



PRIVATE UNIVERSITY PRODUCTS AND NEWS

MAY 2022  
PUPNMAG.COM

MARYMOUNT UNIVERSITY

**PERSISTENCE  
AND TEAM SPIRIT:  
THE LUND CENTER**

**ALL DOORS  
ARE NOT  
CREATED EQUAL**

**A+ CAMPUS  
KEY CONTROL**

**MEASURING  
THE VALUE OF  
DAYLIGHTING**

N. GLEBERD

# A Vision for Engineering

**GROUNDING IN THE LIBERAL ARTS  
AT MARYMOUNT UNIVERSITY**



## HIGH DESIGN FOR HIGHER EDUCATION

The D|13 Sink System—featuring the XLERATORsync® Hand Dryer—is a masterpiece of form and function. It elevates the aesthetics of the restroom and provides the ultimate user experience, seamlessly fusing the soap dispenser, faucet and hand dryer in one cohesive solution. Fully customizable design options give architects and designers the freedom to completely transform any restroom environment. It also comes fully equipped with a HEPA Filtration System proven to remove 99.999% of viruses from the airstream<sup>1</sup>.

**DESIGN YOUR TOUCHLESS D|13 SINK SYSTEM TODAY**



### PROJECT

UMass Amherst Isenberg School Of Management Business Innovation Hub

### LOCATION

Amherst, Massachusetts

### USE

Collaborative social and study space

### CAPACITY

150+ Staff  
5,000 Students

### SIZE

70,000 SF

### ARCHITECTS

Bjarke Ingels Group (BIG) + Goody Clancy

### CERTIFICATION

LEED Silver



**GOOD DESIGN SOLVES EVERYTHING**

D13Group.com  
877.826.3255

<sup>1</sup>Based on testing performed by LMS Technologies, 2020



# HOPE'S®

For more than a century, Hope's has handcrafted the world's finest steel and bronze windows and doors, and we continue to refine the art that makes them the strongest, most sought-after and longest lasting windows and doors available. Hope's exclusive hot-rolled steel and solid bronze profiles replicate the traditional aesthetic of historic buildings while providing modern performance and efficiency. Hope's windows and doors are built to last a lifetime and beyond – sustaining their beauty and performance for generations. [HopesWindows.com](https://www.HopesWindows.com)

HOPE'S WINDOWS, INC. — EST. 1912 — JAMESTOWN, NEW YORK

CROW ISLAND ELEMENTARY SCHOOL, WINNETKA, ILLINOIS  
PRODUCTS SHOWN: Jamestown175™ Series steel windows

RENOVATION ARCHITECT: GreenAssociates, Inc.  
PHOTOGRAPHER: IMG\_INK

# Taking today's keys into tomorrow.

Know the exact whereabouts of keys on campus and prevent them from being lost and stolen.



**MORSE  
WATCHMANS**

[morsewatchmans.com](http://morsewatchmans.com)

# FEATURES

20

## Persistence & Team Spirit: The Lund Center

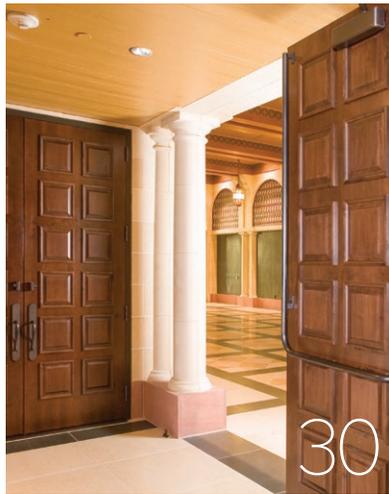
The scenic 350-acre grounds of Gustavus Adolphus College are located in the Minnesota River valley town of Saint Peter, Minnesota, which is about a ninety minute drive to the cultural and economic hub of Minneapolis-St. Paul. Students at the small liberal arts college benefit not only from the intimacy of a close-knit community but from a tradition of strong connections forged with employers in the nearby metropolitan area.



30

## All Doors Are Not Created Equal

From performance spaces and libraries to labs, lecture halls, and classrooms, buildings on university campuses require a wide range of special purpose door and window products. Administrators and architects need to consider many factors when undertaking new construction or renovating existing buildings on campus.



38

## A+ Campus Key Control

Old-school physical lock and key security hardware has provided access control solutions to university campuses for hundreds of years. Thousands of metal keys and locks exist on any given university campus, creating a need for expedient and efficient key control procedures.

# COLUMNS



Photo courtesy Marymount College

### SPOTLIGHT / ON OUR COVER

## 08 A Vision for Engineering Grounded in the Liberal Arts

Eric Bubar, Associate Professor of Engineering at Marymount University, has a background of research in astronomical stellar spectroscopy, an area of applied physics that relies on a great deal of computer programming and data analysis. A student request to complete a 3D printing project under his guidance, however, has led him to draw on the array of skills he developed in applied physics to guide the establishment of an entirely new engineering program at Marymount.



### FACILITIES & MAINTENANCE

## 16 Measuring the Value of Daylighting

The value of introducing natural light into a space has been proven again and again through scientific studies. Humans crave light for mental well-being and need it for physical health.

# EDITOR'S LETTER



Hello, Everyone--

This is an exciting time on your campuses. Graduations, banquets, and award dinners dot your calendars, and your campuses continue to shine for all your staff, faculty, students, and visitors. As you entertain these groups, you get to share the beauty of your campus grounds, the grandeur of your buildings, and the peaceful learning atmosphere that you nurture throughout. This month also gives us the Memorial Day holiday, kicking off the summer season and marking the beginning of all the projects that you will be doing over the summer break to prepare for the return of students in the fall.

In this short note, I take a moment to talk about all of us taking a little time to remember the people in our lives who touched us and gave their efforts into helping us throughout our lives. My goal here is to not talk about one single person but to think about the many people who have brought each of us knowledge, encouragement, and the gift of themselves for the purpose of enriching our lives. I look back now over more than a few years, and in every stage of my life there was someone who took the time to be a help to me. These gifts—large and small—have helped me over the life journey I have been blessed to take.

Reminiscing on those memories brings out in me a desire to offer such knowledge and encouragement to others in some way every day as much as I can. I am beginning to realize that it is the little things that people are looking for, such as an ear to listen, someone to sit with them, an act of courtesy, a shared laugh, and acknowledgement on a personal level.

Many of you regularly get the opportunity to enrich others' lives on your campuses, and I am grateful that you pour yourselves into helping those who you touch every day. The world is a better place because of your actions, and I believe that someone, somewhere, right now is remembering you and how you encouraged them—and because of your acts of kindness, they will pay it forward to someone else today.

I am thankful to those who have helped me throughout my life in both big and small ways, though I don't really believe that any help has been small. As the year moves from spring to summer, I re-commit to continue paying these kindnesses forward in their honor.

Have a great month! I look forward to talking with you again soon—

Ed Bauer

Publisher/Editor-in-Chief

*Private University Products and News Magazine*

ed@pupnmag.com

Ed Bauer  
*Publisher/Editor-in-Chief*  
ed@pupnmag.com

Lawrence Provenzano  
*Associate Publisher*

Cynthia Mwenja, PhD  
*Copyeditor*

Hilary Moreno  
*Creative Director*

Lisa Gibbs, EdD  
Cynthia Mwenja, PhD  
*Staff Writers*

Mike Crowder  
Bob McCluney  
Marcey Tweedie  
David Vinson, PhD  
*Contributing Writers*

Cassidy Clevenger  
*Circulation*  
circulation@pupnmag.com



PUBLISHED BY FLAHERTY MEDIA  
PO Box 1903, Pelham, AL 35124  
Toll Free: 800-705-5280  
Fax: 855-239-8093

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage-and-retrieval system without permission in writing from the publisher. The views expressed by those not on the staff of PUPN magazine, or who are not specifically employed by Flaherty Media, LLC, are purely their own. Comments and submissions are welcome, and can be sent to ed@pupnmag.com.

# We're Still Listening.

**Water professionals know** that swimmers demand clear and clean water. That's why we continue to work hard to make your job easier. Make chlorination easy with the **ACF Series** Calcium Hypochlorite Feeders.

**Clarify with Vantage Poly-A Clarifying Tablets.** This unique and powerful tablet water clarifier is not just to clear up cloudy water after a long weekend. As a maintenance product, it works with your filtration system to remove organic and inorganic compounds to prevent dull and cloudy water.

## SANITIZE with the **ACF Series** Calcium Hypochlorite Tablet Feeders

- ⌘ Safer than liquid systems
- ⌘ Runs "Clean" - Less Maintenance!
- ⌘ Simple, Efficient, and Durable
- ⌘ Systems available for ANY size pool
- ⌘ NSF/ANSI Standard 50 Certified

## CLARIFY with the **VPF-20** Poly-A Tablet Feeder

- ⌘ Unique tablet clarifier
- ⌘ Easier than liquid systems
- ⌘ Removes organic and inorganic compounds
- ⌘ Increases filter effectiveness
- ⌘ Proven cryptosporidium removal



AllChem Performance Products, Inc.  
Phone: 352.378.9696  
FAX: 866.343.1216  
email: [vantage@allchem.com](mailto:vantage@allchem.com)  
[www.vantagewatercare.com](http://www.vantagewatercare.com)

# VANTAGE

Copyright 2015  
VANTAGE is a registered trademark of  
AllChem Performance Products, Inc.



# A Vision for Engineering Grounded in the Liberal Arts

by Cynthia Mwenja, PhD

Eric Bubar, Associate Professor of Engineering at Marymount University, has a background of research in astronomical stellar spectroscopy, an area of applied physics that relies on a great deal of computer programming and data analysis. A student request to complete a 3D printing project under his guidance, however, has led him to draw on the array of skills he developed in applied physics to guide the establishment of an entirely new engineering program at Marymount.

## The First 3D Printing Project at Marymount

A few years after Bubar was hired to teach physics at Marymount, a student wanted to do a 3D printing project—she had heard about a group called e-NABLE that was making and donating prosthetic upper limbs to people around the world. Of all of the faculty members on campus, Bubar’s research focus aligned the most closely with this project, so he agreed to work with the student. Marymount underwrote the cost of one 3D printer and supplies, and they set up the printer in the computer lab Bubar used for astronomy research. In the term following that first project, twenty more students expressed interest in creating similar designs. That keen student interest “was a clue that we should go deeper” into this work, Bubar observes drily. He was able to secure an internal grant for five more printers and to teach other faculty members how to work with the equipment. Professors across campus have been interested in using the 3D printers within their disciplines, including fashion design, education, business, interior design, and art.

Beginning with the first 3D printing

project on campus, Bubar has continued to work with e-NABLE. The organization works systematically to improve its designs, and Marymount students who improve on existing designs—or create their own—can decide if they would like to make their work available as open source resources. Open source computer software is available for users to freely use, modify, and share. Astronomy research, Bubar says, relies on computer programming that is fairly open, but the world of 3D printing is “ridiculously” open source. Not only are the plans for 3D-printable objects open source, but the plans for the 3D printers themselves are freely available, as well.

Having created some prosthetics, students wanted to add bionics to the mix. Prosthetics, Bubar explains, are body-powered through the use of cables, while bionic designs are electronic and use sensors on the arm to detect muscle activity. The prosthetics can be attached with a suction system or by using Velcro for a lower tech option; people who are creating these devices are experimenting with other options for their attachment and control. Interest in 3D printing has become

even more interdisciplinary and widespread at Marymount, with around twenty printers currently scattered in schools across the campus; eight of these are housed in Bubar’s lab, including a few resin printers.

Todd Rimkus, Director of Marymount’s School of Science, Mathematics, and Engineering, ties that student interest in these 3D printing projects to Marymount’s last Quality Enhancement Plan (QEP), which was to “empower students for service.” He says that faculty members seek opportunities to use their own areas of research to involve students in community service. That first 3D printing project provided a prosthetic hand to a young girl at Christmas, and this combination of truly meaningful service with innovative, hands-on research has students from many majors flocking to the opportunity, Rimkus says. Currently, Bubar reports, between forty and fifty students want to engage in 3D printing projects each semester. Rimkus says that these students’ 3D printing service projects inspire him to continually re-examine how he might expand opportunities for community service within his own research with students.



PHOTO COURTESY MARYMOUNT COLLEGE

DS

### Face Shields

In response to the pandemic, Bubar developed another community service project. A week after Covid lockdowns began, someone contacted Bubar about potentially 3D printing face shields for healthcare workers. This person had a sister working in the hospital that was, at that moment, at the epicenter of the crisis in New York City, where workers had little access to any personal protective equipment. Bubar enlisted help on campus and in the Arlington public schools; as a result of his organizing, a group of thirty local people spent several months continuously 3D printed face shields and ear savers for healthcare workers. Bubar also worked with a biomedical group at the University of Buffalo and e-NABLE to experiment with 3D printing face masks; they had trouble sourcing the raw materials for mask filtration due to supply chain issues, but that research is ongoing, Bubar says.

### From 3D Printing to an Engineering Program

Everyone involved traces a direct line from the original 3D project to the development of Marymount's engineering program. The interest in 3D printing on campus was already well-developed when Hesham El-Rewini became the new Provost and Senior Vice President for Academic Affairs in 2019. A computer engineer by training, El-Rewini had the goal of establishing a school of engineering at Marymount; he knew from his own experiences that the engineering disciplines provide unique contributions to society through their approaches to not only seeking solutions to current problems but also preventing problems before they occur. Further, El-Rewini knew that engineering programs will always be in demand, so this direction would be a sound avenue of growth for Marymount. El-Rewini's first step in this

Having created some prosthetics, students wanted to add bionics to the mix. Prosthetics are body-powered through the use of cables, while bionic designs are electronic and use sensors on the arm to detect muscle activity.



PHOTO COURTESY MARYMOUNT COLLEGE

direction was to establish a dual degree program with the University of North Dakota, where he had been dean and professor in the College of Engineering and Mines from 2008 to 2019. Under this agreement, students can attend classes in person at Marymount and online at UND to earn a degree in mechanical engineering from UND, along with a degree in liberal studies or mathematics from Marymount.

El-Rewini became aware of Bubar's work with 3D printing and approached him with a question: "If we were to do engineering at Marymount, how would we do it, and what niche could we fill that is currently unfilled?" The Provost's office had already done a preliminary analysis of engineering programs in the area around Marymount. As Bubar built on this research to answer the question that the Provost had posed, he realized that there was a gap in local engineering programs—no other programs offered engineering related to issues of rehabilitation, such as prosthetics, orthotics, exo-skeletons, and the like. Marymount already has strong nursing and rehabilitation programs established; both Bubar and El-Rewini saw that an engineering school with a focus on biomedical engineering would compliment those existing programs beautifully.



Modular Planter-Anchored Security Screen Wall  
Lifetime Structural Warranty Marine-Anodized Aluminum Frame  
DeepStreamDesign.com 305-857-0466



one place.  
every space.



**Everything education needs — and more**

More design in a stacker. More comfort in a sit. More models to match the needs of any (and every) space for learning. The robust build of Orbix® features an ultra-supportive, extra-wide backrest for unmatched breathability and support to breeze through a day on campus. See more of this smart new collection today.

**SitOnIt • Seating®**

[www.sitonit.net/orbix](http://www.sitonit.net/orbix)



PHOTO COURTESY MARYMOUNT COLLEGE

### Center for Optimal Aging

Marymount’s Center for Optimal Aging also extends Marymount’s strengths in innovative directions. Bubar is involved with this initiative, which focuses in part on identifying and developing technologies that can help people age better. One example he gives is that of a self-balancing spoon for people whose hands may tremble. Bubar’s main focus in this area, however, is using virtual reality for exercise—basically gamifying movement to produce anti-aging effects. Bubar says that playing games for exercise is helpful in getting people to move more, and interacting with virtual reality environments can be instrumental in helping people recover from health setbacks such as strokes more quickly. Many commercial virtual reality products have limitations on their general usability for anti-aging applications—they require participants to be seated, which is not ideal for full-body movement, and they can be very expensive. By contrast, the new Meta headset—the Oculus Quest—is only \$300 and doesn’t need a computer or wires, so it opens new opportunities for anti-aging and rehabilitation. What’s more, Bubar says, is that within six months, the user’s hands will be the controllers, so only the headset will be needed.

## Moisture Meters you can count on.

Reliable - Accurate - Easy-to-Use  
Your best choice:

+RB



### ◀ Pin - Pinless - RH Kit: V-24K

- Ligno-VersaTec Meter
- Depth Electrode
- Inspector Electrode

- Optional: add RH Probe
- RH Thermo-Hygro Probe

Check out Lignomat’s  
full Line of Moisture Meters

**Lignomat** Call 800-227-2105 [www.Lignomat.com](http://www.Lignomat.com)

# Introducing **CENTURION**<sup>®</sup>



## PVI's Most Powerful Water Heater Yet!

- ◆ **Compact, 2000 MBH water heater**
  - Up to 65% less footprint vs. the competition
- ◆ **Advanced Edge<sup>®</sup> Controller with O<sub>2</sub> Trim technology**
  - Self-adjusts and maintains optimal air-fuel ratios for peak efficiency, low emissions and maximum reliability
- ◆ **Durable, corrosion-resistant AquaPLEX<sup>®</sup> duplex stainless steel**
  - Fire tube heat exchanger backed by a 15-year warranty



(817) 335-9531 | PVI.com

### Marymount's New Engineering Curriculum

As Bubar weighed directions for the new engineering program, he looked specifically at commonalities between programs at other schools of engineering, along with determining the standards set by the accrediting body. Beyond those parameters, he considered ways in which Marymount might like to customize its program to fit the biomechanical engineering niche. Bubar has identified open-source wearables—think Apple watches or pedometers—as a prime area for the new program to focus on. All of these wearables, Bubar says, work on basic principles of physics and can be built with off-the-shelf components. Such projects can provide hands-on, active learning for students in the program. Students will also be able to explore bio-3D printing, in which structures are printed from a gelatin-like material which can provide the support for living cells to grow.

Bubar joins the new program as a professor of engineering; El-Rewini says that Bubar is,

“at heart, an engineer.” In addition to the focus on biomedical engineering, the curriculum includes mechanical engineering, which is the basis of most engineering programs, according to Bubar. The program will begin this fall with two new faculty members: Mechanical Engineer Shama Iyer focuses on cell, tissue, and muscle regeneration, and Farzad Ahmadi works with fluid flow, de-icing solutions, and water de-salinization.

All first year students in the engineering program will take a yearlong foundational course in which they will “build stuff that real people will use,” says Bubar; as El-Rewini puts it, they want to establish an engineering program that “works with real people on real problems.” This project-based curriculum spanning the entire first year will be unique to Marymount. In particular, students will work with Marymount’s physical therapy program to learn how to build prosthetic arms, as many students have already done in the 3D printing labs. Bubar wants to prioritize this model of collaboration and discussion, noting that such

an approach generates many additional ideas for projects to explore. Drawing on the strengths of the liberal arts model, the program will feature small class sizes and substantial amounts of personal attention from the professors.

Additionally, building on Marymount’s firm commitment to undergraduate research, all of the research projects in the program will be led by undergraduate student researchers. Rimkus points out that Marymount students have an advantage over those at other institutions because they do not have to compete with graduate students for meaningful research opportunities. Students in the engineering program and in the 3D printing labs have opportunities to solve real problems through designing and field testing their work. For a project of this magnitude, El-Rewini says, “you need a champion, and I couldn’t have asked for a better champion” than Bubar.

### Diversity in Engineering

Bubar says that one of the new program’s big goals is to increase diversity, to “welcome everyone to engineering.” Rimkus agrees, saying that not only are women and people who are members of minority groups under-represented in the field of engineering, they also represent an incredible and largely untapped opportunity for the school to grow. Marymount, he says, has an established culture of welcome for people of all backgrounds, and their Diversity, Equity, and Inclusion Office builds on those foundations of acceptance in more systematic ways. El-Rewini points out that women are in the majority on campus, and Marymount is already designated a Hispanic-serving institution, meaning that at least 25% of the student body is Hispanic. As El-Rewini points out, solutions are stronger when they are generated by groups including people from diverse backgrounds, so the school’s existing diverse populations and DEI focus will support the strong growth of the engineering program.

According to El-Rewini, all graduates of Marymount’s engineering programs will have developed strengths in four major areas, grounding their technical competencies, business acumen, and leadership skills in the liberal arts. As the founding Marymount engineer, Bubar represents a shining example of how these elements intersect.



Compliance just got easier!  
Download and view your required  
emergency lighting reports on your  
mobile device. Learn more at  
[www.acuitybrands/star](http://www.acuitybrands/star)



[in](#) [yt](#) [fb](#) [tw](#) 1-800-866-4682 [www.iotaengineering.com](http://www.iotaengineering.com)



ABOUT THE AUTHOR: Dr. Cynthia Mwenja teaches Composition and Rhetoric at the University of Montevallo.

# University Communication Solutions

Introducing Icom's **LTE-CONNECT** System



## IP501H

License-Free LTE Radio



Instantaneous push-to-talk communications throughout North America. The LTE-CONNECT radio system provides telephone style conversations, packed with conventional two-way radio features. These license-free radios operate on an Icom controlled, private and secure 4G network. This LTE radio solution is perfect for those support, safety and security teams in need of simple, yet wide-area communication solutions.

- License-Free
- Full Duplex Communication
- Individual / Group / All Calls
- Mobile Companion (IP501M)
- Text Messaging
- Fixed Monthly Cost
- Compact & Lightweight



[www.icomlte.com](http://www.icomlte.com)  
[connect@icomamerica.com](mailto:connect@icomamerica.com)

©2021 Icom America Inc. The Icom logo is a registered trademark of Icom Inc. 21126



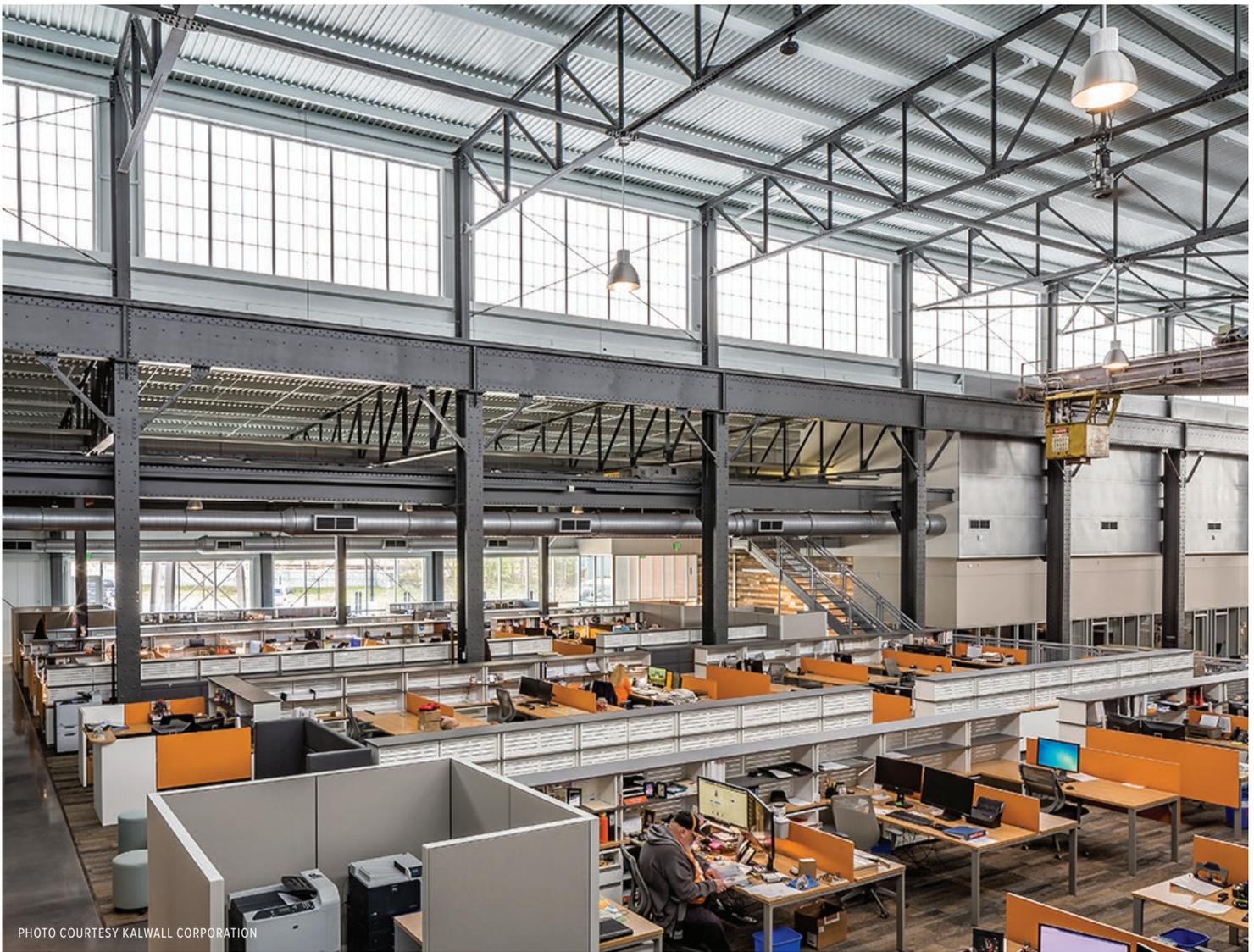


PHOTO COURTESY KALWALL CORPORATION

## FACILITIES & MAINTENANCE

# Measure the Value of Daylighting with Daylight Modeling

by Mike Crowder

The architectural community has come a long way in embracing this fact, most recently exhibited when an architect on the University of California Santa Barbara's (UCSB's) design committee resigned from his position over a proposal blatantly lacking appropriate natural lighting, citing inhumane conditions for the students who would be forced to reside in the proposed building.

The choice to daylight a building is one that should be made at the beginning of the design process, leaving only the question of how to go about it. Architects can use numerous strategies for lighting a space, including artificial lighting and daylighting. But there is one way to ensure a design is meeting appropriate light levels and not falling into the trap that UCSB did: daylight modeling.

### Daylighting for Education

Daylight is essential and provides benefits for students whether they are studying, playing sports, or just hanging out. Students spend a lot of their time indoors, so the introduction of natural daylight to interior spaces helps maintain circadian rhythms for overall physical and mental well-being. This access to sunlight equates to improved mood and performance, creating an environment for success.

The impact of daylight on students is proven. A highly respected study by the Heschong Mahone Group showed students in classrooms with the most daylighting progressed 20% faster on math tests and 26% faster on reading tests over a year period than those with the least daylighting. But

daylighting that is poorly implemented can have adverse effects. Uncontrolled sunlight entering a space can create issues with glare, leading to shades or other control features being implemented, ultimately negating the benefits of daylighting in the first place. Daylight modeling allows designers to plan and avoid these issues to ensure the best daylighting strategy.

### Daylight Modeling

Daylighting is the practice of introducing controlled natural light into an interior space. Daylight modeling measures the performance of daylighting strategies using 3D software to simulate the building, capturing every pattern of daylight throughout the structure. The goal is to ensure that a design meets appropriate

levels of natural light while reducing glare. Daylight modeling allows a facility to be designed from the earliest stages to optimize construction for building occupants.

Daylight modeling uses several metrics to ensure that a design meets optimal light levels. Useful daylight illuminance (UDI) categorizes and measures the overall level of usable lux in a space, highlighting the areas of a room that do not get sufficient levels of natural lighting. Spatial daylight autonomy (SDA) measures the percentage of a space that meets recommended illuminance levels over a defined period of time. Annual sunlight exposure (ASE) helps limit excessive sunlight that could cause glare issues and is used with SDA to calculate LEED credits. Calculations are also made to identify glare potential and biological effects on potential inhabitants of a building.

### Daylighting Standards

A landmark ruling in building lighting standards was the New York State Tenement House Act of 1901, which banned the construction of windowless



PHOTO COURTESY KAL WALL CORPORATION



**KENYON**  
**CERAMIC GLASS**  
**COOKTOPS**  
*Since 1931*

### SMART BUILT-IN SAFETY FOR THE USER AND FACILITY



**CHILD SAFETY LOCK-OUT WITH AUTO SHUT-OFF**



**HEAT LIMITING COOKING SURFACE PROTECTORS**



**MEETS ADA REQUIREMENTS INCLUDING CA & TX**



**RADIANT & INDUCTION COOKTOPS AVAILABLE**

CONTACT US FOR SPECIAL PRICING:  
[COOKWITHKENYON.COM](http://COOKWITHKENYON.COM) | 860.664.4906



PHOTO COURTESY KALWALK CORPORATION

Daylighting is the practice of introducing controlled natural light into an interior space. Daylight modeling measures the performance of daylighting strategies using 3D software to simulate the building, capturing every pattern of daylight throughout the structure.

and unventilated buildings throughout the state. Under this legislation, all buildings are required to have outward facing windows in each room, proper ventilation to circulate fresh air, indoor plumbing and open outdoor courtyards.

While there are no legal code requirements for daylighting in the United States, many standards regarding lighting design have evolved since the turn of the 20th century. The Illuminating Engineering Society (IES) was established in 1906 and remains one of the most prominent authorities on illuminance standards. IES standards help architects and engineers understand lighting recommendations and design well-lit, high-performing buildings

that reduce reliance on artificial light.

The most basic use of daylight modeling is to ensure that spaces are meeting recommended light levels, measured in units of illuminance or lux. According to current standards, 300–3000 lux is considered a desirable lighting level in most cases. Meeting certain lux levels measured by SDA and ASE can help a building earn LEED® or other sustainable building credits.

#### **Daylight Modeling and the UCSB Dormitory Design**

UCSB is currently pursuing a dormitory that would have 4,500 students living across eleven stories in windowless bedrooms,



PHOTO COURTESY KALWALL CORPORATION

relying entirely on artificial environment systems to filter air and provide artificial light and synthetic views of the outdoors. Because the systems rely entirely on environmental simulations, in the event of a power outage or disruption, the building is deemed nearly entirely uninhabitable due to the lack of air filtration or natural lighting.

Aside from the proven health and wellness benefits of introducing natural daylight to this space, utilizing daylight modeling could minimize the need for artificial lighting and create impressive energy savings. Proper daylighting can also improve a building's thermal performance, reducing heating and cooling loads.

Daylight modeling for UCSB or any construction project could help to identify the best design strategy for introducing natural light, with the ability to compare materials, placements and building geometries.



**ABOUT THE AUTHOR:** Mike Crowder, LEED AP of Kalwall Corporation, has more than twenty-five years of experience in the building materials industry. He travels across the U.S. and Canada educating architects, engineers, and contractors on the benefits of natural daylighting. Learn more about Kalwall's complimentary daylight modeling services at [www.kalwall.com/daylight-modeling-services/](http://www.kalwall.com/daylight-modeling-services/).

Aside from the proven health and wellness benefits of introducing natural daylight to spaces, utilizing daylight modeling could minimize the need for artificial lighting and create impressive energy savings. Proper daylighting can also improve a building's thermal performance, reducing heating and cooling loads.



1921

KRAUS-ANDERSON AND BWBR ARCHITECTS

# PERSISTENCE & TEAM SPIRIT

AMIDST A MAJOR EXPANSION OF  
GUSTAVUS ADOLPHUS COLLEGE'S  
WELLNESS AND ACTIVITIES FACILITY,  
**THE LUND CENTER**

by David Vinson, PhD

The scenic 350-acre grounds of Gustavus Adolphus College are located in the Minnesota River valley town of Saint Peter, Minnesota, which is about a ninety-minute drive to the cultural and economic hub of Minneapolis-St. Paul. Students at the small liberal arts college benefit not only from the intimacy of a close-knit community but from a tradition of strong connections forged with employers in the nearby metropolitan area.



Class sizes are small, allowing for closer working relationships among students and professors, and students can more easily get to know one another in class and around campus. As a student-centered institution, Gustavus empowers its students to pursue a path of self-discovery, to collaborate, to embrace new perspectives, and to develop social and critical thinking skills—all qualities which benefit graduates as they enter a highly competitive job market.

Integral to further strengthening Gustavus' student-centered culture is its commitment to promoting health and wellness. Such a commitment has resulted in a major overhaul of the campus Wellness and Activities Facility, known as the Lund Center. The facility opened its doors in 1984 and is currently undergoing an expansion that nearly doubles the original size to 365,000 square feet. In terms of achieving optimal functionality, the Lund Center's expansion will address two primary needs: first, to provide state-of-the-art wellness

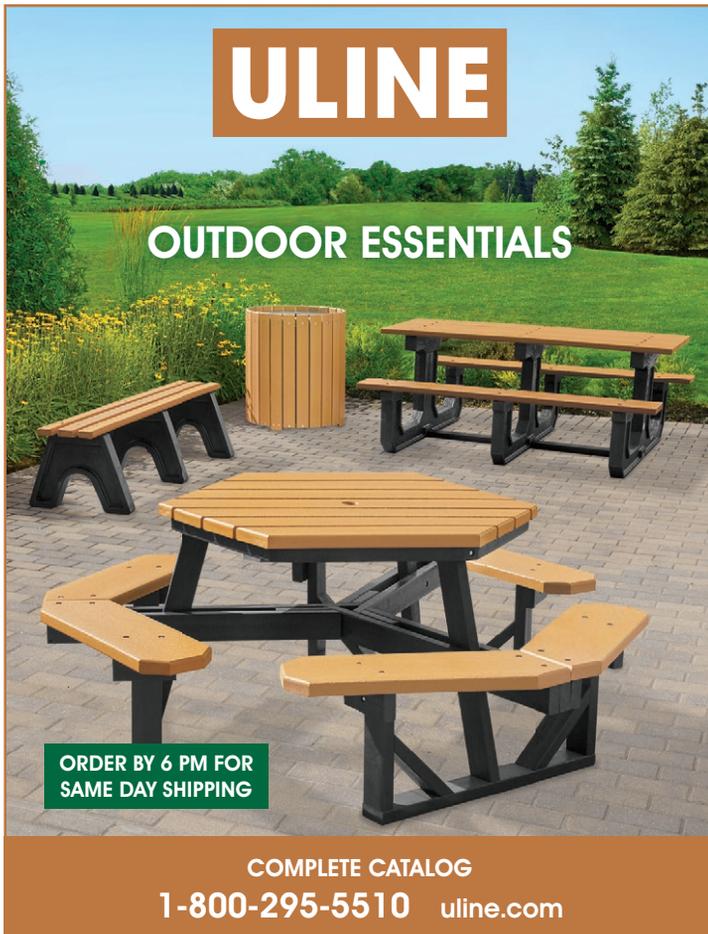
space and equipment for all students and staff; and second, to improve and add student gathering spaces, locker rooms, and office space. Kraus-Anderson, the construction company appointed to complete the \$62 million project, broke ground in April 2021. Thanks to Kraus-Anderson's diligent and steadfast work, in addition to the support it receives from the architectural firm of BWBR, Gustavus has celebrated the completion of the project's first phase as recently as April 2022.

### Balancing Traditional Campus Aesthetics with Fresh Ideas

Gustavus' 350-acre campus is lush with vegetation and ample green spaces, and it contains striking Kasota Stone buildings such as the Old Main, Rundstrom, and the Anderson Social Science Center. The expansion is located on the west side of the current Lund Center for Athletics and Health Exercise Science, overlooking Gustavus' football stadium as well as the College's 125-acre

Arboretum. According to Tim Kennedy, Vice President for Marketing and Communication at Gustavus, the location of the expansion was chosen because it "provides a gateway for the students and staff using the facility to move easily from indoor activity spaces to outdoor recreation and athletic facilities," most of which are located primarily on the west side of campus.

As with many other construction projects, staying true to campus aesthetics while also providing spaces that stand out in exciting ways poses definite challenges. "The goal [has been] to bridge the classical red brick masonry and locally quarried Kasota Stone facades from many of the other buildings on campus while [also] incorporating the vertical nature of the window fenestrations in the newer buildings." The exteriors of the new construction include creatively used pre-cast concrete that mimics Kasota Stone, and they have been paired with the red brick masonry of the original exterior. Campus dwellers are welcomed



**ULINE**

**OUTDOOR ESSENTIALS**

ORDER BY 6 PM FOR SAME DAY SHIPPING

COMPLETE CATALOG  
1-800-295-5510 [uline.com](http://uline.com)



**ATHLETIC FACILITIES**  
INLAID PLATFORMS • LOCKERS • SYNTHETIC GYM FLOORS

**WEIGHT ROOMS**  
800-821-4557 • [ABACUSSPORTS.COM](http://ABACUSSPORTS.COM)

**ABACUS**  
Sports Installations Ltd.

**GSA**  
GS-03F-039GA

**COLLECT.**

**SORT.**

**TRANSPORT.**

**ROYAL<sup>®</sup>**  
**BASKET TRUCKS**  
www.royal-basket.com  
800.426.6447



**ORGANIZE YOUR GYMS & ATHLETIC FACILITIES WITH FUNCTIONAL CART SOLUTIONS FROM ROYAL<sup>®</sup>. OUR CARTS ARE DESIGNED TO REDUCE CLEAN UP TIME, TRANSPORT TOWELS AND LAUNDRY WITH EASE, AND KEEP YOUR FACILITIES LOOKING CLEAN AND PROFESSIONAL.**



**CHOOSE YOUR CART.**

**PICK YOUR COLOR.**

**ADD YOUR LOGO.**

- 13 VINYL COLORS
- 7 MESH COLORS
- 9 POLY COLORS
- CUSTOM BRANDING & LABELING



**CONTACT US TODAY!**

**WWW.ROYAL-BASKET.COM • 800.426.6447**





PHOTO COURTESY BWBR / WWW.BWBR.COM

into the building by transparent, bird-safe glass that leads the eye towards a 10,000 square foot cardio and group fitness space. Gustavus and BWBR architects prioritized staying true to campus aesthetics while also creating a modern, naturally lit facility, one that balances a traditional look and feel with fresh ideas. The facility is open and inviting, offering a spectacular view of the sprawling southern Minnesota countryside.

### **A Story of Overcoming Obstacles and Shaping Gustavus' Future**

A major victory of the expansion project is that Phase I has been completed on schedule, despite the unpredictability that comes with building during a pandemic. Kraus-Anderson and BWBR have contended with labor shortages, material and supply chain issues, and COVID-19 protocols. The good news: contingency plans were in place that helped those on and off site to reprioritize and find focus. Unifying as a team allowed the group to adapt and present creative solutions. The \$24.6 million Phase I of the project features a 72,000-square-foot athletic and fitness facility addition, including 10,000 square feet of new weight room space,

## **So, you think you know movement?**

Furniture specifiers make hard choices every day. Selecting a chair that moves, synchronizes and performs the way students, scientists and healthcare workers do shouldn't be one of them. That's why we want to reintroduce you to MVMT® seating – the award-winning ergonomic design that's positively impacting user comfort and well-being at some of today's most recognized scientific and medical facilities.

So if you've heard of MVMT seating but haven't experienced it for yourself, it's time you reconsider. Contact us to schedule a demonstration and ask about our on-site sample program.

**reMeet** MVMT seating.



© 2022 BioFit Engineered Products. All rights reserved. MVMT is a registered trademark of BioFit.

[biofit.com](http://biofit.com)

JOIN 100+ CAMPUSES IN DEPLOYING AWARD-WINNING

# SELF-SERVICE DISPENSING KIOSKS



Space-Saving • Experience-Enhancing • Forever-Flexibility

Mix-N-Match Laptops And Now  
110V Portable Power Outlets



For More Info Go To:  
[ChargersAnytime.com](http://ChargersAnytime.com)

A New Innovative Approach To Student Battery Access

**OVER 4 MILLION**  
ANNUAL CHECKOUTS AND GROWING  
**4,000,000**



Trusted Technology Branded to Your Local Look-n-Feel  
**LAPTOPSANYTIME™**  
Automated Checkout Kiosks  
1-877-836-3727 • [LaptopsAnytime.com](http://LaptopsAnytime.com)



PHOTO COURTESY BWBR / WWW.BWBR.COM

10,000 square feet of cardio and group fitness spaces, plus state-of-the-art locker rooms, a spacious third-floor student lounge, and even a recruiting suite, all of which is set to open during the first week of May.

Phase II of the expansion will include the complete renovation of the existing facility along with a new 53,000 square-foot practice facility, plus the addition of a new entrance at the northeast corner of the building. Upon completion of the project, the Lund Center will offer vastly enhanced spaces for wellness as well as academic programs in health, exercise science, and athletic training. The facility will serve as a huge boost to the men's and women's athletic programs, and the broader impact of the expansion is its efficacy as a recruitment tool to prospective Gusties, including student-athletes.

Not only will the expanded Lund Center serve as a setting for summer campers of all ages, but it will also operate as a new venue for Gustavus' annual Nobel Conference, a major event on the St. Peter campus that draws thousands of students, alumni, and community members. Attendees will be able to attend speeches and panel discussions led by experts from around the nation

# NAC Flooring Essentials

Professional Installation Isn't Complete  
Without These NAC Products



**Sound Control**



**Crack Isolation**



**Waterproofing**



NAC innovations are the foundation of world-class flooring solutions that will protect you and your building from the ground up.

800-633-4622 • [nacproducts.com](http://nacproducts.com)



**SportsArt**

INSPIRE  
PERFORMANCE.  
MEANINGFUL  
SUSTAINABILITY.

G690 Verde Treadmill

## COMBINE INTENSITY AND SUSTAINABILITY WITH ECO-POWR™ AND CARDIO INTERVAL TRAINING.

Add SportsArt ECO-POWR™ cardio equipment to your facility and give members the power of quick, effective interval training that also powers the planet. Our Rower, Stepper, Vatio Indoor Cycle, and Verde Treadmill offer the customizable settings users want and the reliability you demand. And, our innovative ECO-POWR™ technology generates usable electricity with every workout, offsetting your energy costs and inspiring performance.



G516 Vatio Indoor Cycle



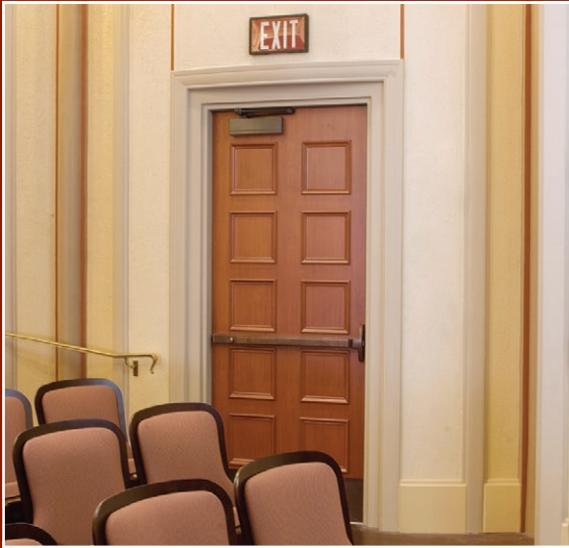
G260 Rower



G778 Stepper

Discover our full line of cardio and strength solutions at [gospportsart.com](https://gospportsart.com).

## Acoustical Doors with Built-In Bullet Resistance



Krieger's acoustical doors protect against unwanted sound in campus labs, lecture halls, libraries, and more by exceeding the American National Standards Institute (ANSI) S12.60-2002 standard. Plus, they can be configured with a bullet resistance rating of UL 752 with up to Level 3 included for an added layer of safety during an active shooter event.

Acoustical Rating	Bullet Resistance
STC 45 – 48	UL Level 1 & 2
STC 49 – 53	UL Level 3
Bullet ratings up to Level 9.	

### Added Campus Safety and Security

All acoustical assemblies come with Krieger's new Cam Lift Hinge that has an ASTM F476 Grade 40 rating—the highest rating available for security swinging doors. You can also add a security pin to the Cam Lift Hinge, which delays the door opening in the event of an attempted forced entry.



[www.KriegerProducts.com](http://www.KriegerProducts.com)

As with many other construction projects, staying true to campus aesthetics while also providing spaces that stand out in exciting ways poses definite challenges. “The goal [has been] to bridge the classical red brick masonry and locally quarried Kasota Stone facades from many of the other buildings on campus.”

and world, including Nobel Laureates. The speakers for the 2022 gathering in the fall will focus on mental health among young people, a topic that nicely aligns with the Lund Center's role in providing a space for health and wellness.

### A Commitment to Sustainability

Gustavus' campus-wide commitment to sustainability informs its ambitions for realizing LEED Gold status. The College is working towards reducing campus energy usage 25% by 2025 and becoming a zero-waste campus.

Phase I of the project, for instance, saw the adoption of several sustainable strategies. Embodied carbon associated with the project was greatly reduced through the reuse and renovation of an existing facility. Improved wellness has been achieved through increased access to daylight via additional windows; acoustics were improved via new sound absorptive materials and other strategies; and renovation materials were vetted via multiple sustainable criteria, including considerations of human health impacts, responsible sourcing, and limiting VOCs. Other sustainable efforts included the elimination of high impact refrigerants, and the project's solar heat island effect was reduced through the use of high reflectance roofing and sidewalks.

### The Lund Center's Transformative Impact

The community at Gustavus Adolphus College can marvel at the remarkable transformation of the Lund Center, particularly with the completion of Phase I. Gustavus, the architectural firm BWBR, and the general contractor Kraus-Anderson have all united with a common mission. That they have managed to accomplish so much during a global pandemic speaks to a collective determination to adapt, persevere, and find resilience together. As Tim Kennedy at Gustavus aptly says, “[The pandemic] could have easily disrupted the project, but we were able to turn it into the dream we always wanted it to be.”



**ABOUT THE AUTHOR:** Dr. David Vinson has a PhD in English with specializations in transatlantic literature and cultural studies. He is a committed scholar, teacher, and dad. If you ever meet David, avoid the subject of soccer. His fandom borders on the truly obnoxious.

# PUTTING ALL YOUR EGGS IN ONE BASKET?



FLEXIBLE CONTROL  
FOCUS ON SPEED & PREVENTION



EASY TO MANAGE  
MOBILE CREDENTIALS



RISK ASSESSMENT  
W/ DATA ANALYTICS



DATA DRIVEN  
ADAPTS TO YOUR NEEDS



VIDEO SURVEILLANCE  
FULLY INTEGRATED



CROSS PLATFORM  
USE YOUR EXISTING SYSTEM



NATIONAL REACH  
LOCAL SERVICE



INDUSTRY WIDE  
LOCK INTEGRATION



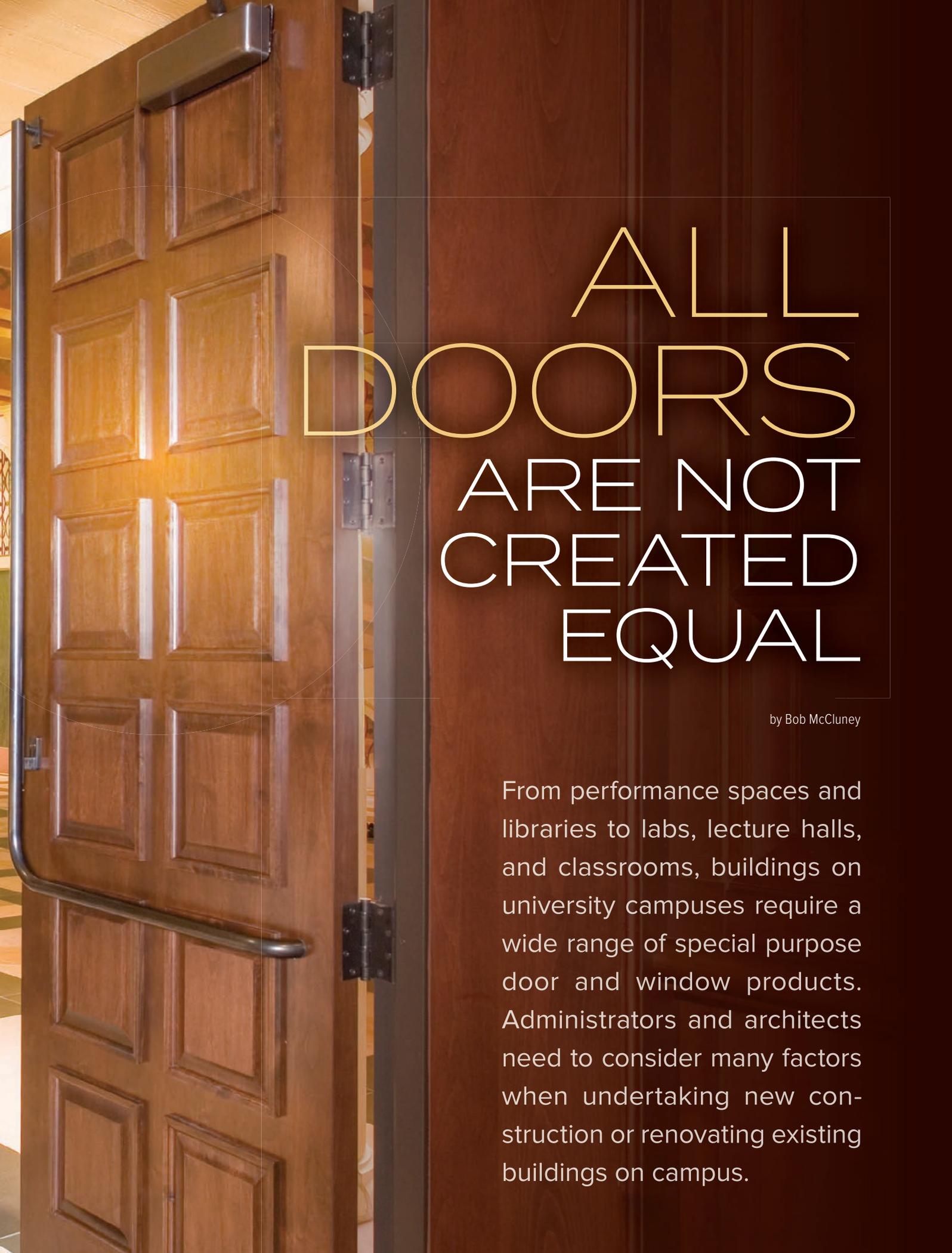
## GO AHEAD, WE WON'T TELL.

You CAN put all your eggs in one basket. At American Direct, we offer Total Security Solutions including mechanical doors, frames and hardware distribution, a feature rich access control platform with industry wide lock integration and robust video surveillance solutions and a commercial integration arm that has nationwide reach. Find out how our technology focused approach can help the students and faculty who use your buildings stay safe and secure.

[accessNsite.com/PUPN522](https://accessNsite.com/PUPN522)

**AccessNsite**<sup>®</sup>  
by American Direct





# ALL DOORS ARE NOT CREATED EQUAL

by Bob McCluney

From performance spaces and libraries to labs, lecture halls, and classrooms, buildings on university campuses require a wide range of special purpose door and window products. Administrators and architects need to consider many factors when undertaking new construction or renovating existing buildings on campus.



PHOTO COURTESY KRIEGER SPECIALTY PRODUCTS

The first and foremost consideration is safety, balanced with providing optimal learning environments. The U.S. Census Bureau and the American Medical Association determined that excessive noise in the classroom reduces a student's ability to hear the lessons by 25-30%. Based on these findings, the American National Standards Institute (ANSI) has developed criteria to help ensure that learning environments are optimally built for student safety and educational success. The ANSI Standard for Classroom Acoustics (ANSI S12.60-2002, Acoustical Performance Criteria, Design Requirements Guidelines for Schools) establishes safety guidelines and acoustical requirements that can be easily integrated into building projects on university campuses. In addition, the Partner Alliance for Safer Schools (PASS) Safety and Security Guidelines for K-12 Schools provides valuable information for architectural decision-makers in any educational setting.

With more than eighty-five years of experience supplying quality custom doors and windows for schools and universities across the country, Krieger offers a full range of door assemblies with the STC (Sound Transmission Class) ratings up to STC 55 for doors and STC 56 for windows. Doors like these can ensure that campus facility

designs meet or exceed the ANSI Standard, providing a great opportunity for projects to raise the bar on construction quality for any educational setting.

#### **Acoustical Doors with Built-in Bullet Resistance**

Safety on campus is a major concern, which is why designers would consider pairing acoustical doors with a bullet resistance rating as designated by Underwriters Laboratory (UL), adding an extra layer of security in the event of an intruder or active shooter. Designers can seek out custom doors to meet their exact criteria; such criteria may include safety features such as these:

- STC 45 doors constructed to include bullet resistance of UL Level 2
- STC 50 doors constructed to include bullet resistance of UL Level 3
- Hybrid construction with UL Level 4-9
- Windows with security blinds inside the panes of glass to block the view of an intruder into the room
- Interface with access control and electromagnetic security hardware

- Side lites and window wall configurations to enhance the architectural aesthetics
- UL Fire Labels of up to three hours

#### **Special Purpose Doors**

Special purpose doors are tested to ensure they can meet specialized requirements, and they receive ratings from accredited independent industry sources that attest to their ability to perform the desired function. Depending on the location's requirements, special purpose doors may look like standard doors, or they may have a completely unique and customized aesthetic. Here's a brief overview of various types of specialized performance needs:

**ACOUSTICAL**—Used for a wide range of applications from performance spaces to libraries for sound enhancement or noise reduction and containment

**BULLET RESISTANT**—Increases the safety and security of the interior or exterior doors on any campus building

#### **BLAST AND PRESSURE**

**RESISTANT**—Used in labs, workshops, and mechanical rooms to protect personnel and property from explosions and explosion-borne projectiles



ANY SPORT. ANY LEVEL.  
**ANY BUDGET.**



## ATHLETIC LOCKERS

Take your team room to the next level with modern, rugged wood or metal lockers from GearBoss. From basic designs to D1 and pro level custom configurations, we've got a solution for your program and budget.

## HIGH-DENSITY STORAGE

GearBoss High-Density Storage Systems organize, secure and protect equipment for an entire athletic program in rugged, easy-to-access carts and shelving.



**GEARBOSS**<sup>®</sup>  
by Wenger

See photos, virtual 360-degree walkthroughs and more at [gearboss.com](http://gearboss.com) or call 800.493.6437

**RADIO FREQUENCY SHIELDING**—  
For use in data centers, healthcare settings  
with X-ray, or any other sensitive areas

**TORNADO AND HURRICANE  
PROTECTION**—Protects campus-  
designated shelters and safe rooms from

high wind speeds associated with extreme  
weather events

**Special Purpose Performance  
Combinations**

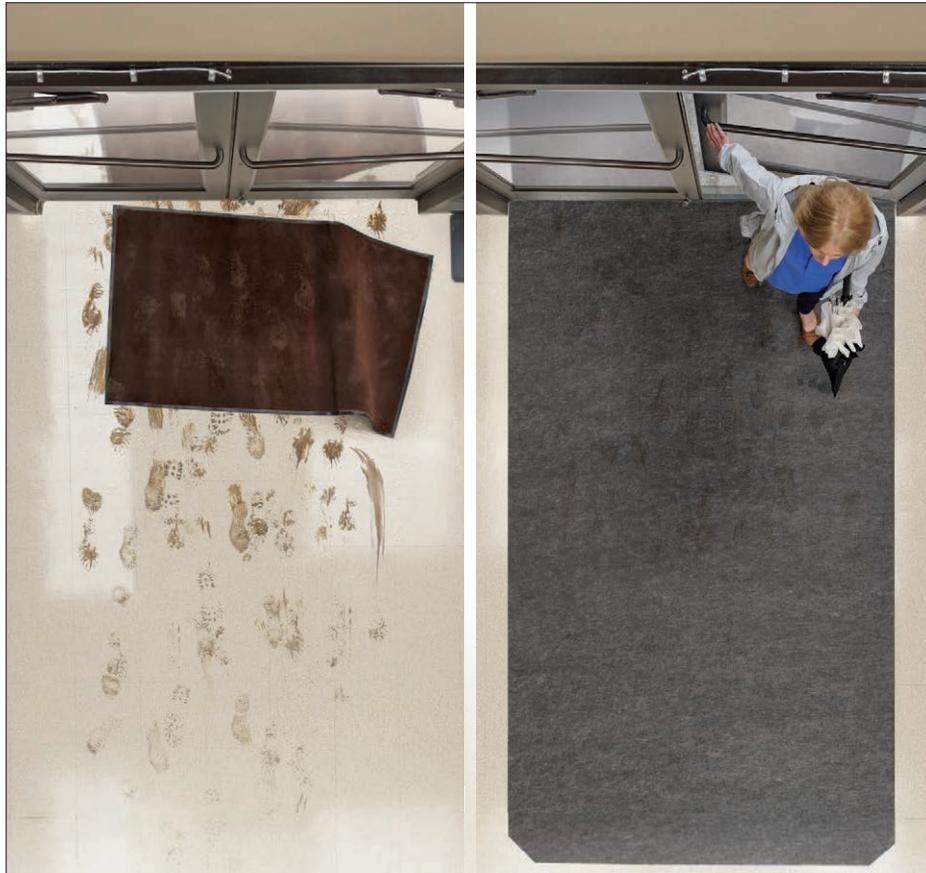
Because every location is unique, designers  
should consider working with door and window

manufacturers who can custom-build items to  
order. Whether a project requires an oversized  
acoustical stage door with a built-in bullet  
resistance rating for the theater department  
or an acoustical door that can withstand hurri-  
cane-force winds, a manufacturer who custom  
builds its products can engineer doors in any  
performance combination necessary. All of  
these special performance combinations can  
be manufactured in any size, style, and finish  
desired to ensure a seamless appearance with  
the surrounding architecture.

**Industry Leader**

Since its founding in 1936, Krieger Specialty  
Products has been a nationally recognized  
leader in special purpose doors and windows.  
The company offers a full range of industry-  
leading design, manufacturing, testing, and  
installation of custom door and window  
products to fulfill various acoustical, safety  
and security, and radio frequency needs.  
Krieger aims to seamlessly combine form  
and function, fabricating its products with  
the utmost precision and quality to perform  
as needed—and to be aesthetically and histor-  
ically appropriate as architects demand.

Krieger products are installed in some of  
the most high-profile, premier buildings in  
the United States, including the Walt Disney  
Concert Hall, the Pentagon, and Griffith  
Observatory, as well as military installations,  
nuclear power plants, industrial plants, and  
embassies around the world. Krieger is proud  
to be a trusted manufacturer of specialty doors  
and windows for a wide range of projects at  
top universities such as Harvard University,  
University of Michigan, Stanford University,  
New York University, and California State  
University-Fullerton's Claves Performing Arts  
Center, along with hundreds of K-12 schools  
across the country. With a proven track  
record and a reputation for the highest quality  
products and service, Krieger is a premier  
provider of custom-built doors and windows  
needed for unique and specific functions.



# COVERAGE WHERE IT COUNTS.

Create safe walk-off coverage with  
**PIG Grippy Mat.**

Visit [newpig.com](http://newpig.com) or  
call **1-800-HOT-HOGS®**.

 **New Pig**  
One Pork Avenue • Tipton, PA 16684

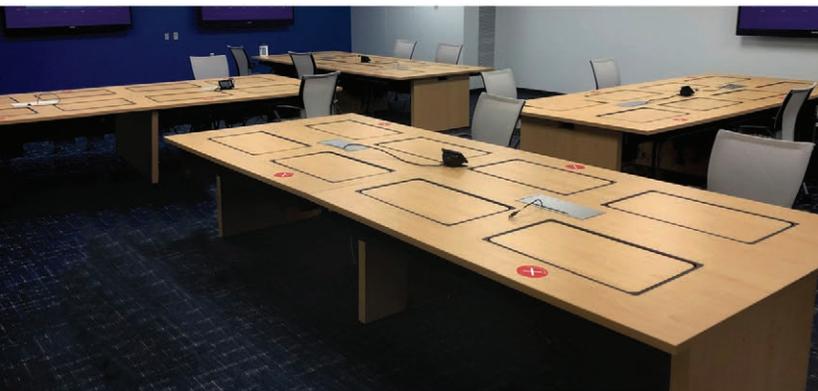


**ABOUT THE AUTHOR:** Bob McCluney is  
President of Krieger Specialty Products,  
a company that has been designing  
and manufacturing special purpose doors and  
windows for over eighty-five years. His expertise  
includes numerous years in special purpose  
door and window installation, engineering,  
design, and testing.



# Flex Your Capacity With SMARTdesks®

**flipIT® monitor mount system distributes workstations around your SMARTdesk®**



2021 installation of flipIT® monitor mounts in Piatto™ 8-seat Conference Tables for Northwood University.

- **Flexible:** Install full capacity classrooms that flex to changing occupancy needs.
- **Ergonomic:** Screens are below the horizon line: no visual obstructions to presenter or other tables.
- **Customizable:** Specify in a wide range of SMARTdesks® conference tables, active learning furniture, and classroom desk systems.
- **Trusted:** Benefit from SMARTdesks® 25 years of experience designing classroom solutions and learning layouts—without cost or obligation to buy.

SMARTDESKS®, SMARTDESK®, and flipIT® are registered trademarks of CBT Supply, Inc.  
©2022 CBT Supply, Inc. All rights reserved.  
flipIT® US Patent No. US 7,784,412 B2.



**SMARTDESKS®**

Work intelligently.

800 770 7042 | [www.smartdesks.com](http://www.smartdesks.com)

It takes a Viking to...

# PROTECT YOUR ASSETS



**DON'T PUT YOUR  
CAMPUS AT RISK**

We don't mess around when it comes to your greatest assets. You need it **secure and battle-tested**, day in and day out, year after year.

Viking Entry Systems and Emergency Phones are built to last. Available Enhanced Weather Protection will provide added defense for outdoor use.

Say goodbye to unreliability, and hello to rugged durability. **YOU NEED A VIKING.**



**Start planning your installation today!**

**715.386.8861**  
vikingelectronics.com



# VIKING

 **DESIGNED, MANUFACTURED,  
AND SUPPORTED IN THE USA**

# TOUCH-FREE CALLING



E-30TF-IP



E-32TF-IP



E-20TF-IP

## Goodbye germs, hello hands-free!

These Touch-Free VoIP Entry Phones are equipped with Viking's touchless motion sensor. A simple wave over the sensor will activate a call. Touch-free calling eliminates the exposure to germs and bacteria from typical push button switches.

The phones provide quick and reliable handsfree communication for SIP VoIP phone systems with PoE. They can be programmed from any touch tone phone, PC, or remotely using a static IP address.



Learn more about  
**TOUCH-FREE  
CALLING**

# VIKING

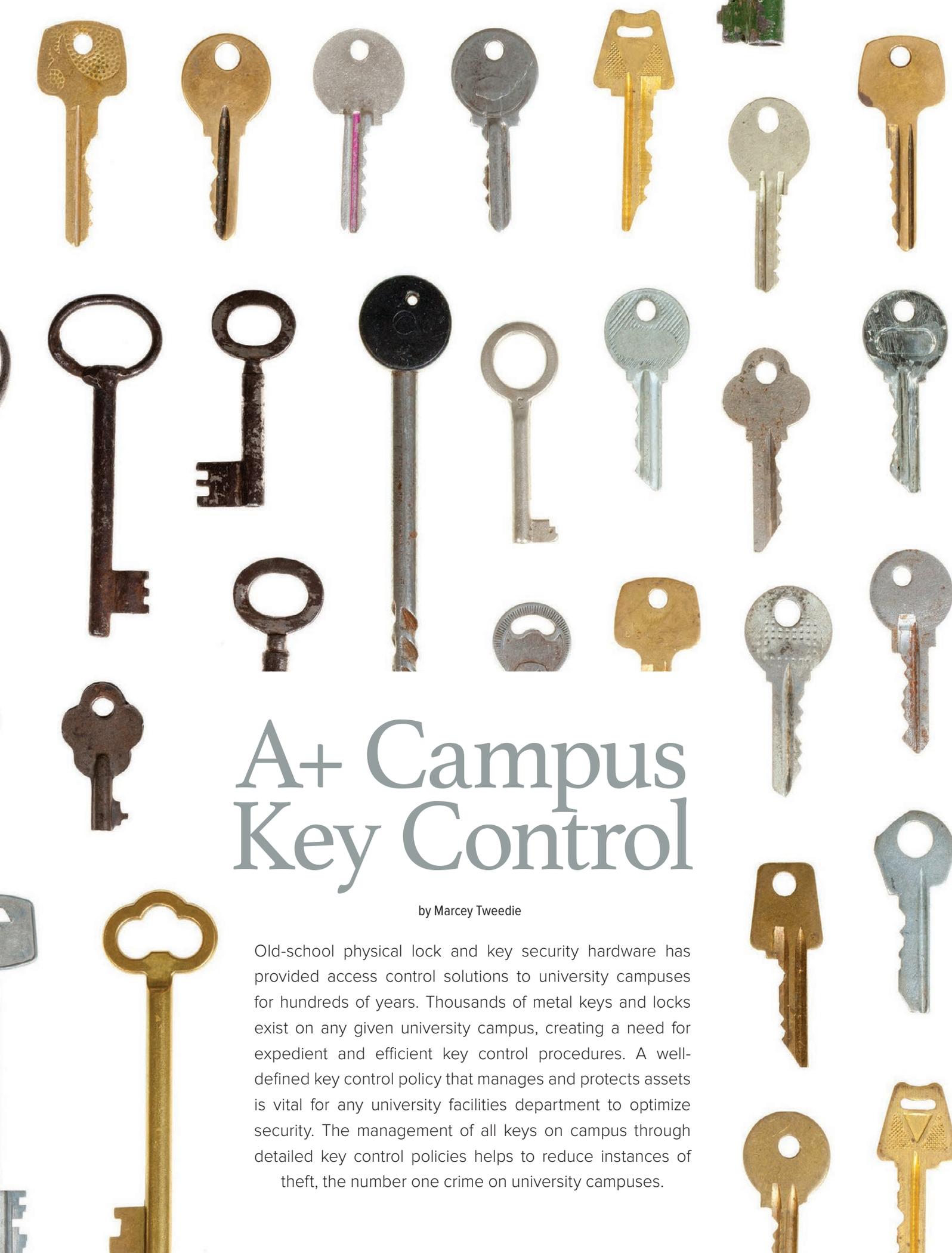
 DESIGNED, MANUFACTURED,  
AND SUPPORTED IN THE USA



Start planning your installation!

**715.386.8861**  
vikingelectronics.com





# A+ Campus Key Control

by Marcey Tweedie

Old-school physical lock and key security hardware has provided access control solutions to university campuses for hundreds of years. Thousands of metal keys and locks exist on any given university campus, creating a need for expedient and efficient key control procedures. A well-defined key control policy that manages and protects assets is vital for any university facilities department to optimize security. The management of all keys on campus through detailed key control policies helps to reduce instances of theft, the number one crime on university campuses.



Over the past three decades, manual clipboard, log, and pegboard methods evolved to sophisticated electronic key control systems that provide more efficiency and accountability for key control security.

The old-school implementation of campus key control policy involved administrators manually recording every key removal and return on a log attached to a clipboard and then vending the appropriate keys from a pegboard and label system to authorized recipients. This “school of hard knocks” key control method often contributed to scads of lost keys, burglaries when lost keys ended up in the wrong hands, and financial headaches when the expense of re-keying and replacement of locks costs thousands of dollars.

Fortunately, over the past three decades, manual clipboard, log, and pegboard methods evolved to sophisticated electronic key control systems that provide more efficiency and accountability for key control security. Key control systems automate every key transaction so key control policy and procedures can be implemented and followed

through with accuracy. An electronic key control system tracks which keys are out, who has them, and when and where they are returned, reducing instances of lost and misplaced keys.

Universities undergo frequent changes that include the build-out of new dormitories or learning facilities, the razing of outdated or unused buildings, the constant flow of ever-changing populations on campus, and the purchase of new fleet vehicles; all of these circumstances require regular audits, updates, and changes to key control policy and procedures. When key control policy is not well-defined, security vulnerabilities emerge if protocol and procedures are not spelled out and communicated to university employees, contractors, faculty, and students.

Making the grade for a strong and well-defined campus key control policy involves

communicating the policy with the campus population and implementing the key control procedures with the investment of electronic key control. Maximizing procedures with “think like a criminal” creativity to deploy key control solutions protects more than just keys on campus. Usually the facilities, security, and lock shop departments administer key control policy which includes:

- appointing administrators responsible for managing keys
- determining who is eligible for key usage
- managing and securing master keys
- fabricating and managing new and duplicate keys

# Best Practices for Keeping Students Safe

## A Guide to Campus Security

This **FREE** comprehensive Campus Security eBook walks you through what you need to know, including:

- Evaluating the total cost of ownership before purchase
- Best practices in assessing your risk
- An interactive map of common applications
- Helpful checklists to track progress
- Modern technologies and integrations
- Establishing policies and procedures

Learn more



[aiphone.com](http://aiphone.com)



Once the key control policy is defined and established, an electronic key control system provides accountability features to help mitigate the risk of lost or misplaced keys. These systems lead to reduction of incidents of theft, promoting a safer and more secure campus.

- assigning specific keys to specific users
- tracking key removals and returns
- defining access of keys for contractors
- implementing procedures for obtaining keys
- defining procedures for instances of lost keys
- determining and removing obsolete keys from the system

Once the key control policy is defined and established, an electronic key control system provides accountability features to help mitigate the risk of lost or misplaced keys. These systems lead to reduction of incidents of theft, promoting a safer and more secure campus. Some of the features and benefits available through electronic key control include:

### Audit Reports

Audit reports can be generated on demand with an electronic key control system. Key control administrators can instantly see who accessed certain keys in actual time because every key transaction is recorded through the electronic key control software. Reports can also be programmed to be automatically emailed to any person at any time. More frequent key control audits can reveal to key control administrators' areas where policy needs to be amended to strengthen and improve security.

### Accountability

A special feature allows users to provide notes in the key control system about the usage and purpose of obtaining a key. This feature creates adherence to the key control policy directives so there is more likelihood that the keys are being used for the right reasons at the right times in the right areas by the right users. Also,

**CHASE SECURITY SYSTEMS, INC.**  
Celebrating our 45th Year

www.chasesec.com Made in USA

**KAY PARK RECREATION**  
MAKING PLACES PEOPLE FRIENDLY • SINCE 1954

PROMO Code PUPN22PA

Tables, Benches, Litter Receptacles, Grills, Bike Racks, Dog Park Equipment, Highway Towable Bleachers & Stages

Ladder Toss Bag Toss Benches

1-800-553-2476 FAMILY OWNED AMERICAN MADE www.kaypark.com

# KÄRCHER



# A SCRUBBER THAT THINKS ON THE FLY.

The **KIRA B100 R** robotic scrubber is able to clean large hard floor surface areas quickly while safely navigating people and obstacles. Powered by BrainOS®, an intuitive cloud based AI operating system, our growing line of autonomous solutions makes cleaning smarter, and allows your team to focus on what they do best.

[karcher.com/us](https://karcher.com/us)



Scan to learn more

While cybersecurity helps to deter the most determined hackers, anti-virus software is not enough to protect against campus data breaches. Protecting server rooms and equipment cages with electronic key control provides accountability for who has access to the server room and prevents the theft of computer hardware and all the data that resides on it.

when new personnel and student populations are ever-changing, an electronic key control provides the security needed while orientation about key control policy and procedures takes place.

Access to keys will only be given when authorized usage is granted with assigned credentials. Having user accountability for all the keys on campus means key control administrators will always know which keys are currently being used and by whom. Permissions can easily be changed as needed.

**Access Control**

Users are granted access to the electronic key control system only if the credentials are entered correctly or are recognized by the system. Users are required to enter a secure PIN code, use a fingerprint or card reader, or complete biometric facial recognition. Users can easily be added or removed when needed.

All users of the key control system—including employees, students, educators, and contractors—need access to different buildings and locations around campus for specific periods of time. A key control system allows key control administrators to customize and program the permissions to make each key available only to those individuals authorized to enter a specific building or area. Temporary contractors and visiting faculty may be granted restricted access for the days and times needed only; these parameters can be programmed into the electronic key control system. For highly sensitive areas on campus, dual or triple user authentication can be programmed requiring multiple users to sign a key out or back in, which prevents single users from giving sensitive keys to unauthorized persons. Electronic key control systems provide surprising security capabilities, leaving plenty of opportunities to get creative on campus, including the following:



**ULTRA  
COACHLINER™**

**THE ULTRA COACHLINER DXL™** is the industry leader. This front engine motorcoach has the smooth ride, capacity and luggage space of a traditional coach bus, at only **HALF THE COST** to own and operate.





**CUSTOMIZE YOUR COACHLINER**  
[coachliner.com](http://coachliner.com)



**Starting at \$3493 Per Month**  
\*10% Down. 3.9% APR for 84 Months with \$40,000  
Balloon Payment or Walk Away at End of Lease.  
Pricing based on SE 102.



**FEATURES**

▶ **SEVERAL MODELS AVAILABLE**

- AirGlyde Full Air Ride Suspension Systems
- Comparable to Motorcoach Storage (549 Cubic ft.)
- Seats 42-56 or 54 with Lavatory
- High Comfort Premium Seating
- Cummins 9L Diesel
- HD Arctic Plus A/C (Industrial Grade Compressors)

- USB/110V Outlets & REI Video
- Premium Sound Abatement Package
- Full Composite No Wood Construction
- Alcoa Aluminum Alloy Wheels
- Pinnacle Premium Air Ride Driver's Seat
- Duraguard+\* Fire Resistant Anti-Mold/Mildew Floor
- Precision Reinforced Steel Cage

- Ride Control Stabilization System
- 102" Wide
- Optional LED Headlights
- Optional Boosted Premium Sound System
- Optional O<sup>2</sup> Safe Technology Clean Air System
- White Glove 24/7 Support & Assistance Program

Visit us at [coachliner.com](http://coachliner.com) or call **(800) 475-1439**

# RECRUITER™

WOOD SPORT LOCKER

## 2



### CUSTOM INSTALLS



### BENCHES



**Get Your Team  
GAME READY!**

**SUPERIOR®**  
AMERICA'S MOST COMPLETE LOCKER LINE™

**Metal, Plastic, Phenolic & Wood Lockers**



**+MedSAFE™**  
ANTIMICROBIAL FINISHES

Our Metal Lockers are available with MedSafe™ antimicrobial finishes with Microban®, formulated to protect against bacteria, mold, yeast & mildew for up to 20 years! Very beneficial for educational, healthcare, food processing and other hygiene conscious environments.



**800-776-1342**



✉ info@ListIndustries.com

🌐 ListIndustries.com



Access to keys will only be given when authorized usage is granted with assigned credentials. Having user accountability for all the keys on campus means key control administrators will always know which keys are currently being used and by whom. Permissions can easily be changed as needed.

**More Secure Computer Server Rooms**

Data breaches that affect sensitive information on campus can create fallout that may incur hefty fines, potential lawsuits, and the headaches of software, firewall, and reputation recovery. Firewalls and antivirus software alone are often not enough to protect against data breaches. While cybersecurity helps to deter the most determined hackers, anti-virus software is not enough to protect against campus data breaches. Protecting server rooms and equipment cages with electronic key control provides accountability for who has access to the server room and prevents the theft of computer hardware and all the data that resides on it.

**More Secure Fleets**

Campus fleets include athletic team vehicles, scooters, golf carts, buses, campus security vehicles, cars, bicycles, crew team

shells, landscaping equipment, and more. Replacement of fleet vehicles is an expense that needs budgeting. An electronic key control system with fleet management software secures keys and optimizes and “right-sizes” fleets. Over-utilization and under-utilization of fleet vehicles leads to lost revenue. A two-in-one key and fleet management system prevents theft and assigns vehicles only to authorized individuals. The software keeps fleets on schedule with maintenance and rotates usage to lengthen the lifespan of each fleet vehicle. Key removals and returns are all recorded and tracked with instant reports available.

**More Secure Weapons**

Electronic key control systems have the capability to store small firearms, weapons, and ammunition used by campus police officers. Besides modules for keys, locker modules can be configured into the system

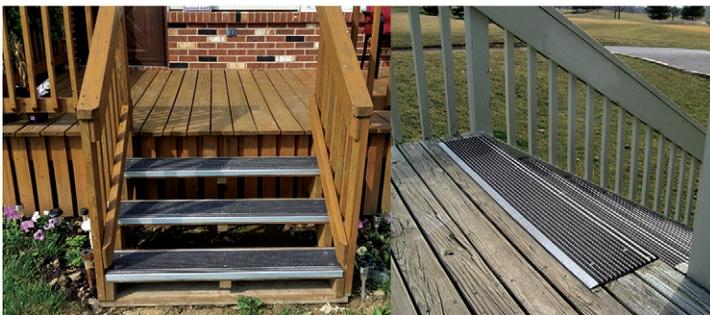


**Stairmaster®**  
Safety Treads



**Stairmaster Safety Renovation Treads:**

- Designed for the modernization and restoration of all stair types
- High quality to assure long tread life under heavy pedestrian traffic
- Durable and long lasting treads for both indoor and outdoor use



**Wooster Products Inc.**  
Anti-slip safety stair and walkway products  
For more information contact us today!  
[woosterproducts.com](http://woosterproducts.com) | 800-321-4936



**BEDBUGS • BACTERIA**  
**MOLD • MILDEW • MITES**  
**MOSQUITOS • GERMS**  
**LICE • VIRUSES**  
**SPIDERS • ODORS**  
**FUNGUS • INSECTS**

*Sterifab It!!*



**STERIFAB®**  
MUCH MORE THAN A BED BUG KILLER

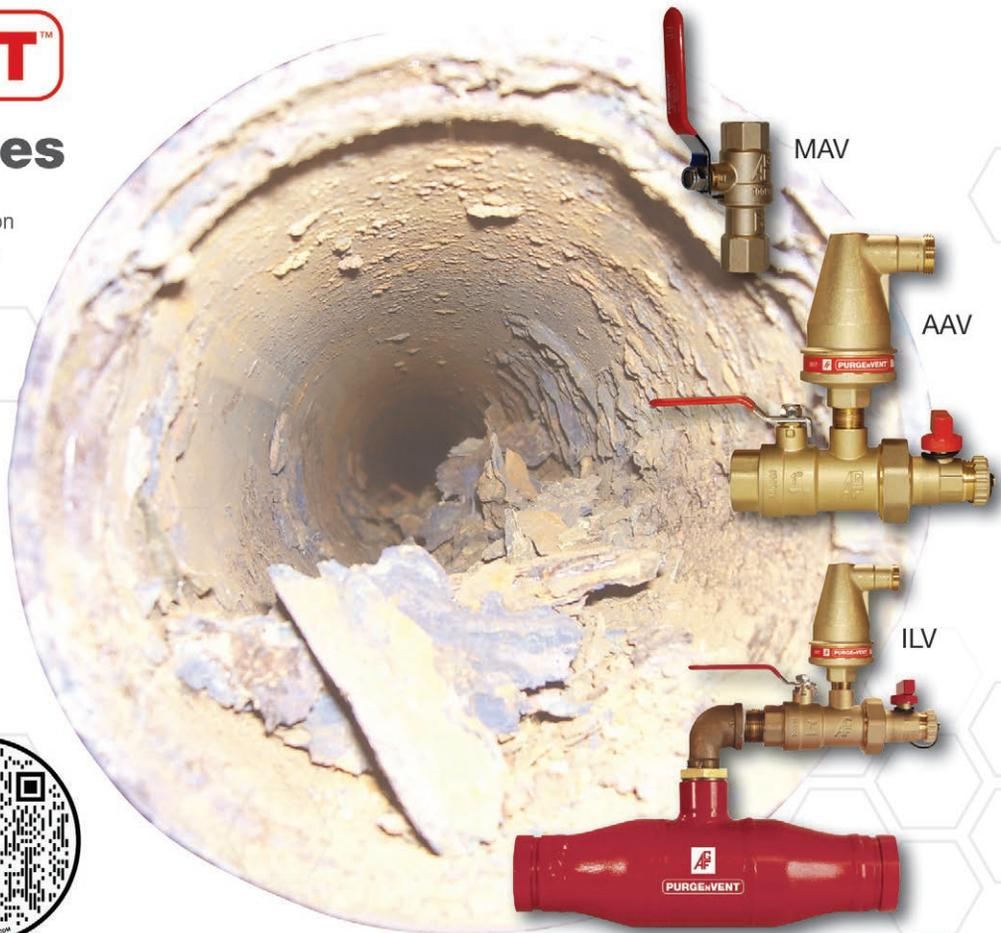
800 359-4913 • [STERIFAB.COM](http://STERIFAB.COM)

# VENT TO PREVENT CORROSION

**PURGEVENT™**

## Air Venting Valves

NFPA 13 requires the addition of an air vent on each wet pipe fire sprinkler system that utilizes metallic pipe to help mitigate internal pipe corrosion. PURGEVENT valves come in a variety of styles. The 7910MAV is a manual air vent that has the smallest footprint on the market. The M7900AAV features an 7900V automatic air vent that releases excess air while the system is in operation. It also includes an isolation valve and purge valve. The purge valve helps air exit the system faster when filling, and it can be used as a vacuum break when draining the system. The vacuum break helps the system drain faster and protects gaskets from being dislodged on other system components when draining. The M7930ECA includes a pipe cap for easy installation, and the M7950ILV features an air separation chamber that installs into the main branch line for applications with difficult to reach system high-points.



[www.agfmfg.com](http://www.agfmfg.com)

to provide access control to only authorized users, so weapons do not end up in the wrong hands. The system is programmable to ensure that assets can be accessed only at specific times, such as during work shifts. A requirement for the key control policy for weapon removal can include leaving notes within the system providing information about who and when and why weapons are accessed, how many rounds of ammunition were taken, and for what reasons.

**More Connectivity with Integrations**

Electronic key control systems can be integrated with leading access control systems so administrators can get a bigger picture of actual time security. The inter-operability between the two systems allows merging related functions so parameters of key control policy can be established along with access control parameters. For instance, if a key is not returned on time, then the user is denied egress from the facility until the key

is returned. By integrating key control and access control, safety and security is bolstered, especially during emergencies or lockdowns, because the two systems communicate with each other.

**More Security for Important Assets**

Physical assets such as mobile phones, two-way security radios, laptops, wallets, tools, historical artifacts, car keys, weapons, utensils, jewelry, and passports can all be secured in storage lockers within an electronic key control and asset management system. Campus staff and faculty members are at risk of having personal possessions stolen as they arrive at work and move around lecture halls, laboratories, and work areas. Maintenance and science departments need to lock away expensive tools or sensitive equipment and manage who has access to them to prevent theft. Electronic key control and asset management provides peace of mind to department heads that there is security and

accountability for items which are expensive to replace.

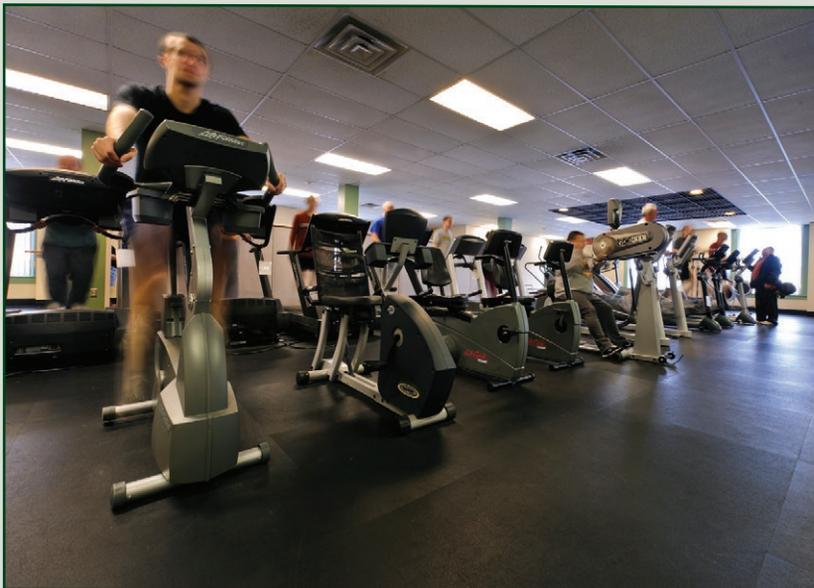
By combining a solid key control policy and maximizing the procedures through electronic key control systems, university campuses can reap the benefits of a safer and more secure campus. Decision-makers should look around, get some ideas brewing, and get creative with electronic key control security solutions.



**ABOUT THE AUTHOR:** Marcey Tweedie, Marketing Specialist for Morse Watchmans, has been with Morse

Watchmans for six years and has over thirty-five years of marketing communications experience. A Connecticut native, she enjoys exploring obscure towns with fun downtowns, history and good restaurants, gatherings with her husband and two grown daughters, travel, the arts, crafting, long walks, kayaking and good reads.

# RUBBER SPORT FLOOR



- Durable spike resistant flooring
- Made of recycled rubber combined with color flecks of new rubber
- Available in roll goods, glue down or interlocking tiles in a variety of colors



**MUSSON RUBBER CO.**

P.O. Box 7038 • Akron, Ohio 44306  
 800-321-2381 • Fax 330-773-3254  
 info@mussonrubber.com • www.mussonrubber.com



## CHAIRS DESIGNED WITH YOU IN MIND

At BEVCO, we specialize in ergonomic seating solutions that perfectly balance comfort and durability.

Explore our exclusive line of chairs and stools, expertly designed and handcrafted for demanding higher education environments.

**There are enough things to worry about these days—what you sit in shouldn't be one of them.**



When it comes to safety, reliability, and comfort, look to BEVCO for built-to-order seating solutions that are made to last.

**Visit [BEVCO.com](http://BEVCO.com) to learn more!**

✉ [sales@bevco.com](mailto:sales@bevco.com)

☎ 800-864-2991



## Clark Atlanta Receives \$11.8 Million Grant for Knowledge Metaverse Hub

EON Reality, the global leader in Augmented and Virtual Reality learning solutions for industry and education, awards Clark Atlanta University a \$11.8 million grant to bring the Knowledge Metaverse to the HBCU community.

The Knowledge Metaverse amplifies access and engagement in learning by combining the real world with digital information and extended reality (XR), similar to immersive experiences that have become increasingly popular in arts, gaming, and entertainment. Created through a global network of users, the Knowledge Metaverse is a digital grassroots movement. The EON-XR solutions provided through this grant enable Clark Atlanta University, the first Historically Black College and University to receive this award, to offer training to their faculty members and students to augment traditional in-person and online instruction.

“Partnering with a respected HBCU like Clark Atlanta University, whose graduates shape our world every year, demonstrates the impact EON-XR can have on the future

of academia and the sciences,” says EON Reality founder Dan Lejerskar. Clark Atlanta University is an invaluable addition to EON Reality’s network of U.S. institutions. The university brings its rich social justice history and research-intensive instruction to the Knowledge Metaverse. “When a university with their commitment to social justice and deep focus on digital learning can utilize and add to the Knowledge Metaverse, the possibilities for reshaping our society are endless. I can’t wait to see how Clark Atlanta University incorporates EON Reality’s solutions into their curriculum.”

“Clark Atlanta University remains dedicated to our scholars and equipping them with the best resources and innovative technologies,” said President George T. French Jr., Ph.D. “As we accelerate our momentum, these essential partnerships support our efforts to step into the future of interactive teaching and learning through relevant and future-focused innovations.”

Clark Atlanta University was established in 1988 by the historic consolidation of

Atlanta University (1865) and Clark College (1869). Clark Atlanta University continues a 150-year legacy rooted in African-American tradition and focused on the future through global innovation, transformative educational experiences, and high-value engagement. CAU cultivates lifted lives that transform the world. Notable alumni include: James Weldon Johnson; American civil rights activist, poet, and songwriter (composer of “Lift Every Voice and Sing,” known as “The Black National Anthem”); Ralph David Abernathy Sr., American civil rights activist; Congressman Hank Johnson, Georgia District 4; Kenya Barris, American award-winning television and movie producer; Kenny Leon, Tony Award-winning Broadway director; Jacque Reid, Emmy Award-winning television personality and journalist; Brandon Thompson, Vice President of Diversity and Inclusion for NASCAR; and Valeisha Butterfield Jones, Chief Diversity and Inclusion Officer at the Recording Academy, among others. To learn more about Clark Atlanta University, visit [www.cau.edu](http://www.cau.edu).

EON Reality is the world leader in augmented and virtual reality-based experience creation for education and industry as well as the creators of the Knowledge Metaverse. EON Reality’s twenty-three years of success are tied to its belief that knowledge is a human right and should be available, accessible, and affordable for every human on the planet. To carry out this mission, EON Reality developed and launched EON-XR, a SaaS-based platform dedicated to the democratization of XR content creation that brings code-free XR development and publishing to smartphones, tablets, laptops, and XR-focused devices. EON Reality’s global network of more than 1.4 million users is building the Knowledge Metaverse in more than 100 locations and has created the world’s leading XR library for education and industry with over 2.16 million 3D assets and counting. For further information, visit [www.eonreality.com](http://www.eonreality.com).

**MEAN GREEN ELECTRIC ZTR MOWERS**

**COMMERCIAL GRADE.  
ALL DAY BATTERY POWER.**



*Commercial Grade*



*All Day Power*



*User Friendly*



*Planet Friendly*

**MEANGREEN**  
ELECTRIC MOWERS

Find a Dealer at:  
[meangreenproducts.com](http://meangreenproducts.com)

★ USA  
ENGINEERED AND BUILT

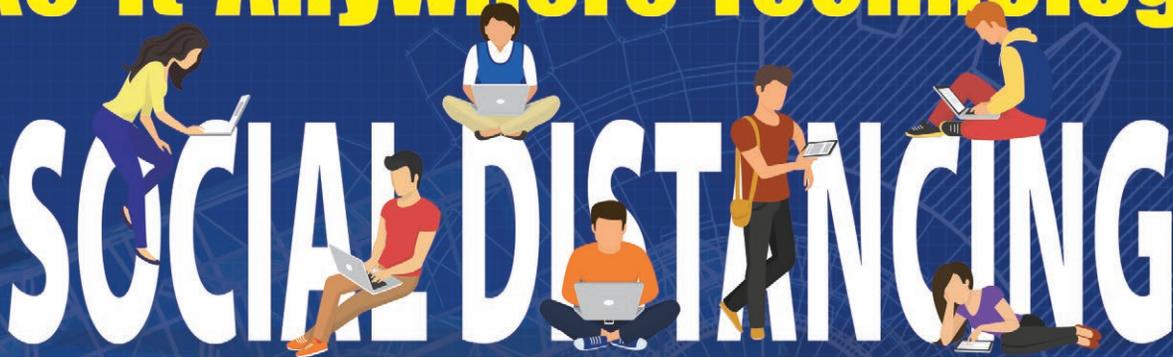
Assembled in the USA  
using domestic and  
foreign parts.



PO Box 1903  
Pelham, AL 35124

PRSRD STD  
US POSTAGE  
PAID  
PERMIT 284  
MIDLAND MI

# Take-It-Anywhere Technology™



## DISPENSING LAPTOPS, TABLETS, CHARGERS AND MORE

### OVER 3 MILLION

ANNUAL CHECKOUTS AND GROWING

3,000,000

### Join The Self-Service Revolution

Self-Service Kiosks with auto-docking allow you and your facility to maximize overall space and streamline operations to accommodate greater user demand.

Call today to discuss options and possibilities.



For More Info Go To:  
[ChargersAnytime.com](http://ChargersAnytime.com)

## 877.836.3727

*Trusted Technology Branded  
To Your Local Look-n-Feel*

Finally You Can Dispense Laptops, Tablets and Portable  
Chargers To Students Anywhere With **No Staff** Involvement!

For More Info Go To: [LaptopsAnytime.com](http://LaptopsAnytime.com)



## LAPTOPSANYTIME™

Automated Checkout Kiosks