

ARMACELL SOLUTIONS

Education

At 12% of all nonresidential construction, schools and universities are a significant portion of all building done in the US each year. Whether the students are K-12 or part of our institutes of higher learning, all educational buildings need to have high-performing HVAC systems. Insulation that saves energy and preserves indoor air quality is a must. Armacell's innovative insulation solutions for schools and universities make us first in our class.

www.armacell.us



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



EDUCATION SOLUTIONS

If you ask a college or high school student what matters to them, chances are you will get a nontraditional answer. This is because the students of today are exceedingly nontraditional when compared to just a decade ago. Students today are unyieldingly passionate and forward thinking, but steady themselves on securing education and evolving through their relationships. For a nontraditional student, only a nontraditional school will do.

Growth is a cornerstone tenant in education. Growing minds seek growth-enabling technologies which in turn demand growth-enabling resources. Utilizing this concept as a reference point in education building construction design will help round out envelope management considerations and secure long term reliability. If you know where you're growing, you have a better chance of preparing for the journey.

Educational construction is the third largest sector of nonresidential building and has been steadily growing. As such, system designers and specifiers are looking for innovative solutions to meet the demands of their HVAC systems.

POPULARITY AND TRENDS

Codes and regulations will be primary guides in designing educational facilities. This is great news considering the complexity of need found through planning and preparing to construct these spaces.

70 %

Of college students are non-traditional. They are not right out of high school anymore.¹



¹ Click this link to Source Information

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 education facility construction project environment can be slow due to confidence in reliability, or simple budget constraints. More traditional builds may include an AHU that mixes air in return airstreams for office space, dedicated units for large classrooms, and student unions or common areas that utilize a dedicated outdoor air system just for return air. However, strategic planning of a dedicated outdoor air system could provide the means to capture lost energy while also supporting the increased usage of VRF and chilled-beam systems.

As codes and standard requirements change, or the list of needs in an education facility 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, increased comfort in learning spaces, and cutting edge research laboratories: life-changing elements inherent to an educational environment. Properly securing and insulating these core



elements is the first step in supporting the growth of our educators and the students of tomorrow.

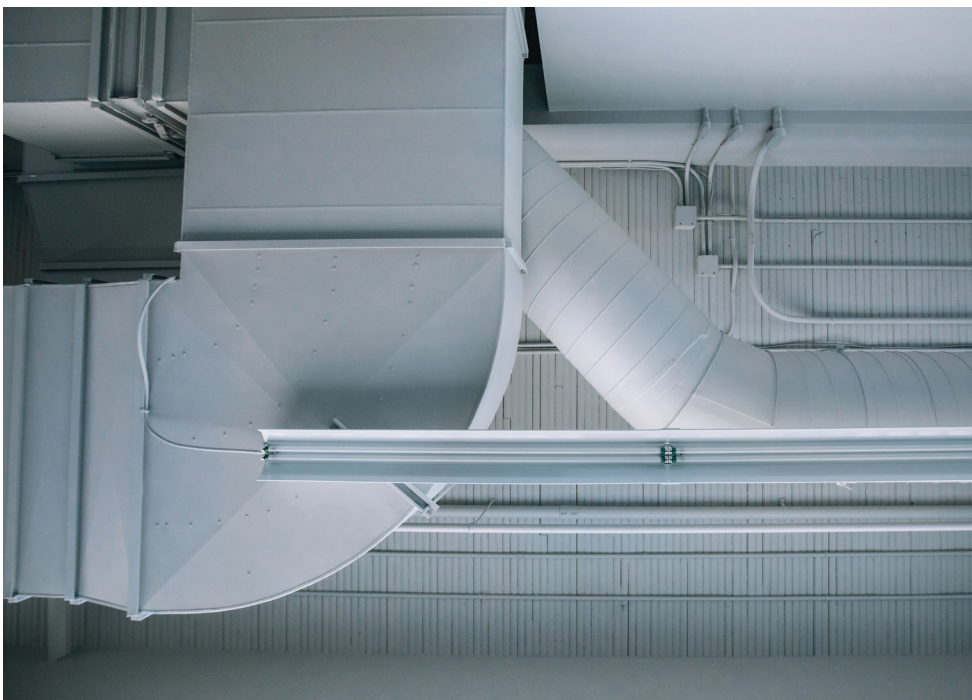
HEATING/COOLING METHODS

Heating and cooling challenges within education buildings are numerous. A new construction elementary school gym will

pose different challenges than a college dormitory renovation. Envelope requirements will vary per design but the end-goal of meeting efficiency and space requirements, while promoting the highest learning environment experience possible, is paramount. More and more each year, schools and universities pose significant challenges in occupational loads and building efficiency to meet the needs of future students.

School and university buildings could require a number of heating and cooling solutions operating as an integrated system. In particular, renovations force the marriage of old and new in a progressive environment. New construction should require planned renovation far in the future. If the equipment and insulation design isn't installed in a system, collaboration towards achieving maximum comfort and efficiency is difficult to produce. A top priority for school building design is management and efficiency of HVAC and plumbing systems. Simplicity in design, ease of installation, and immediate access for operational maintenance remain areas of particular importance.

Given the increased usage of varied ducting and plumbing across an education facility campus, issues of moisture intrusion reach





unmanageable levels during operation if not properly accounted for. If, for instance, insulation gets wet then that moisture could lead to mold problems that may go undetected for months or even years simply as a result of the physical constraints of construction envelope. Additionally, refrigerant piping is a constant culprit for condensation build up and even refrigerant leaks over time. As this piping traverses the inner workings of an auditorium or classroom hallway, the risk of moisture damage increases exponentially. Designing a system with the most protective insulation barrier is insurance any designer can afford.

As school buildings are filled with scores of different air-conditioning technologies, it is safe to assume that the noise from the fans and blowers inherent to these technologies will bring along unpleasant noises and acoustic ailments. While insulation can be used to preserve air quality and temperature, the acoustic benefits should not be taken for granted in designs promoting worthwhile learning environments. For example, air-handling units cooling a cafeteria require specific acoustic conditioning to maintain the acoustic comfort of occupants in an adjoining classroom hallway. Lining and wrapping ductwork with closed cell insulation helps manage audio frequencies specific to air-handlers and potential microbial growth common to open-cell insulation types.

INNOVATIONS

Topics like passive fire control, acoustic comfort, and increased integration of dissimilar technologies already present opportunities for innovation in the education facility design of today. As custom HVAC and plumbing solutions become increasingly sought after, designer reliability and consistency will become an increasingly important standard by which these facilities are developed.

LEED® certification is also increasingly popular. While it is a benefit for building owners and tenants, demanding limitations will be placed on technology selection and implementation. Appropriate selection of materials and equipment that may help qualify buildings for LEED certification is necessary if an owner wishes to achieve long-term durability and lower maintenance costs. Insulation systems should provide both of these things. Armacell's solutions are a master class in innovation.

INSULATION DEVELOPED FOR THE LEARNING ENVIRONMENT

The one thing aligning all design variables presented by educational facility construction, and renovation, is the need for 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 schools and universities.

Specifying Armacell Systems for educational facilities construction and renovation is a PhD-level 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. Its 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. ■





EDUCATIONAL FACILITIES RELY ON OUR PROVEN SOLUTIONS

PROJECTS WON

- **Boston University Data Sciences Center** – Boston, MA
- **C. D. Fulkes Middle School** – Round Rock, TX
- **Columbia City High School** – Columbia City, IN
- **George Mason High School** – Falls Church, VA
- **Govans Elementary School** – Baltimore, MD
- **Kihei High School - Phase 2** – Kihei, HI
- **Lehigh University - Bridge West South Residential Hall - Phase 1** – Bethlehem, PA
- **MOC-Floyd Valley Elementary School** – Orange City, IA
- **North Carolina Central University School of Business** – Durham, NC
- **Princeton University Residential Colleges** – Princeton, NJ
- **Red Oak Elementary School** – Red Oak, NC
- **Sun Prairie West High School** – Sun Prairie, WI
- **UCLA Le Conte Apartments** – Los Angeles, CA
- **University of Alabama - Freshman Residence Hall** – Tuscaloosa, AL
- **University of Alabama Bryant-Denny Stadium Renovations & Addition** – Tuscaloosa, AL
- **University of Cincinnati Calhoun Residence Hall** – Cincinnati, OH
- **University of Colorado - Engineering Center North Wing & Tower (Renovation)** – Boulder, CO
- **University of Connecticut Edward V. Gant Building (Renovation) - Phase 1 & 2** – Storrs, CT
- **University of Georgia Brumby Hall (Renovation)** – Athens, GA
- **University of Michigan W. K. Kellogg Institute and Dental Building (Renovation)** – Ann Arbor, MI
- **University of Victoria Residence - Phase 1** – Victoria, BC
- **University of Washington Milgard Hall** – Tacoma, WA
- **University of Waterloo Biomedical Building** – Waterloo, Ontario
- **Wake Forest University Bostwick & Johnson Halls (Renovation)** – Winston-Salem, NC
- **Washington University Neuroscience Research Facility & Parking Garage** – Saint Louis, MI

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.

© Armacell, 2023. All brands with a registration mark are trademarks of The Armacell Group.

00272 | Education Solutions | Armacell | MKTbrochure | 052023 | NA | EN-A

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

