

Energy Optimization: Why Hospital Steam Plays a Crucial Role

Data shows how Hospital Steam Systems are vital for energy optimization and energy efficiency measures

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EXTENSIVE ENERGY USE

Hospitals tend to have a high energy use intensity (EUI) compared to other building types, nearly three times the average commercial building (Della Barba 2014). They are currently the second most energy-intensive building type in the U.S., with heating, cooling, and ventilation (HVAC) comprising 52% of their energy use (Taylor and Arch 2016).

How Hospital Steam Systems are Vital

Hospitals rely on steam boiler systems for various purposes, such as heating, humidification, and sterilization. Here are some of the main applications of boilers in hospitals and why they are indispensable.

HEATING

One of the primary functions of a steam system is to provide heat to the whole building. This is especially important for hospitals, where patients and staff need to be comfortable and safe at all times. A general guideline is between 20°C and 24°C (70° to 75°F). Cooler temperatures help keep bacteria growth at a minimum. A steam boiler system can efficiently distribute heat throughout the facility, even across multiple floors. A boiler system is also more economical than other heating options, as it can adjust its output according to the demand.

HUMIDIFICATION

Another vital role of a steam boiler system is to maintain the optimal level of humidity in the hospital environment. The relative humidity inside a hospital should be between 30% and 60%



Sustainability and energy optimization efficiency data monitoring for healthcare administrators

depending on the specific requirements. This is because certain pathogens, such as viruses, bacteria, and mold, can thrive in either too dry or too moist conditions. A boiler system can help prevent the spread of these harmful agents by producing steam that regulates the humidity in the air. This way, the hospital can provide a safe and healthy atmosphere for both patients and staff.

STERILIZATION

A third essential use of steam boilers in hospitals is to sterilize medical equipment, tools, and instruments. These items need to be free of any germs or contaminants. Of all the methods available for sterilization, moist heat in the form of dry saturated steam under pressure is the most widely used and the most dependable. Steam sterilization is nontoxic, inexpensive, rapidly microbicidal, sporicidal, and rapidly heats and penetrates fabrics. A boiler system can help achieve this by generating steam that reaches high temperatures and pressures, killing any microorganisms that may be present. To perform steam sterilization, four factors are important: steam quality, pressure, temperature, and time. The steam should be dry / saturated, and the pressure should be high enough to reach the desired temperature. The most common temperatures are 121°C (250°F) and 132°C (270°F), and the exposure time depends on the type of item and the sterilizer. Steam heat is often a safer way to sterilize than using potentially harmful chemical agents. A boiler system can also supply steam to autoclaves that use steam to sterilize medical waste and other materials.

FOOD SERVICES

A fourth area of the hospital that relies heavily on the boiler system is the kitchen. The kitchen staff has to prepare and serve meals for hundreds or thousands of people every day, including patients, staff, and visitors. This requires a lot of hot water for cooking, cleaning, and sanitizing the food and utensils. The boiler system provides the hot water and steam needed for these tasks, as well as for heating the kitchen space. Without a reliable and efficient boiler system, the hospital kitchen would not be able to function properly.

LAUNDRY SERVICES

One of the hidden but essential aspects of hospital operations is the laundry room. Every day, hospitals generate tons of dirty linen that need to be washed, dried, and sanitized. This includes patient gowns, bed sheets, blankets, towels, and more. To ensure that the laundry process meets the high standards of hygiene and infection control, hospitals need to use hot water and steam in large quantities. That's why many hospitals have a dedicated boiler system for their laundry room, separate from the main steam plant that serves other purposes. The laundry boiler system is responsible for producing enough steam to heat the water used in the washing machines and dryers.

HOW TO OBTAIN ENERGY SAVINGS IN HOSPITAL STEAM SYSTEMS

Healthcare Facilities Managers, Sustainability Directors and ESG Officers are always looking for ways to reduce energy in their facilities. As this article highlights, steam systems are essential for hospitals and healthcare facilities to function. Energy engineers know that healthcare facilities

can save energy, reduce costs, and reduce emissions without replacing existing steam system equipment. Minimizing radiant heat loss to improve efficiency is key. In the average Healthcare Facility, mitigating radiant heat loss in steam systems provides savings that are substantial and ongoing.

Shannon Global Energy Solutions has helped [healthcare facilities achieve their goals in energy efficiency](#), cost reduction and emissions reduction with high quality engineered [thermal blanket insulation systems](#) that are removable and reusable. For information about energy conservation measures, supporting data, payback periods, and hospital client case studies, contact info@shannonglobalenergy.com

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