's positioning?



IQMESH[®] routing protocol

IQMESH routing protocol is collision-free, based on the TDMA and oriented flooding, supporting unicast, broadcast, groupcast, and selective cast. **It is deterministic and reliable.**

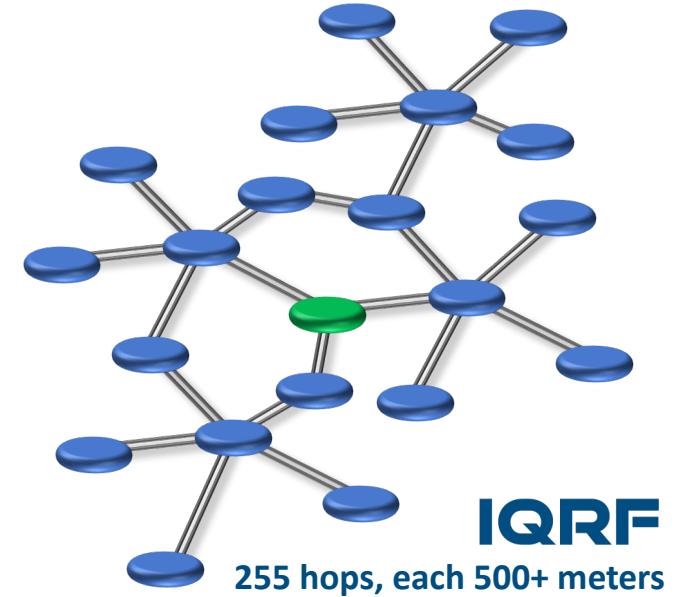


IQMESH[®] routing protocol



INDUSTRIAL RELIABILITY to/for wireless

- ✓ simple to implement
- ✓ collision free
- ✓ deterministic
- ✓ no single point of failure
- ✓ no partial acknowledgments required
- ✓ more nodes » higher reliability
- ✓ proven in real applications



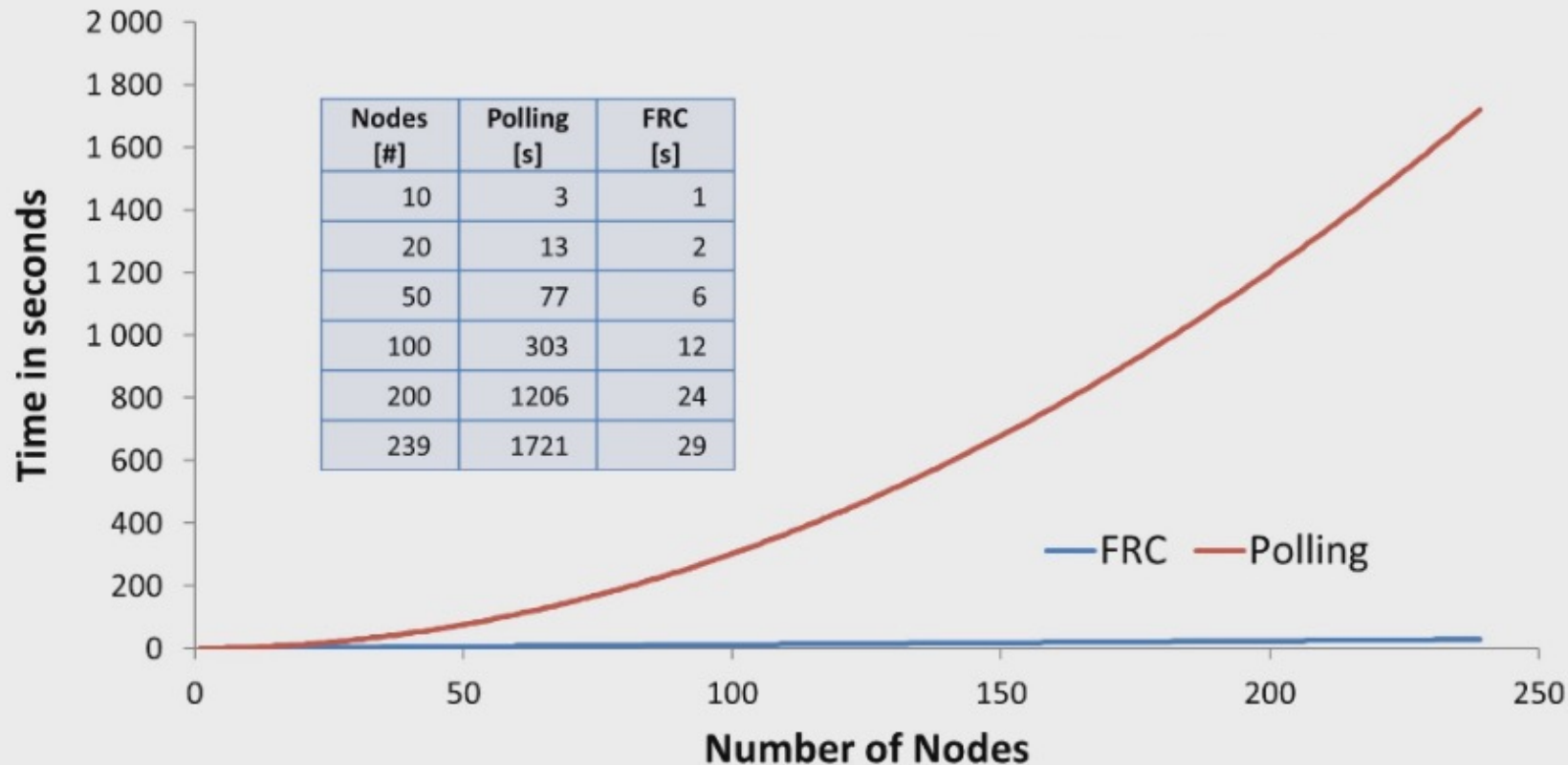
No vectors or tables are stored on routers or delivered in frames.

FRC[®] Fast Response Commands protocol

Protocol based on the IQMESH network arrangements and routing, enabling fast data aggregation and acknowledged broadcasts/multicasts.

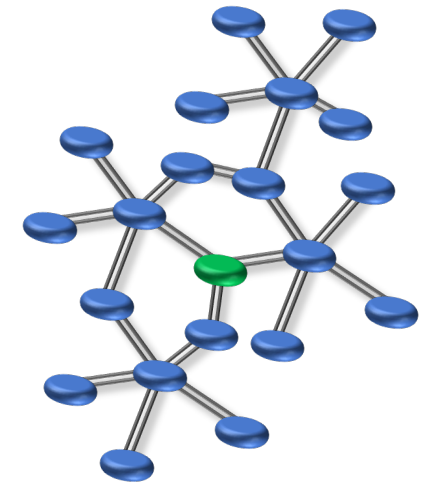
FRC[®] protocol further increases IQMESH[®] protocol reliability.

Exponential dependency linearized



Topology independent
deterministic

<https://iqrf.it/timing>



INDUSTRIAL RELIABILITY

High level robustness and successful delivery even under really challenging conditions

IQMESH + FRC » great solution for Lossy, Low Rate WMNs.

Commissioning

Ready tools to build the network according the specifics of each installation.

- **Pre-installation** – prepare the network in warehouse, after installing devices on proper positions just click the IQRF autonetwork button
- **With installation** – scan each device just at the installation via QR or NFC to commissioning app, then use the IQRF autonetwork functionality
- **After installation**
 - ready commissioning tool to check each device and place to a map source
 - GPS ready for outdoor installations

Always with keeping security and reliability standards

IQRF[®] uses cases

- Smart lighting
- Environment monitoring
- Smart sanitary
- Building automation
- Smart heating



Indoor and street lighting

Wirelessly controlled lights



**Up to 70 %
energy savings**



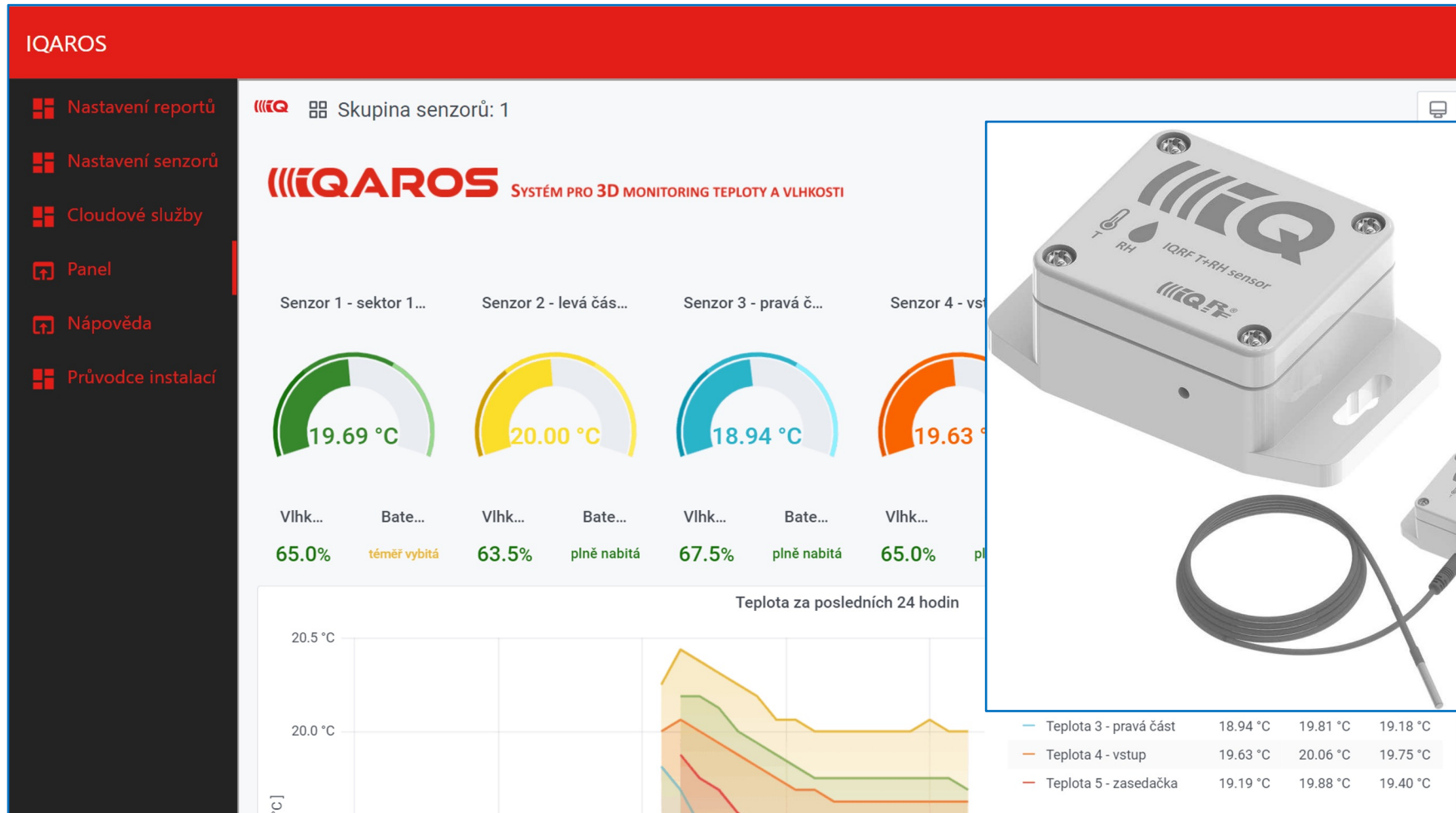
Street lighting

Energy savings, but not at the cost of security!!!



Environmental monitoring (CO2, T/RH, VOC ...)

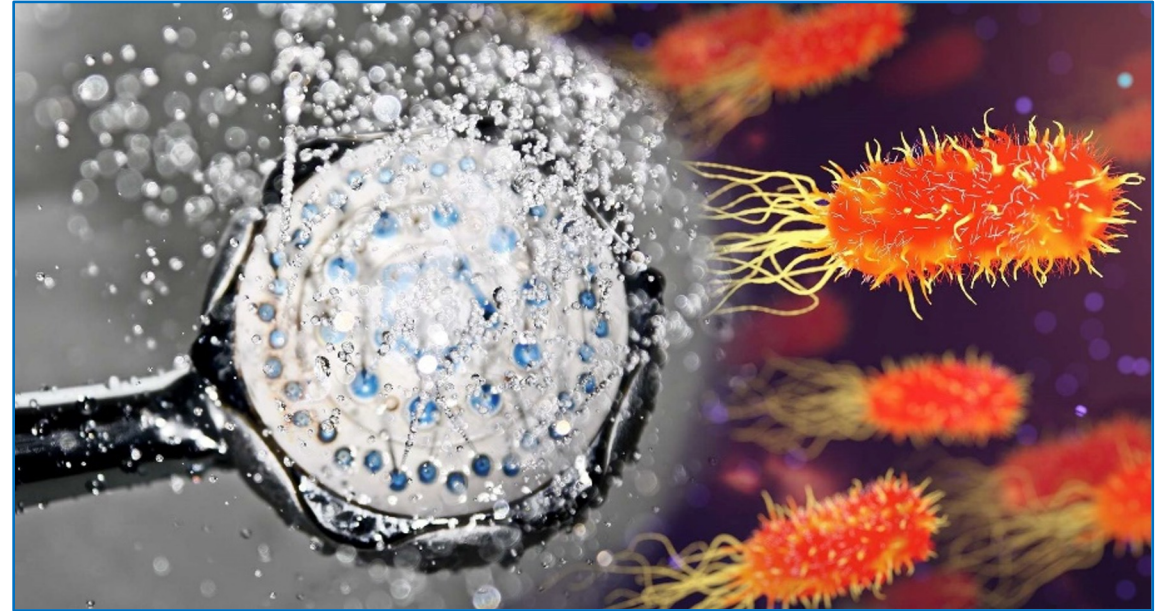
Industrial buildings, warehouses, schools, hospitals ...



Teplota 3 - pravá část	18.94 °C	19.81 °C	19.18 °C
Teplota 4 - vstup	19.63 °C	20.06 °C	19.75 °C
Teplota 5 - zasedačka	19.19 °C	19.88 °C	19.40 °C

Smart Sanitary

Remotely monitored and controlled sanitary equipment



Buildings and heating

Economical intelligent heating and heat regulation



Smart heating in detail...AUSTYN INTERNATIONAL

„Energy at the right time in the right amount in the right place,,

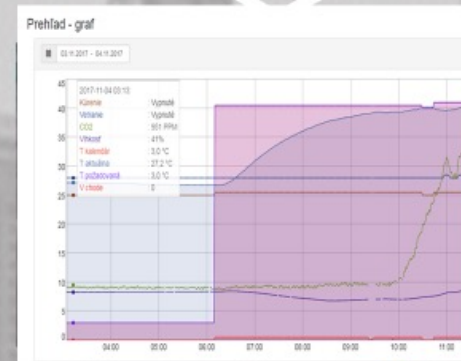
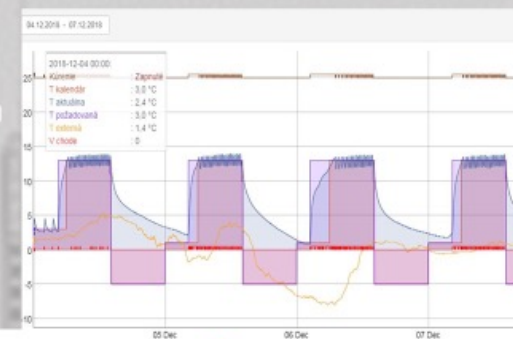


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ENERGY SAVING SOLUTION

HEAT SAVINGS THROUGH EFFICIENT PROCESS MANAGEMENT

- ▶ **POWER+**
 - ▶ Energy savings
- ▶ **INTIME, OUTTIME**
 - ▶ Intelligent start and end of heating
- ▶ **MONITORING GATE /WINDOWS**
- ▶ **AIR CONTROL** – ventilation according to air quality



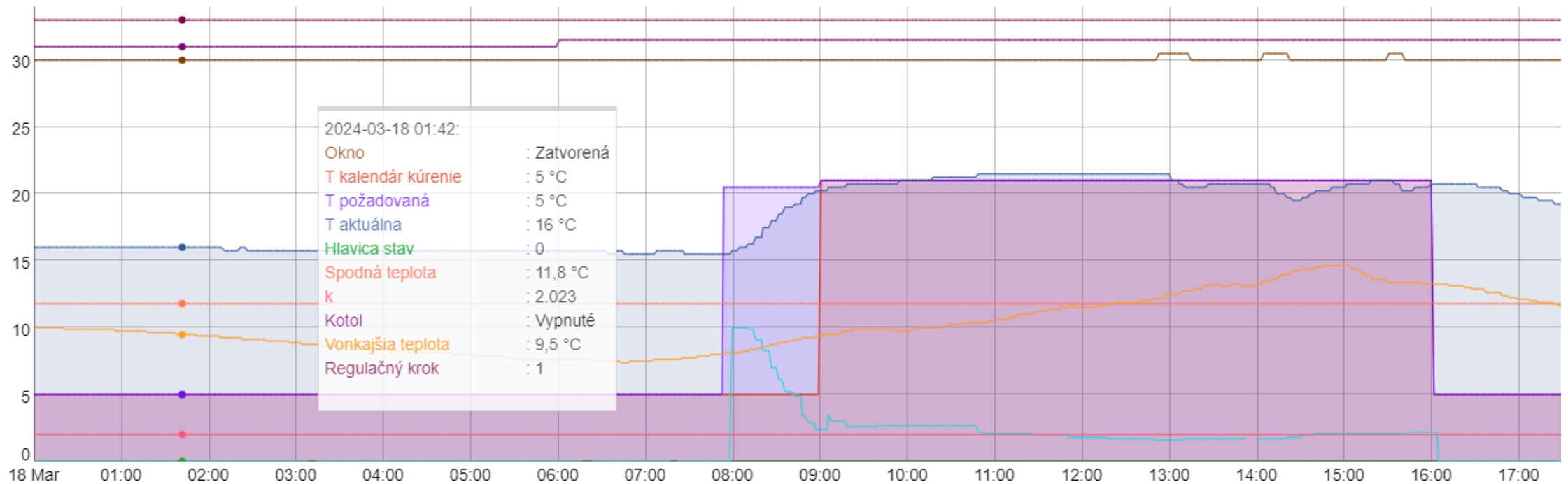
Energy at the right time , in the right amount

Smart heating management – INTIME, window/gate control, battery saving.

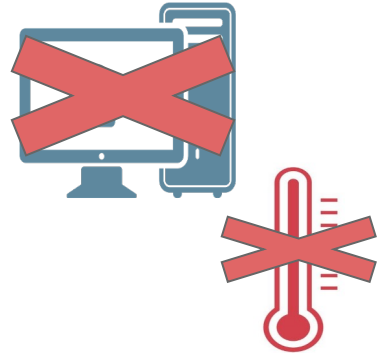
Budova / 1.2. AI - Obchodné

Kalendár

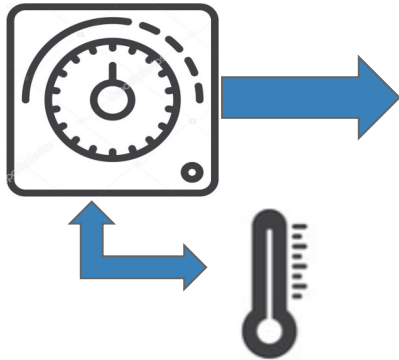
18.03.2024 - 18.03.2024



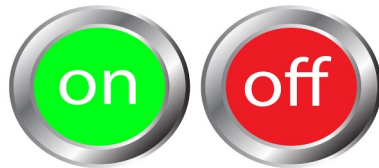
BEFORE



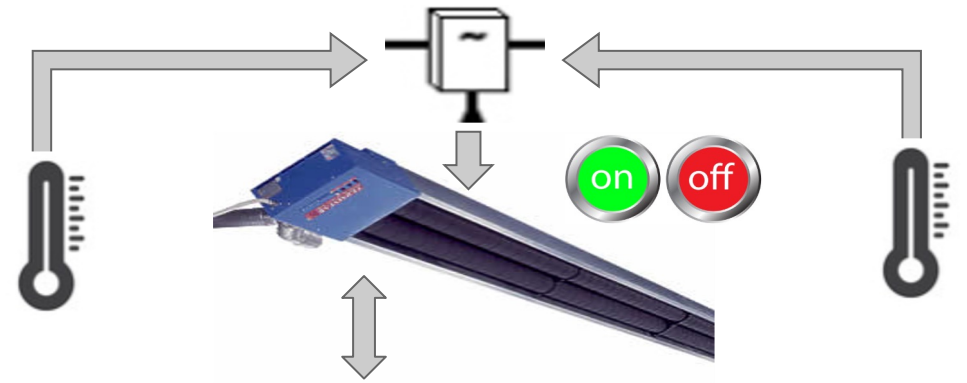
Local manually regulated thermostat for each hall



MaR - measured and regulated according to 1 thermometer



AFTER



Measuring and regulation

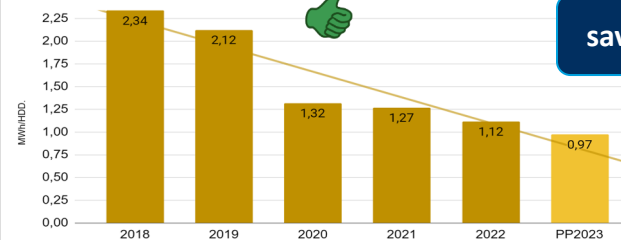


Self learning
2x thermometer for heater

Outside temperature measurement for regulation



Natural GAS KPI Heating - Total energy/hdd



saving 2 067 MWh/year

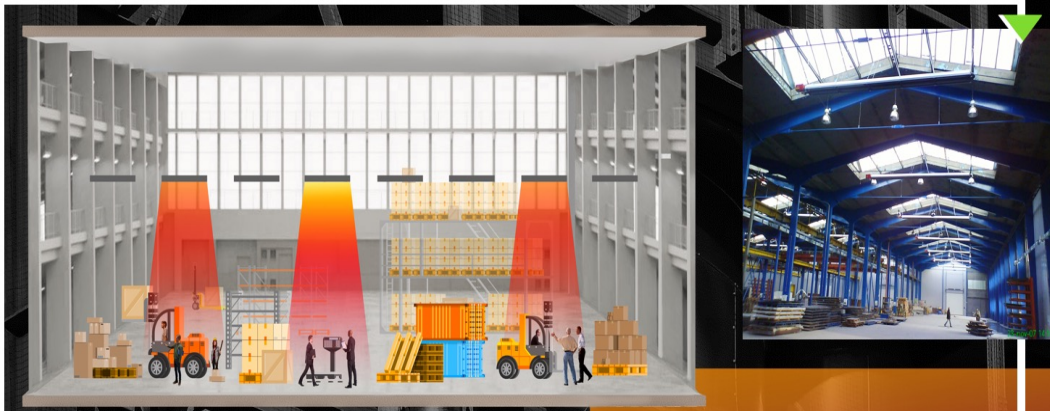
CO₂
376 174kg

BENEFITS:
79 k€


B/C
5,6

Energy at the right place

Smart heating management – Power+.




The diagram shows a cross-section of an industrial hall with three distinct heating zones. Each zone is represented by a vertical column of heat rising from the floor. The zones are located near a forklift, a person, and a stack of pallets. A green arrow points to the right, indicating the direction of the view.




A photograph of an industrial hall during workday, showing a large open space with a high ceiling and a skylight. The floor is covered with various materials and equipment.

ZONE HEATING
WORKDAY
IN THE INDUSTRIAL HALL



The diagram shows a cross-section of an industrial hall with a single heating zone. The heat is concentrated in one area near a forklift and a stack of pallets. A green arrow points to the right, indicating the direction of the view.



A photograph of an industrial hall during day off work, showing a large open space with a high ceiling and a skylight. The floor is mostly empty.

ZONE HEATING
DAY OFF WORK
IN THE INDUSTRIAL HALL

Energy at the right place

Smart heating management – Power+.



REFERENCES

MORE THAN 100 COMPLETE PROJECTS

- ▶ **Elementary School KALINČIAKOVA**
 - ▶ Installed RS AGS control system using zone regulation and progressive heating management.
 - ▶ More than 300 hot water radiators, a heat source and a previously unused hot air ventilation unit are regulated. Installed CO₂ measurement in classrooms and zone regulation of ventilation.
 - ▶ **Savings achieved: 40 %**
 - ▶ **Return on investment: 24 months**



REFERENCES

MORE THAN 100 COMPLETE PROJECTS

▶ WHIRLPOOL

- ▶ Control of infrared radiators by the RS AGS control system using zone regulation and progressive thermal management.
- ▶ More than 50 gas infrared heaters are regulated.
- ▶ **Savings achieved: 30 %**
- ▶ **Return on investment: 18 months**



Hala V, 4.08

