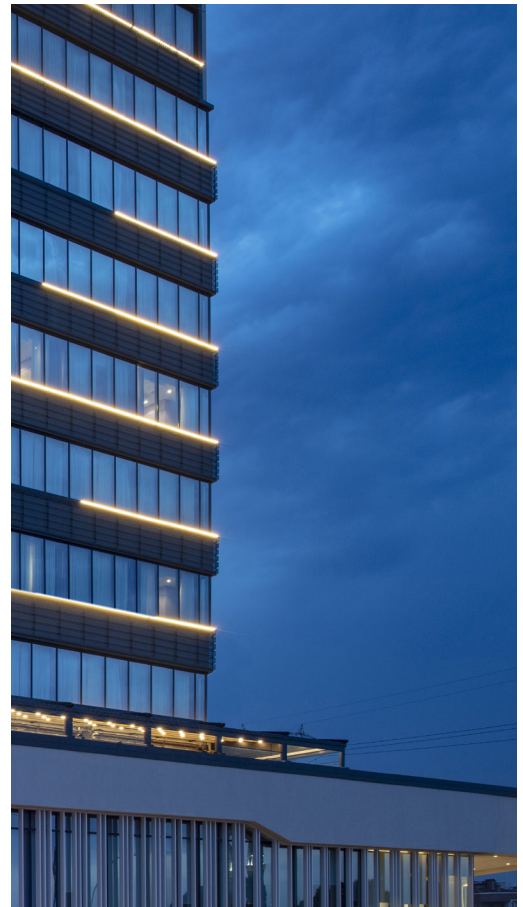
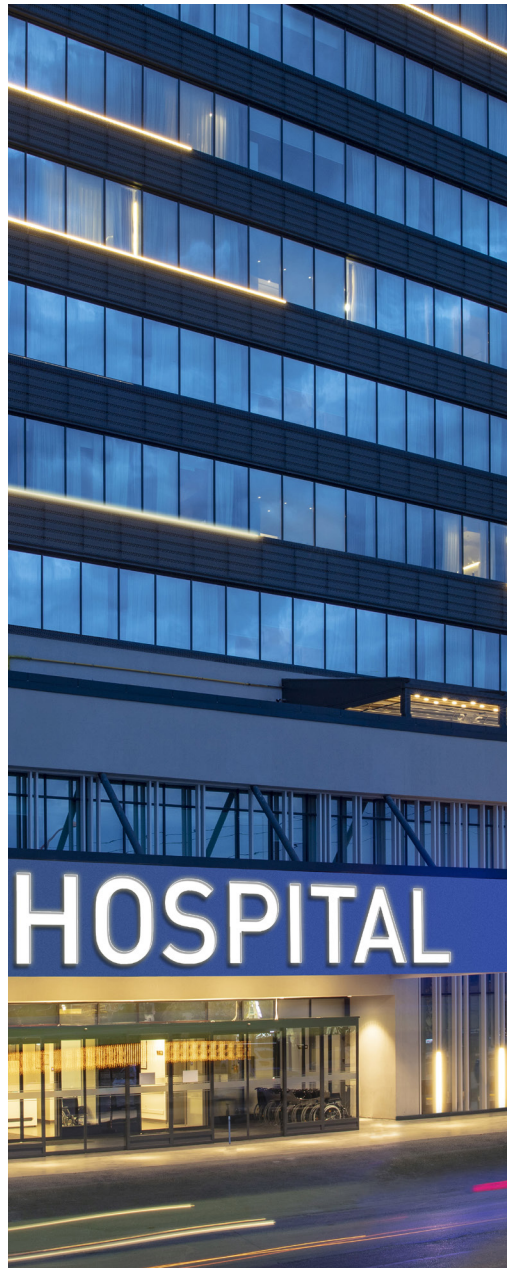


ARMACELL SOLUTIONS

Healthcare

Hospitals and Medical Centers are vital to the well-being of our communities. Saving lives depends on state-of-the-art medical devices but also high performing heating, cooling and ventilation systems. It's how the building keeps patients comfortable and preserves indoor air quality. Armacell offers Healthcare insulation solutions for environments where downtime is not an option.

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 **armacell**[®]
MAKING A DIFFERENCE AROUND THE WORLD



HEALTHCARE SOLUTIONS

Imagine repairing an engine on an airplane in flight. Incredibly, this situation is not unlike renovating a hospital HVAC system, if the hospital discovered that their systems had not been properly designed or implemented at the time of new construction. Although this may seem fantastic and exaggerated, you should stop and consider the critical impact of HVAC, and even plumbing systems, as they serve and support other critical life systems within the medical environment.

HVAC systems in a medical facility provide occupant comfort and safety as in any other building, but most importantly they support medical tasks and the promise of patient and staff health and safety. An HVAC system in a hospital, medical, or biomedical space should be implemented to assist in the control of infection, removal of harmful odors, reduction and dismissing of contaminants; all of which facilitate success in medical procedures, experimentation, and patient healing. Just as an airplane is built to take off and land, an HVAC system should be designed to help and heal.

Healthcare is one of the

Top 5

energy-consuming
building categories.



POPULARITY AND TRENDS

New and updated codes and regulations will be primary guides in designing hospitals, medical, and biomedical facilities. This is great news considering the complexity of need found through planning and preparing to construct these spaces. Although codes and standards provide guidelines and parameters in which an agile designer can operate, it helps to trust the systems and technologies you incorporate on a deeper level.

Adoption of newer HVAC and plumbing technologies to the hospital and medical construction project environment can be slow due to confidence in reliability. While VRF as a standalone system may not be conducive to indoor air quality standards, waste-energy recovery methods used with existing equipment may reduce hospital operations costs and increase system reliability. However, strategic planning of a dedicated outdoor air system, for example, could provide the means to capture lost energy while also supporting the increased usage of VRF and chilled-beam systems.

As code and standard requirements change, or the list of needs in a medical construction project grow throughout a design period, it's comforting to know that there are basic processes and systems supporting the complex functions of each room. Air and water must be contained;



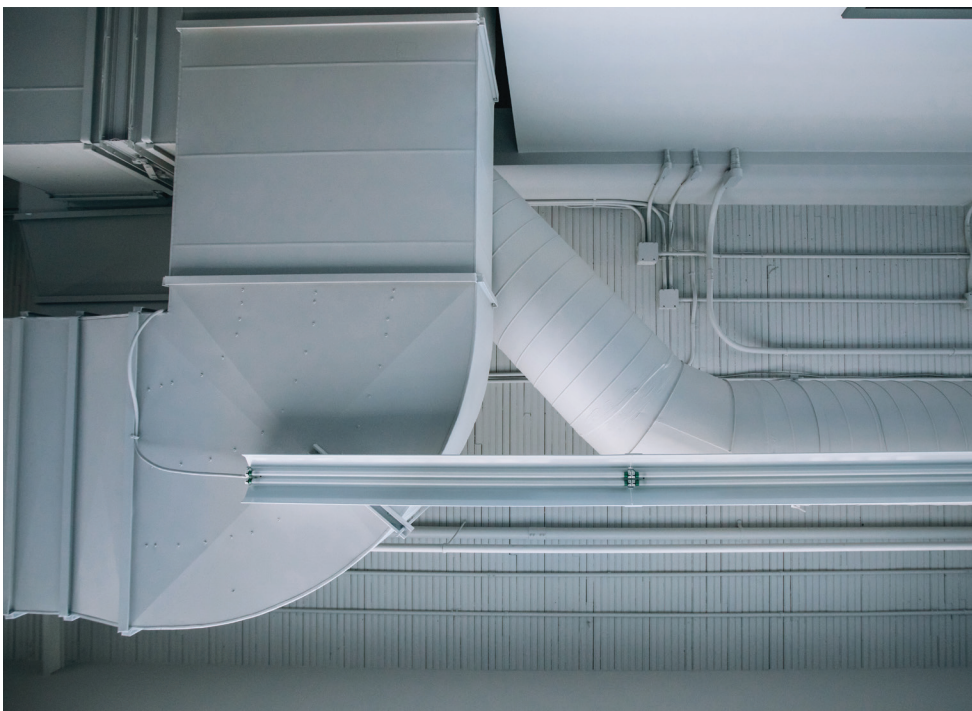
gas and heat must be distributed. Seemingly simple resources like these still power the demand for new technology, automated processes, and advanced treatment practices: all life-saving elements that enter the hospital environment. Properly securing and insulating these core elements is the first step in supporting doctors and nurses as

they save lives on a daily basis.

HEATING/COOLING METHODS

Filtration, room pressurization, outside-air usage, and specific humidification levels are significant design parameters which directly impact the capability of a medical facility. Load envelope considered in other types of buildings is merely a starting point for these facilities. Specialty equipment such as refrigerators, magnetic resonance imaging machines, sterilization ovens, and biological sampling analysis equipment are par for the course in any major hospital. Air flow, humidity, and pressure differentials, per individual equipment manufacturer specifications, must be well thought out in design in order to sustain proper functioning of these items.

Almost every room in a hospital or medical facility is appropriate for air conditioning of some kind. Unconditioned spaces still require air recirculation but also have to accommodate the infrastructure of HVAC and plumbing passing through their walls, ceiling, or floors. Grease vents and ducting are still required in the kitchen and cafeteria because staff and visitors need to eat in a room specially designed to prevent the recirculation of smoke originating in the kitchen without interfering with the room's exhaust.





Patients' rooms are a needed haven for those infirmed and away from their homes. The rooms may typically feature a standard dual duct or VAV system, but it is important that the room be quiet, resist mold growth, and provide specific temperature management. Patient rooms designed for isolation are even more critical needing relative pressurization atmospheres to the surrounding halls and rooms. Sealing a room to maintain pressurization is difficult, but necessary. Total solution insulation systems that can insulate the envelope and protect patients and medical staff are the only option.

Hospitals and medical facilities are places meant to contain, heal, shelter, and discover. Their design for sustainability and capability pushes the most experienced designer to use their widest breadth of skills. Proper humidity levels in operating and cystoscopy rooms are not just requested, it is expected without question. Temperature control precision to +/- 2° in critical spaces such as laboratories and labor rooms is not on a wish list, it is a design set point. While the HVAC equipment addresses these demands, insulation facilitates the end goal. Designing a system with the most protective and productive insulation barrier is insurance any designer can afford.

INNOVATIONS

Hospital and medical facility construction continues to grow year over year. Demands

created by population shifts in age and preference have refocused hospital goals towards increasing patient comfort and satisfaction through design. Fewer medical office buildings are being built on campuses while retail space and patient-family comfort is on the rise. Facilities must be built to meet requirements of today, but also accommodate the technology and capabilities of tomorrow.

While healthcare construction standardization is on the rise it is also important to ally yourself with technology providers who offer entire solutions. Providers who grow and change with their environments create opportunities to accommodate the future and address the present. 3D printing, advanced robotics, and wearable tech will continue to blossom and impact the medical industry. Meeting the resource demands of these new technologies can be a daunting task. At Armacell, innovation is at the heart of what we do.

INSULATION FOR HOSPITALS AND MEDICAL CENTERS

Every aspect of a hospital, medical, or biomedical facility requires consistency and reliability, which means they require the proper insulation. Armacell's insulation systems are ideal for insulating chilled water piping, chillers, cooling tanks and air handlers. Insulating pipes, refrigeration

lines or cooling systems not only promotes energy efficiency, but it also prevents condensation on below-ambient temperature surfaces—a critical issue for hospital and medical facilities.

Specifying Armacell Solutions for hospitals and medical facilities is a smart move. Armacell uses a fiber-free, formaldehyde-free, low VOC formulation for its foam insulation, which makes it an excellent option for any environment, eliminating particulate that can jeopardize air quality and equipment. A closed-cell structure also prevents moisture ingress and naturally resists the growth of mold and mildew. Most importantly, the flexible nature of Armacell's insulation means it installs easily in tight spaces in floors, walls or ceilings. You can count on Armacell insulation retaining its thermal integrity over time, lasting well into your future. ■





HEALTHCARE FACILITIES RELY ON OUR PROVEN SOLUTIONS

PROJECTS WON

- **AdventHealth Hospital at BluHawk** – Overland Park, KS
- **Advocate Aurora Health Care Medical Development** – Mount Pleasant, WI
- **Atrium Health Main Campus (Expansion)** – Charlotte, NC
- **City of Hope Outpatient Cancer Center & Parking Structure - Phase 1** – Irvine, CA
- **Duke University Hospital (Addition)** – Durham, NC
- **Grand Island Community Hospital** – Grand Island, NE
- **Hawaii State Hospital New Patient Facility - Phase 1** – Kaneohe, HI
- **Hopital Enfants Jesus - Phase 1** – Quebec, Canada
- **Kaiser Permanente South Nova Medical Center & Parking Garage** – Woodbridge, VA
- **McLaren Greater Lansing Regional Medical Center** – Lansing, MI
- **Mohawk Valley Health System Hospital** – Utica, NY
- **Mt. Washington Pediatrics - Research Building** – Baltimore, MD
- **Ozarks Medical Center MOB/Women's Center/Pharmacy** – West Plains, MO
- **Peace Arch Hospital Expansion Project** – White Rock, BC
- **Penn Patient Pavilion** – Philadelphia, PA
- **Penn State Health Lancaster Medical Center** – Lancaster, PA
- **Shodair Children's Hospital** – Helena MO
- **TMC3 Helix Collaborative Biomedical Research Building** – Houston, TX
- **UNC Hospitals New Perioperative Tower** – Chapel Hill, NC
- **University of Pennsylvania Health System Medical Facility** – Radnor, PA
- **UNM Hospital Patient Tower & Parking Structure** – Albuquerque, NM
- **UPMC Vision & Rehabilitation Hospital at Mercy** – Pittsburgh, PA
- **VCU Adult Outpatient Pavilion** – Richmond, VA
- **WellStar South Cherokee Campus** – Holly Springs, GA
- **Winship Cancer Institute at Emory Midtown Tower** – Atlanta, GA

SMART SOLUTIONS FOR YOUR BUSINESS

Armacell's Solutions Portfolio groups insulation products into comprehensive packages aimed at making the specification of the right insulation for mechanical systems easier than ever before. Mechanical engineers, insulation contractors, building owners, or distributors can easily identify the best insulation products for use in an air plenum, on HVAC/R mechanical piping, chilled, or plumbing – the key places where insulation is critical to the performance of the equipment. Packages offer two levels of cost and service: High and Superior Performance with a 10- or 15-year warranty.

All data and technical information are based on results achieved under typical application conditions. It is the customer's responsibility to verify if the product is suitable for the intended application. The responsibility for professional and correct installation and compliance with relevant building regulations lies with the customer. By ordering/receiving product you accept the Armacell General Terms and Conditions of Sale applicable in the region. Please request a copy if you have not received these.

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ABOUT ARMACELL

As the inventor of flexible foam for equipment insulation and a leading provider of engineered foams, Armacell develops innovative and safe thermal and mechanical solutions that create sustainable value for its customers. Armacell's products significantly contribute to global energy efficiency making a difference around the world every day. With more than 3,300 employees and 27 production plants in 19 countries, the company operates two main businesses, Advanced Insulation and Engineered Foams. Armacell focuses on insulation materials for technical equipment, high-performance foams for acoustic and lightweight applications, recycled PET products, next-generation aerogel technology and passive fire protection systems.

For more information, please visit:
www.armacell.us

