



CENTER OF
LOW ENERGY
BUILDINGS

At the very beginning in 2008

- ▶ **Directive 2010/31/EU on the energy performance of buildings**
- ▶ **The need of brownfield area revitalization in Pisek (CZ)**
- ▶ **Demand for common cooperation between businesses (large and SME's) and R&D institutions**
- ▶ **EU infrastructure financing of technology centres**



CLB Innovation network



CLB Innovation activities

- ▶ Technology transfer and R&D projects
- ▶ Matchmaking events and conferences
- ▶ Common commercial proposals
- ▶ Finding and hiring graduates
- ▶ Forming a formal structure (cluster) and workgroups



Use and storage of energy from renewable sources

- With trends in reducing the energy consumption of buildings, whether for legal reasons, economic or otherwise logically pragmatic reasons, have recently increased investments in new technologies and use of renewable energy sources.

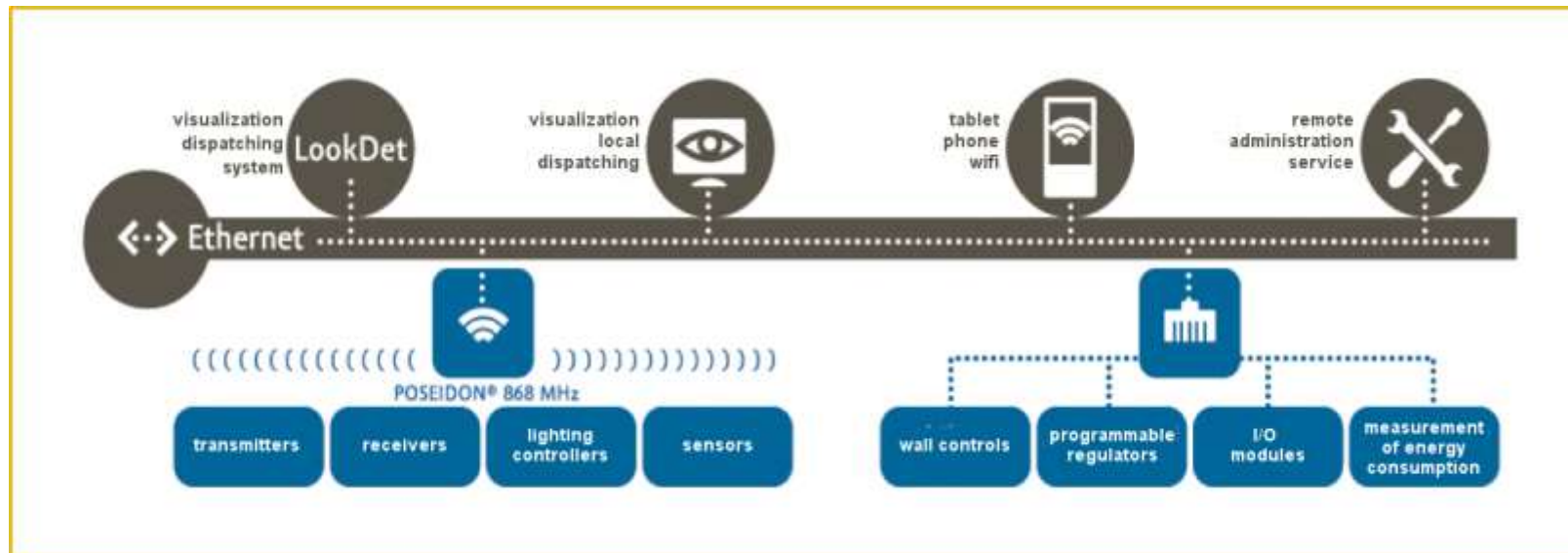


Use and storage of energy from renewable sources.

- It may be the source, for example, photovoltaic power, heat recovery, wind energy and others that are related to storage. Batteries will be used directly for the needs of the building, possible use of nearby buildings, public lighting, charging stations for electromobility, and others .



- These technologies are currently at the stage of specific applications, existing control systems are capable of managing several energy media. The absence of a suitable control system, led by the project partners to implement their own research and development in this direction.



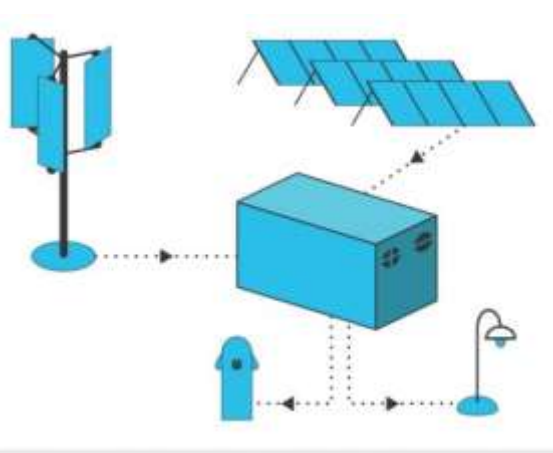
Installed Renewable Energy resources in CLB center

Installed renewable energies:

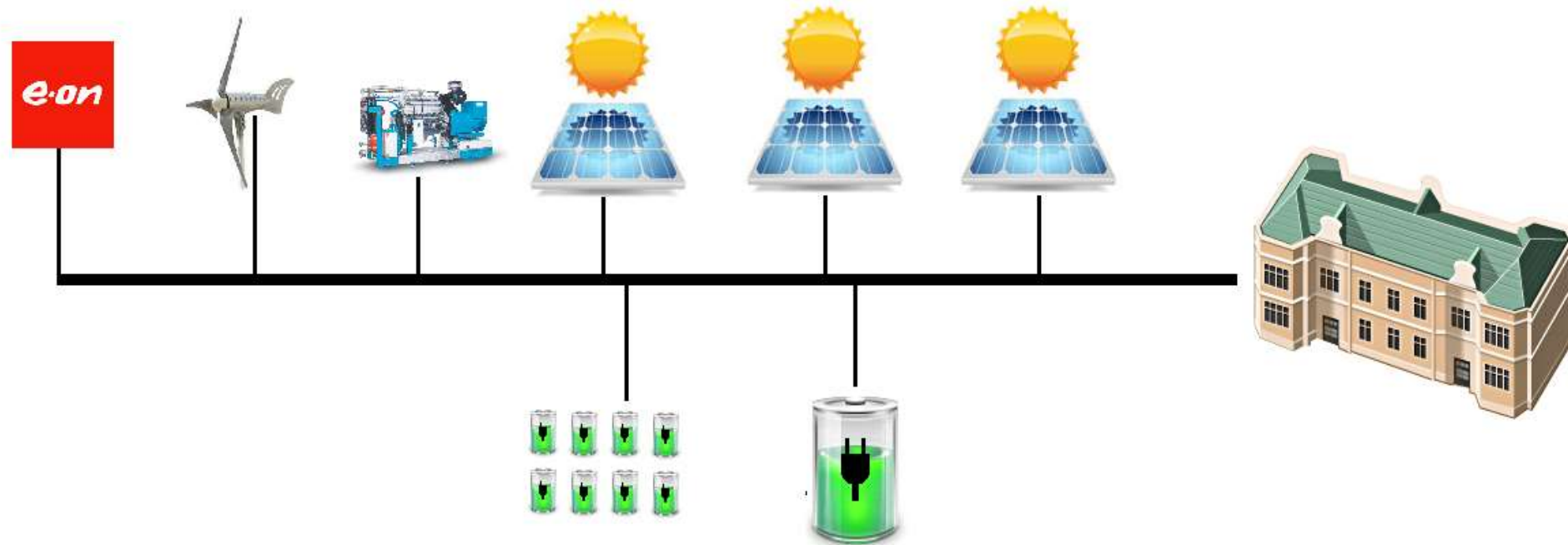
- Existing photovoltaic power plant with an output of 87kW
- New photovoltaic power plant on the facade of the output of 35 kW and a new hybrid photovoltaic plant on the roof of the Congress Centre 45 kW
- Being prepared are assembly of 13 No. wind turbines with an output of 5 kW, $13 \times 5 = 65$ kW
- Heat recovery, including storage in the underground tanks of capacity cca 700 m³
- Geothermal wells $6 + 1 = 7$ units (1 unit is well)

Storage of Energy

- Batteries of different parameters, one with a capacity of 800 kWh and two smaller capacity of 130 kWh
- Both the batteries and the windmills are independently managed by their software systems
- The building is managed by the "Building Management" system
- Prepared are sensors for measuring the total energy and the accumulation of data and storage



Schematic Diagram



Tasks of the Center

- One of the major tasks of the Centre and the entire project is the process of monitoring and evaluation, including data storage, which is the basis for future research in this sector. Data will be opened to other research ongoing in the CLB center.
- The center is also equipped with a traditional source, such as the gas cogeneration independent unit, which can produce 20 kW of electrical energy and 40 kW of heat for the building.

Modern control systems and cooperation

- Geothermal wells and hybrid photovoltaic plant are sources for heating or cooling of the building, this system is of course connected to the heating system of the building.
- For the modern regulation it is therefore necessary to devote intensive research in to cooperation of all built-in systems and their appropriate synergies.

The end of the presentation

Thank you for your attention

RG Group, a. s.
Budějovická 255
397 01 PÍSEK

<http://www.clbpisek.cz>