USING SMART TECHNOLOGIES (IOT - INTERNET OF THINGS) TO IMPROVE THE EFFICIENCY OF HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS

Rasulov Javohir

Graduate student at Tashkent University of Architecture and Civil Engineering, Uzbekistan

Exchange student at Hongik University, South Korea

javohirrasulov7922@gmail.com

Annotation: This article discusses using smart technologies (iot technologies) in order to improve the efficiency of engineering communication (heating, ventilation and air conditioning) systems of buildings based on South Korean experience. Examples of using smart technologies to improve the efficiency of engineering communication systems of public and industrial buildings. The article presents examples of buildings and structures in Korea that use Internet-controlled smart technologies (IOT technologies) to improve the efficiency of heating, ventilation, and air conditioning systems. The article also examines the methods and approaches used to increase the efficiency of engineering communication systems of buildings in Korea, including building codes, engineering evaluation, and creating comfortable living and working conditions. Overall, the article provides a useful overview of efficient design and construction of heating, ventilation and air conditioning systems in South Korea.

Keywords: heating system, ventilation system, air conditioning system, IOT technologies, engineering communication systems of buildings,

The HVAC (heating, ventilation, and air conditioning) system is an essential component in modern buildings, responsible for regulating the indoor environment and maintaining the comfort of occupants. With the emergence of the Internet of Things

(IoT) technology, HVAC systems have become smarter, more efficient, and easier to control. In developed countries, the use of smart technologies in engineering communication systems has begun and is showing results. For example, Japan, United States of America, Turkey, Germany, China, Russia and other countries. These are just a few examples of countries that have successfully used smart technologies in heating, ventilation and air conditioning systems. Let's take South Korea as an example.

IoT-enabled HVAC (Heating, Ventilation, and Air Conditioning) systems have become an essential component of modern buildings in South Korea, regulating indoor environments and ensuring occupant comfort. With the advent of IoT technology, HVAC systems have become even smarter, more efficient, and easier to control.

IoT-based HVAC systems have the capability to connect to the internet, allowing remote monitoring and control of temperature, humidity, air quality, and energy consumption. These systems gather data from sensors, actuators, and controllers, enabling decision-making and optimizing the operation of HVAC equipment.

One of the main advantages of IoT-enabled HVAC systems is their ability to adapt to changing environmental conditions and user preferences. For example, when there is a change in temperature or occupancy levels, HVAC systems can adjust the temperature and ventilation speed accordingly, ensuring optimal comfort and energy efficiency.

IoT-enabled HVAC systems also offer benefits in terms of early detection of issues and specialized maintenance. By analyzing data from sensors and other sources, these systems can identify and diagnose problems before they become major issues, reducing downtime and maintenance costs. Furthermore, by providing real-time insights into energy consumption and equipment performance, IoT-enabled HVAC systems can optimize energy usage and reduce carbon emissions.

In conclusion, IoT-enabled HVAC systems are essential for modern buildings in South Korea, providing comfort, energy efficiency, and optimized maintenance. With the growing adoption of IoT technology, HVAC systems are becoming even more

advanced, reliable, and user-friendly, contributing to the sustainable development of buildings and cities.

Many buildings in South Korea have adopted IoT technologies for their HVAC systems to improve energy efficiency, comfort, and maintenance. For example:

• Seoul, the **"Smart City Air Management System"** project was launched in 2019 to enhance air quality and reduce energy consumption by deploying IoT sensors and data analytics in HVAC systems.

• In addition, many new buildings in South Korea are being constructed with IoT-enabled HVAC systems. For instance, the "**Smart and Green Building**" project in Songdo, a new city near Incheon, is a high-tech, sustainable urban development that features IoT sensors and controls in its HVAC systems to improve indoor air quality and reduce energy usage.

• Furthermore, IoT-enabled HVAC systems have been implemented in various types of buildings, including commercial buildings, hospitals, and educational institutions. For example, the **Incheon International Airport Terminal 2** has installed IoT-enabled HVAC systems to regulate air quality and temperature in real-time, while the **Ewha Womans University** in Seoul has implemented an IoT-based HVAC system to optimize energy consumption and provide a comfortable learning environment for students.

REFERENCES

1. A New Communication Standard Enabling Future Smart HVAC Systems In Smart Buildings. Originally Published on 26 July 2020

2. https://www.softeq.com/blog/how-iot-based-hvac-systems-help-improve-energy-efficiency-in-commercial-buildings

3. ChatGPT, GPT-3.5 HVAC