DESCRIPTION OF THE HaaS /Heat-as-a-Service/ SERVICE AND HOTEL BUILDING MANAGEMENT SYSTEM

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Popular hotel heating systems

In Europe, hotels, due to their specific nature and size, often use central heating systems, which ensure even heat distribution throughout the building. There are several types of central heating commonly used in the hotel industry.

Central heating systems are the most common solution in hotels due to their ability to provide consistent and uniform heat throughout the facility. There are two main types of central heating systems:

Hydronic (water) systems use boilers to heat water, which is then distributed throughout the building via pipes to radiators or underfloor heating systems.

Forced air systems use furnaces to heat air, which is then distributed through a network of ventilation ducts.

Popular hotel heating systems

Heat pumps offer an energy-efficient alternative to traditional hotel heating systems. They operate by transferring heat from one location to another, rather than generating heat. However, heat pumps are an expensive solution.

Air-source heat pumps extract heat from the outside air and transfer it to the building's interior. They are suitable for moderate climates and can significantly reduce energy consumption.

Popular hotel heating systems

Ground-source heat pumps extract heat from the ground, offering higher efficiency and stable performance regardless of the outside temperature. They require more extensive installation but can provide significant long-term savings.

Cogeneration systems (CHP), also known as combined heat and power (CHP), simultaneously generate electricity and heat from a single fuel source. CHP systems are particularly effective in hotels that have high year-round heating and electricity demands, such as hotels with pools, spas, and restaurants.

Underfloor heating provides a luxurious and comfortable heating solution for hotel rooms and common areas. These systems can be water-based or electric, with heating elements installed beneath the floor surface.

Radiant Heating Panels

Thermal comfort of hotel guests and related problems

Lack of thermal comfort,

too low or too high temperatures, and problems with heating and cooling systems are common problems in hotels. The resulting increase in energy consumption and high heating and cooling costs pose a significant challenge for many hotel owners.

Heating Costs:

Incorrect energy distribution across individual appliances translates into a lack of thermal comfort and generates unnecessary energy consumption, leading to high heating and cooling costs.

Heating costs and related problems

During a typical hotel day, rooms are used depending on reservations and the number of hotel guests. During other periods and throughout the day, the rooms are unoccupied. This means that the vast majority of the time, the rooms are not in use, but they must be heated.

The question arises: is it advisable to maintain a constant temperature in the rooms during the heating season that ensures thermal comfort for hotel guests?

Does lowering the room temperature outside of hotel guest hours and then restoring it result in savings in thermal energy consumption?

And if lowering the temperature proves appropriate, when should it be restored so that thermal comfort is achieved when hotel guests arrive?

Problems with thermal comfort

Overheating or underheating of rooms is caused by poor energy distribution among individual receivers.

Variable heating and cooling demand throughout the year and the large number of rooms in a building pose a significant challenge to the proper operation of the entire system. It is quite difficult to ensure that all heat (and cooling) receivers have proper flow.

Another problem is the lack of adaptation to heating and cooling demand, depending on hotel occupancy and external conditions.

The largest contributor to heating costs with a central system is the inability to zone individual rooms, rather than the need to heat the entire building.

DESCRIPTION: ZONE HEATING SYSTEM

We offer a zoned building heating system that provides wall-mounted room heating using our own heating panels or transforms hotel room walls into heat emitters.
The decorative heating panels are mounted on the walls inconspicuously, as they are only 4mm thick.
Another solution: applying a heating layer to the walls of the rooms, providing flexible solutions and a concealed heating system.
Heating savings come from using a different heating method than convection and air heating, as the panels or walls act as heat emitters.
Additional savings come from the ability to zone rooms. A zoned heating system is an innovative solution that allows for independent temperature control in different rooms or zones of the building, instead of relying on a single central thermostat.
This system increases user comfort by allowing individual temperature settings based on hotel occupancy and provides significant energy savings by heating only those areas that are currently in use and require heat.

How does a zoned heating system work?

ZONE HEATING SYSTEM

Zoning: The building is divided into independent heating zones.

Measurement Devices: Thermostats, temperature, humidity, and air quality (CO2) sensors are placed in each zone to monitor room parameters.

Smart Control: These devices communicate wirelessly with the main controller and send a signal to the heating device to activate it when the temperature drops below the set point.

Reaching the Set Point: When the temperature in a zone reaches the required value, the system receives a signal to turn off the heating and end the operation of the heating device for that zone.

Key benefits of zoned heating

High comfort: Allows for perfect temperature adjustment to occupant preferences in each room.

Energy savings: Reduces energy consumption because heat is delivered only where needed, leading to significant savings.

Precision: Enables highly accurate temperature setting and maintenance in individual zones.

Flexibility: Users can program temperature schedules, lowering temperatures in infrequently used rooms or when hotel guests are absent.

The zoning system is ideal for use in private homes, but also in commercial buildings, offices, schools, hospitals, hotels, and religious buildings, where comfort and energy efficiency are equally important.

Intelligent control by the system

Ardena offers intelligent building solutions that provide control, comfort, and energy savings by automating climate and air quality management.

Possibilities include energy savings of approximately 35%, reduced CO2 emissions, increased occupant comfort through balanced temperature and humidity, and improved indoor air quality through CO2 monitoring and control.

Users can utilize features such as automatic scheduling, geolocation control, and detailed energy consumption analysis to efficiently manage entire buildings or building complexes.

Automatic integration of building controls is possible by downloading weather forecasts from the internet.

Key Features and Capabilities

Energy Savings:
By collecting consumption and occupancy data, Ardena enables users to optimize HVAC system energy consumption, leading to significant reductions in monthly energy costs.

Intelligent Automation:
Intelligent automation capabilities enable the activation of various algorithms based on user expectations.

Scheduling:
Users can set daily, weekly, and hourly schedules for devices to operate at specific times, adjusting temperatures and operating modes for optimal comfort and efficiency.

Geolocation:
The system can automatically turn devices on and off based on the user's building location and weather forecasts, ensuring comfort and energy savings when the building is unoccupied.

Key Features and Capabilities

Water Blockage:

Water blockage is possible due to leaks or flooding.

Water consumption monitoring is also possible.

Hotel Room Heating Off:

Hotel room heating can be automatically turned off or reduced when guests leave the room.

Hotel Room Lighting Off:

Room lighting can be automatically turned off when sunlight intensity increases.

Environmental monitoring and control

Air Quality: Devices monitor temperature, humidity, and indoor air quality, including CO2 levels, to ensure a healthy environment and enable demand-driven ventilation.

Temperature and Humidity: Sensors provide precise readings, enabling optimized indoor climate control to enhance occupant comfort.

Data-Driven Analytics: Dedicated software provides detailed analysis of energy consumption, device activity, and environmental data, enabling in-depth analysis and reporting.

Sustainability: Ardena solutions help buildings achieve sustainability goals by reducing energy consumption and carbon footprint.

Environmental monitoring and control

Long-lasting devices:

All devices are battery-powered (no cables or wall-breaking required) and wirelessly controlled.

The devices are designed for extended battery life, with some lasting up to 10 years, minimizing maintenance and operating costs.

Business model Heat as a Service /HaaS/

Heat-as-a-service (HaaS) refers to a model in which a specialized provider owns, installs, finances, and maintains the property's heating systems, and the property owner pays a predictable fee to receive heat as a service, without the capital costs or operational complexities associated with owning and operating the system.

This approach reduces financial and operational risk for property owners, improves energy efficiency, and aligns with environmental goals by offering a streamlined, sustainable, and predictable heating solution.

How the Heat-as-a-Service (HaaS) Model Works in Property Management

The supplier manages everything: A dedicated company, as a specialized supplier, takes full responsibility for the heating system's lifecycle.

No capital investment: Property owners avoid the significant upfront investment required to purchase and install heating equipment.

Predictable costs: Property owners pay a maintenance fee for the heating system, providing cost certainty and freeing up capital for other investments.

Operational expertise: The supplier handles all aspects of the operation, maintenance, and optimization of the heating system.

Focus on core business: Property owners can focus on their core business without having to manage a complex heating infrastructure.

Key benefits for property owners and managers

Risk Reduction: Eliminate investment and operational risks associated with heating systems.

Increased Energy Efficiency: Providers can implement modern, efficient, and low-emission technologies, potentially improving the energy efficiency class of properties.

Sustainability and ESG Goals: Compliance with sustainability and ESG (environmental, social, and corporate) goals by reducing carbon footprint.

Increased System Efficiency: Leverage the Internet of Things (IoT) and real-time data for predictive maintenance and performance optimization.

Scalability and Flexibility: Adaptable to a variety of property types, from residential to large complexes.

Arrdena.

Key benefits for property owners and managers

Applications:

Modern heating solutions:
ARDENA offers integrated heating solutions, planning, financing, and operating systems, focusing on sustainability and predictable financing models.

Heating subscription:
The "heating subscription" model is an example of a HaaS model, where the service provider owns and maintains the heating system.

Integrated solutions:
For larger complexes or entire facilities, the "use, not own" principle of energy as a service can reduce risk for property owners while improving safety.

Ownership:
If interested, the HaaS service can be suspended and the system transferred to the property owner.

Cooperation offer

ARDENA can provide HaaS services or thermal modernization of the building and change the heating system to zone heating with the possibility of financing the project for a period of 3 to 5 years depending on the size and complexity of the project.

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