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AQUATICS & FITNESS—SUMMER 2017
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TO SALINE**

**LIBERTY
NATATORIUM
TAKING SHAPE**

**SOUND & SURFACE
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AQUATICS & FITNESS FEATURES



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LIBERTY NATATORIUM TAKING SHAPE

by Liberty University News Service

Located beneath the LU monogram at the base of the mountain, the 75,000 square-foot Natatorium facility will be covered with a barreled roof and plenty of glass to allow for natural lighting; the natatorium will feature a separate diving well—all surrounded by upper-deck bleachers with a seating capacity of 1,400.



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by Brennan Prins

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by Dennis R. Berkshire

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CHLORINE TO SALINE: THE SAFETY AND COST BENEFITS

by Steve Pearce

Chlorine kills algae and bacteria by disinfection, and it chemically destroys chloramines and dirt; however, it's a highly dangerous, toxic chemical that can cause fires or discharges of dangerous gases if mishandled. Improper storage can result in a chlorine gas discharge that could lead to temporarily shutting down a pool facility or entire building.



AQUATICS AND FITNESS FACILITIES: CONSTRUCTION

By Liberty University News Service

Liberty Natatorium Taking Shape

Construction crews from Glass & Associates Inc. poured the concrete for the 50-meter pool inside the new state-of-the-art Liberty University Natatorium in late June. The project, which is connected to the Liberty Indoor Track Complex that debuted in January, is due to open in less than two months, on the first of November.

“The pool’s gutter system has already been installed and they are starting to hook that up,” said Liberty women’s swimming and diving Head Coach Jake Shellenberger. “They are also building the interior walls that separate the locker rooms and the wet classrooms. There is still a lot of work to do, but they are moving right along. Assistant Coach Jessica Barnes and I are excited to move into the new pool.”

The Nicest Pool on the East Coast

Located beneath the LU monogram at the base of the mountain, the 75,000 square-foot facility will be much larger than the current LaHaye Aquatics Center pool. Covered with a barreled roof and plenty of glass to allow for natural lighting, the natatorium will feature

a separate diving well—all surrounded by upper-deck bleachers with a seating capacity of 1,400. The facility will elevate Liberty's NCAA Division I women's swimming and diving team and men's club swimming and water polo programs, while also attracting students and community members of all ages.

The 25-yard-wide pool can be divided into twenty lanes for short-course training, with an additional eight lanes in the diving well allowing multiple teams to practice concurrently. With its proximity to the indoor track, it is equipped to host indoor triathlons, as well. The natatorium will also share a 6,554-square-foot weight room and 2,400-square-foot training room with the indoor track complex.

"It'll be a massive pool," Shellenberger said. "I believe it will be the nicest pool on the East Coast and a top-10 facility nationwide. We're excited about the unique bowl seating configuration, seating on three sides, which is extremely rare. That will create an exciting atmosphere that will rival any facility in the country."

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— HEAD COACH, JAKE SHELLENBERGER

Pool Features and Air Quality Upgrades

The natatorium will also feature a nine-lane, 50-meter pool with a movable bulkhead. A separate 17-foot-deep diving well will include 1- and 3-meter springboards and a 3-column tower, featuring 1, 3, 5, 7.5 and 10-meter platforms. The pool will also feature a 13.6 by 43-foot scoreboard, one of the largest in the country, capable of showing multiple display configurations and video replays. Aside from the natatorium's technical features, air and water

quality systems will also get an upgrade. Air quality features include a Paddock Evacuator push/pull, in-gutter system. The first of its kind in the country, the system pumps in fresh air and exhausts stale air from the surface of the water, through the pool gutter, at 8,000 cubic feet per minute.

Even with the preparation for the move to their new home, things have not slowed down for Shellenberger's teams in the offseason. He hired the program's first full-time diving coach, Tori Lamp Wood, who was the 2013 NCAA



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Sports and Fitness Facilities continued



Women's Diver of the Year as a junior at the University of Tennessee. "With our new natatorium, featuring a separate well and full platform, the sky is the limit for our diving program, and we are excited to see the results we will produce."

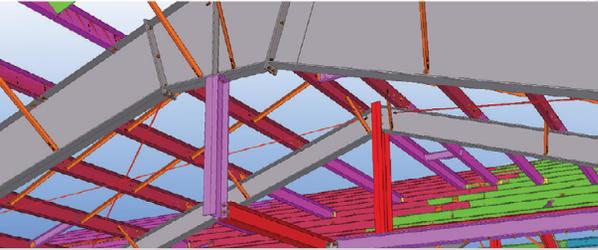
The Lady Flames

The Lady Flames will face some top-notch competition in the 2017-18 season, both in and out of the Coastal Collegiate Sports Association (CCSA). "We have not released our schedule yet, but we do have three home meets scheduled, which is fantastic news for us," Shellenberger said. "There will be some high-level teams coming in for the first year, including some Conference USA opponents."

Similar to the Liberty Indoor Track Complex, which will host the 2018 Big South Conference Indoor Track & Field Championships, the Liberty Natatorium will host the CCSA Swimming & Diving Championships in February 2019. Additionally, as Shellenberger explains, starting this winter and running through next summer, the natatorium has already landed several "big-time high-school age club meets, for both swimming and diving, that will attract myriad people to campus—swimmers and their families and friends, just like the indoor track."

ABOUT LIBERTY UNIVERSITY: Based in Lynchburg, Virginia, Liberty University offers students a world-class education with a solid Christian foundation. Students gain the values, knowledge, and skills they will need for success in every aspect of life. Visit www.liberty.edu for more information.

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Metal buildings are a more economical solution for athletic facilities, gyms and other multipurpose spaces with large clear spans. And, construction costs are lower when compared to conventional construction. The economical construction process can allow you to invest in additional facilities and amenities, such as an indoor pool or other extras. Overall, the affordability, design flexibility and energy efficiency of metal building systems make them a very appealing solution for athletic facilities.

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FITNESS FACILITIES: SOUND AND SURFACE

By Brennan Prins

Sound Advice

When planning or renovating your college's fitness center, be certain to choose the right flooring, or you'll never hear the end of it. Picture your university's fitness center. It's probably similar to those of other private colleges and universities: There's likely an area for weightlifting, rows of exercise machines, big mirrors, windows pouring in natural light, and a separate space for group exercise classes. The floor probably resembles your standard run-of-the-mill fitness center floor, and this is where the design and construction choices become problematic.

Everything may look impressive, but looks can be deceiving, and appearance alone is not how your fitness center will be judged once it is filled with students and staff there for their unique fitness regimens. Your decision to understand how sound travels in your facility can lead to your entire facility's success or failure.

Fitness Is Changing

Your university's fitness center isn't the old-fashioned health clubs that have been around for decades. Everything about it is different, with its sprawling size, complex regulations, and mind-boggling array of equipment.

One method of exercise is increasing in popularity: group fitness classes, with proprietary workout regimes from the likes of Zumba®, BODYPUMP™ and CrossFit. These and many other programs challenge students with high-intensity training that pushes them beyond anything fitness experts of just a few years ago could have imagined. However, with more pushing comes more force. With force, there comes both vibration and noise.

Once you combine vibrations and noise within mixed-use buildings, which are increasingly becoming the norm in these impressive centers—especially those on elite, private college and university campuses—and you’ll understand that the reduction of structure-borne noise in fitness centers is essential.

The Invisible Killer—Noise Pollution

Any sound that’s too loud or lasts too long—like that of a student dropping a barbell or a room full of CrossFit participants running in sync—can result in unnecessary stress, anxiety and annoyance for others nearby. And this pervasive noise won’t just stay in the room. In most cases, the acoustics of a fitness center

will allow the audible structure-borne sound to travel through standard floor mats, floors and ceilings, disrupting those in adjoining rooms, buildings, or living spaces.

In fact, neglecting the noise factor has compromised or ruined countless fitness centers.

Choose Noise Abatement Wisely

In essence, you want to find ways to stop or reduce sound every way you possibly can. For airborne noise, seal air leaks in walls, insulate air ducts, and use acoustical sealant along joints. However, do not neglect what’s beneath your feet; impact and footfall noise/vibration will travel through the floor and into connected structures.

Understanding the effects of structure-borne sounds and vibrations from athletes and equipment is a science. Circuit training, treadmills, spin classes, dance, CrossFit and aerobics, and the noise pollution generated from each need your attention; all of these activities require appropriate flooring to mitigate sound. The result is a pleasing experience for students, which encourages repeated visits to the fitness centers.

Weighing Your Options

As administrators of campus fitness centers, you can choose one of two options:

- Tell yourselves that sound won’t be an issue in your fitness center and hope for the best.
- Choose resilient rubber surface tiles that are designed to dissipate structure-borne noise for guaranteed better experiences for your students and staff.

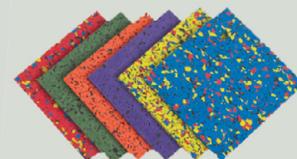
If you’re leaning toward option two, then you have made the right choice. The result will be a surface that greatly reduces the bounce of weights, humming vibrations of fitness equipment and repetitive thumps from group exercise.

Certainly, you want to do your research into flooring manufacturers and installers. Many university administrators believe that fitness center flooring is all the same, but the reality is there’s a significant difference. We’ve seen fitness centers struggling to remain in their space because of their inability to control the noise from within their center with sub-standard surfacing solutions.

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Any sound that's too loud or lasts too long—like that of a student dropping a barbell or a room full of CrossFit participants running in sync—can result in unnecessary stress, anxiety, and annoyance for others nearby. And this pervasive noise won't just stay in the room. In most cases, the acoustics of a fitness center will allow the audible structure-borne sound to travel through standard floor mats, floors and ceilings, disrupting those in adjoining rooms, buildings, or living spaces.

look at a product's test results, usually another eye-opener, since some rubber tile products have been engineered to reduce structure-borne noise by as much as 38 decibels.

Obviously, in these facilities, aesthetics matter tremendously. Luckily, you don't need to sacrifice style for practicality. There's flooring that is aesthetically pleasing yet can take a beating and absorb the sound of everything students want to do, without noise creating an unpleasant environment for students seeking to become or remain fit and healthy.

Here's a final piece of sound advice: Ensure that a plan for "noise" is in your fitness center plan. Let the experts handle the rest.

Don't Let the Science Floor You

You need to take several variables into account, such as the shape of your fitness center, the walls and bracketing systems, doors, windows and ceiling, and of course the flooring assemblies. However, it's not just about what's inside the room that counts. In short, you need to have a holistic approach to noise mitigation and consider the construction materials of adjoining spaces.

Much of this information is new to administrators, which is why flooring professionals are often eager to share everything they know about the particulars.

One of my favorite parts of going through the process of choosing the right flooring is the initial meeting I have with a prospective customer. I'll show them the differences between our options and how one rubber floor product can be superior to another. We'll also

ABOUT THE AUTHOR: Brennan Prins (b.prins@sofsurfaces.com) is a member of family-owned sofsURFACES, a worldwide leader in the production and installation of rubber surface tiles (www.sofsurfaces.com). Prins has grown with the business since he was a teenager and now manages the in-house sales and support team for customers across North America and Europe.

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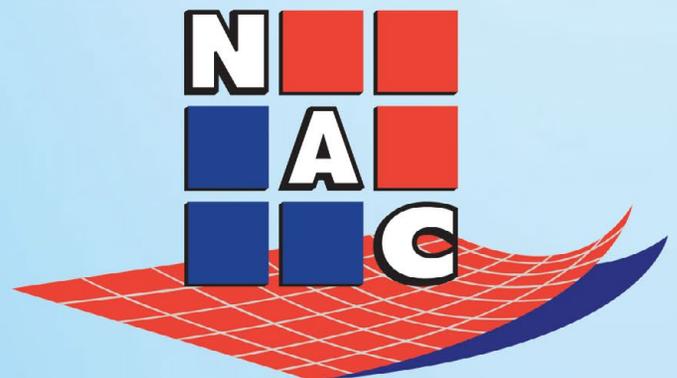
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For many colleges and universities, a key facility improvement on the Athletic Director's wish-list is adding indoor athletic training space. For some, having an indoor facility has gone from "nice to have" to "necessary to compete." Whether the need is for a new building or to add to an existing structure, certain basic issues have to be resolved for the project to move forward. On the list are topics including budget, architectural appearance and long-term cost of ownership regarding maintenance and operating cost. For many schools, the solution has been a steel-framed building system.

Budgets for athletic facilities usually require a substantial portion of funding to come from alumni and community contributions. A good example of how a building system provided the economical answer for a multi-purpose facility is the Schmidt-Bickle Indoor Training Facility located on Fort Hays State University campus in Hays, Kansas.

Funding for the project began with significant contributions from the families of Bob and Pat Schmidt and Don and Chris Bickle. Along with donations from others, the target of \$4.2 million was reached. Much to the surprise of school administrators, when bids were opened, the use of a steel building system came in under budget. This cost saving allowed the school to upgrade the building exterior and include options for more meeting space.

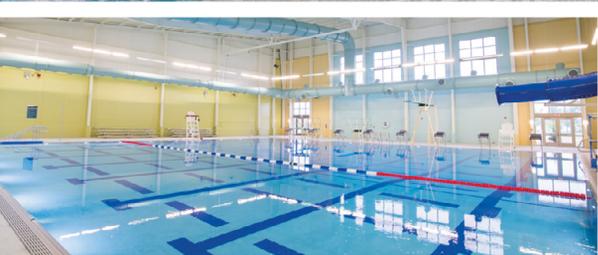
The 50,400 sq. ft. building serves as a multi-use training facility for sports such as football, baseball and track. With 186' clear span framing, the building has a full width, sixty-five-yard-long football field with artificial turf. For track and field training, there is a 70-yard track with jump pits. The building also includes batting cages, storage areas and a team meeting room.

Using a steel building system to create a world-class practice facility on their Ann Arbor, Michigan campus was the mission for the University of Michigan. With a total building size of over 104,000 square feet, the Al Glick Field House is 429 ft. x 216 ft. and reaches 85 feet in height at the highest point.

To allow the steel framed structure to match the appearance of other nearby campus facilities, the building was designed with masonry and brick walls similar to the existing structures. To provide



Bentonville, Arkansas Aquatics Facility



interior lighting while reducing electrical demand, the building utilizes translucent wall panels and windows. With interior features including a full-size practice field covered in “state-of-the-art” turf and observation decks for filming, the facility is considered one of the best in college football.

When Saginaw Valley State University began planning the new fieldhouse as part of their Ryder Center expansion, particular attention was placed on creating energy-efficient space. As part of the building system, designers chose insulated wall panels. These cost-effective panels not only reduced initial material expense but also provide long-term thermal efficiency to lower heating and cooling costs for the life of the building. Additionally, the insulated panels added an architectural element by using a varied color pattern to create visual interest.

Steel building systems are an ideal solution for indoor aquatic facilities as well. The Bentonville, Arkansas district developed an 82,700 sq. ft. multi-use facility that includes an indoor competitive pool and recreational pool with water slide components that extend out of and back into the building. The overall plan also included an

...when bids were opened, the use of a steel building system came in under budget. This cost saving allowed the school to upgrade the building exterior and include options for more meeting space.

elevated running track above the basketball court.

The inherent advantage of using optimized steel design to create clear, uninterrupted spans as wide as 300 feet between columns makes steel framing a great option for indoor ice hockey rinks, football and soccer fields. Further, with today’s computer-aided design, the systems’ approach reduces construction schedules and costs when compared to traditional alternatives.

A complete building system provides more than just structural framing. Building elements such as roof and wall systems can be included as part of the total building package. Having a single-source for the structure, roof and walls provides assurance that all elements of a structure are compatible.

Finally, a systems approach from Varco Pruden Buildings can include additional features such as insulation systems, doors and windows along with day-lighting options for roof and walls. When these items are included as part of a complete building package, issues related to maintenance, warranties and replacement, should they arise, are easier to resolve.

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Photos by Aquatic Design Group

BRINGING MODERN AQUATIC CENTERS TO YOUR CAMPUS

by Dennis R. Berkshire

University enrollment is expected to grow 10% within the next decade, so your institution is undoubtedly planning ways to get the best and brightest of these students onto your campus. As many Universities compete for the prize first-year and transfer students, they must find progressive and exciting amenities to attract discerning students.





For many students the draw to a University campus can be the total package that an institution offers and its quality of life on campus. These aquatic centers can be used for an array of activities beyond swimming, enriching both the university campus and students' lives.

These facilities have been used for student recruitment and the recruitment of student athletes, as well as for general campus recreation and socialization. It serves Freshmen Orientations, Greek Life, Collegiate Sports, and as a General Fitness Center for all students. Additionally, of course, health and wellness is a popular and common thread among the potential students and parents alike.

Serving the Majority of Your Students

Many Universities have aquatic centers to support collegiate swimming and water polo. A recent study found that of the thousands of high school swimmers, 7.9% of the boys and 8.3% of the girls will go on to swim in college. A recent Gallup Poll offers the following participation rate in exercise among college students: 30% participate in vigorous exercise, and 60% of students participate in moderate exercise. These statistics show us that a University Aquatic Center must serve not only the collegiate athletes but the vast majority of the students as well.

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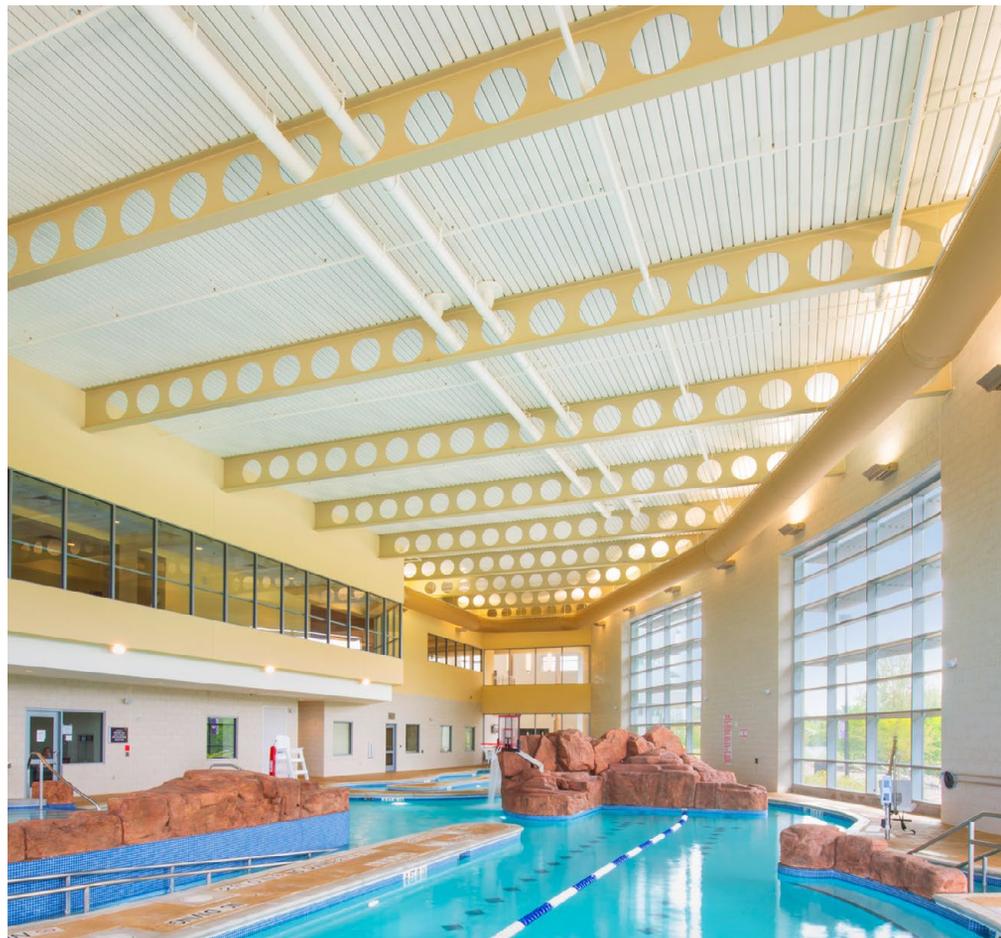
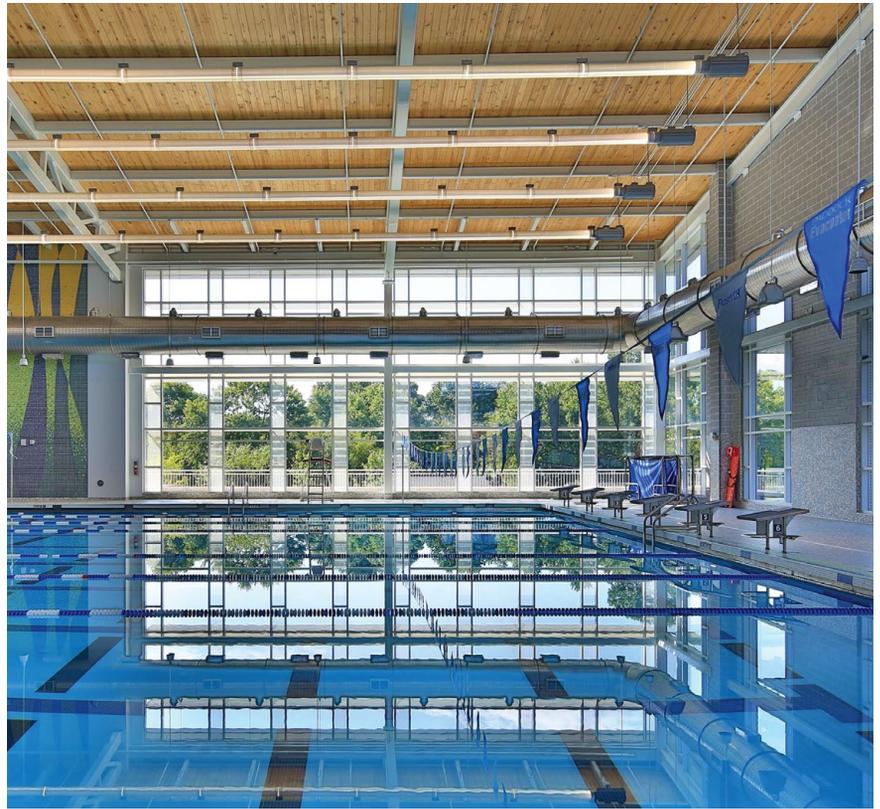
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To that end modern university aquatic centers are being built to serve the entire student body population along with faculty and staff. Therefore, modern aquatic centers must have amenities that can serve programs for the vigorous and moderate exerciser.

Traditional Growing Pains of Modern Aquatics Programs

A modern university aquatic center can include as many as 50 different programs. However, success in programs and popularity can come with challenges and growing pains. Swimming pools designed for competitive programs such as swim teams, water polo, synchronized swimming and diving require deep water pools. A competition pool should be a minimum 2-meters (6.7-feet) deep to provide a safe depth for diving into the pool.

Most recreation programs need swimming pools that have shallow water that allows bathers to stand and touch the floor. The trend in modern aquatics programming is to have deeper and deeper water for better and safer performance in competitive programs and more shallow water—in some cases even beach type entries—to support recreation programs. This trend has made many existing university swimming pools obsolete.



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Challenges of Replacing Versus Renovating

Universities are then faced with the challenge of trying to renovate existing facilities or simply replacing them all together. To satisfy this trend the new pool configuration is often multiple pools. One pool will be configured for competition programs, with deep water operating with cooler water temperatures of 78 to 80 degrees; a second pool will then be configured for recreation and fitness programs with shallower water operating with warmer water temperatures of 82 to 88 degrees.

Even the competition pools have developed amenities for recreational use to reach out to the majority of students. For instance, inflatable obstacle courses and log rolling competitions are examples of recreation programs designed for deeper water pool use.

Demand for Water and Air Quality

Another challenge for a modern aquatic center is the level of use and the demand for water and air quality. Given the increase in programming, the facility has little if any down time to perform preventative maintenance. Most state codes require the swimming pool water to be recirculated within 6-hours or less; this is known as a 6-hour turnover rate. However, with heavy bather loads, this code minimum requirement may be inadequate.

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Due to bather wastes, body oils, and sunscreen, the water may need to be circulated and filtered more often to maintain good water quality. It is not unusual to see a 2-hour to 4-hour turnover rate for a modern recreation pool. When trying to use an old existing pool for these new recreation programs and increased bather load, the underground pipes may not be large enough to support this flow rate. If a new recirculation system, filter system, and pool piping is required, then the facility needs to determine if the existing pool will meet all of the programmatic needs versus a remove-and-replacement project given the relative comparative construction costs.

The bather loads and efficacy of the pool recirculation system can also have an impact on the natatorium air for indoor pools. As bather load wastes build up in the pool water, chemical reactions must occur that allow the waste products to be broken down and off-gassed into the natatorium air. Inadequate turnover rates and chemical feed systems will result in poor air quality and a corrosive environment for the building and equipment.

Like the pool water, increased air turnover rates, along with improved air distribution, can help provide better air quality. As students strive for a better quality of life, they will not tolerate pool water or air quality that has occurred in old natatoriums and university pools. This space must be of the same quality as other spaces on campus, and it must be inviting to all the senses.

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In recent university projects, we have seen as many as 28 water features and pool configurations. These features are often targeted to meet specific program needs and may include a lazy river, beach entry, spray features, bubble benches, lounging ledges, vortexes, rain rings, rope swings, climbing walls, zip lines, movie screens, water falls, a band platform, Surf-in-place, water fountain features, along with Wi-Fi connections and charging stations with comfortable seating.

Adding a Bright and Welcoming Campus Attraction

Whatever your needs and programs, a well-designed and operated aquatic center can be a bright attraction to your campus. It can add to the health and quality of life on campus and serve as a great recruiting component for both students and athletes.



ABOUT THE AUTHOR: As president of Aquatic Design Group, Inc., Dennis R. Berkshire has over 35 years of experience in the aquatics industry, with field experience in swimming pool design, construction and operation, and training. He has a strong background in water chemistry and has been involved in the design of automated filtration chemical feed and water chemistry control equipment.

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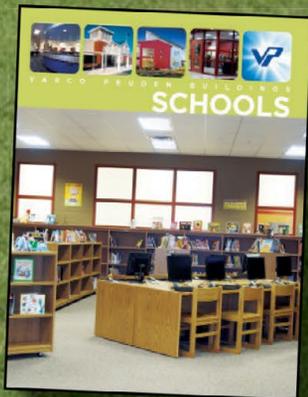
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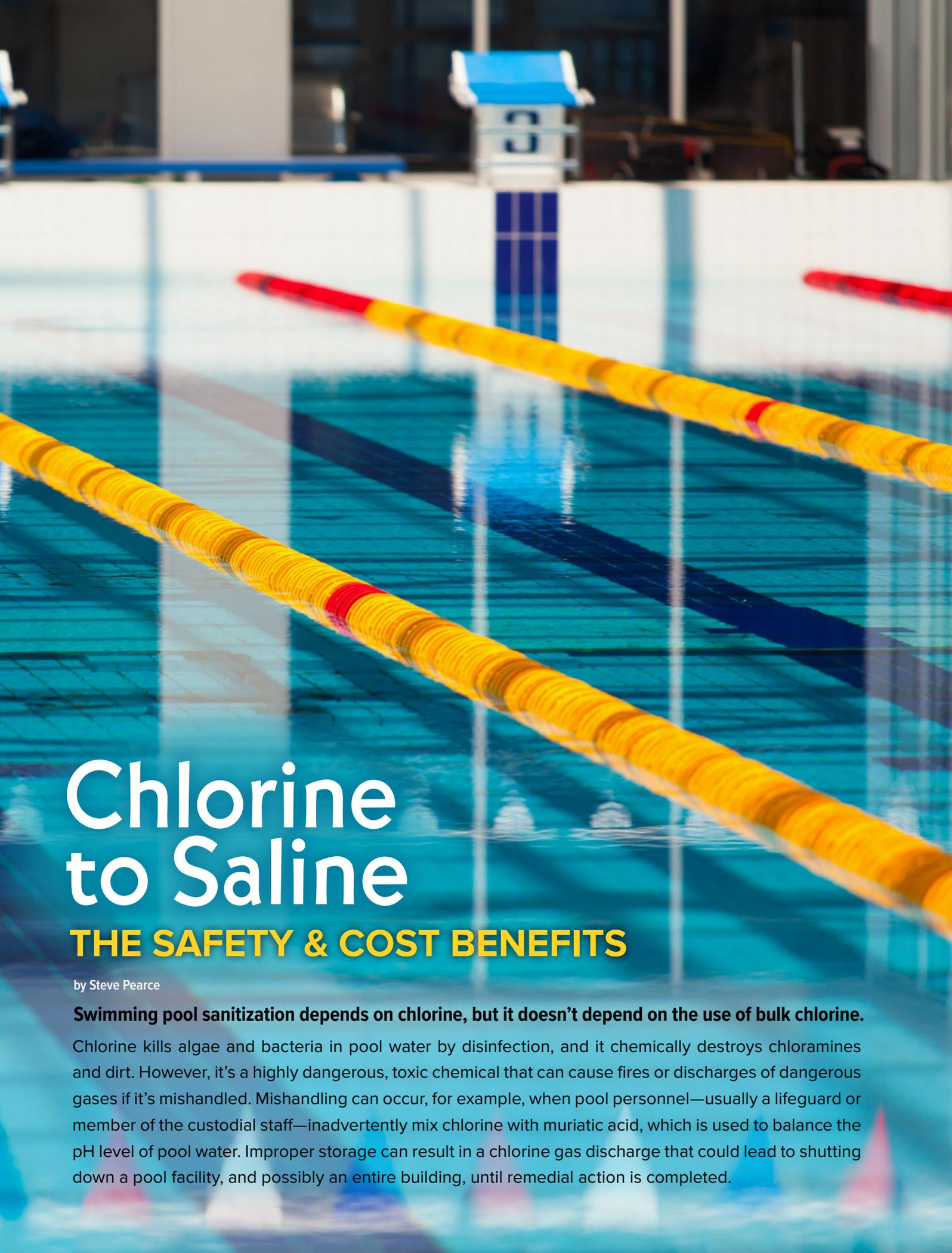


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Chlorine to Saline

THE SAFETY & COST BENEFITS

by Steve Pearce

Swimming pool sanitization depends on chlorine, but it doesn't depend on the use of bulk chlorine.

Chlorine kills algae and bacteria in pool water by disinfection, and it chemically destroys chloramines and dirt. However, it's a highly dangerous, toxic chemical that can cause fires or discharges of dangerous gases if it's mishandled. Mishandling can occur, for example, when pool personnel—usually a lifeguard or member of the custodial staff—inadvertently mix chlorine with muriatic acid, which is used to balance the pH level of pool water. Improper storage can result in a chlorine gas discharge that could lead to shutting down a pool facility, and possibly an entire building, until remedial action is completed.

Further, when algae or chloramines reach unhealthy levels in pools, one of the remedies is to shut down the pool and super-chlorinate the water. This involves raising chlorine levels 5 to 10 times above normal. For indoor pools, special care must be taken to ventilate the space properly and prevent ill effects for anyone in the building. This can put a pool out of action for several days, resulting in economic consequences.

Clearly, keeping a pool properly sanitized safely and cost-effectively is a matter of chemistry and economics.

Basic Pool-Water Chemistry

The chemistry part revolves around having the right amount of chlorine in the pool and making sure its pH is properly balanced. Typically, the chlorine should be 3 to 6 parts per million (PPM) of the pool water to ensure it kills bacteria and prevents algae growth. Combining chlorine and water creates hydrochloric acid, and that's what sanitizes the pool.

During use, however, the balance between acidity and alkalinity can be upset. Constant monitoring of pH levels is required to know

when to add other chemicals, such as muriatic acid. When chlorine in its concentrated form comes in contact with muriatic acid, this creates the possibility of forming a dangerous gas or causing a fire. While all pool personnel should be trained in properly handling both chemicals, some people forget their training or are prone to having an accident if they are rushing to do too many things in too short a time.

On-site safety issues associated with chlorine and muriatic acid can be eliminated by using salt to produce bleach to sanitize pools. In practical terms, pool operators know that liquid chlorine is commonly used in pools as a sanitizer, typically as sodium hypochlorite (NaOCl), which is the chemical equivalent of bleach. On-site batch chlorine generators produce that same end product using salt as their raw material instead of chlorine, and they add a few benefits.

Salt-generated chlorine should be pH-neutral, with generators having the ability to control the pH of the chlorine at a range of 7-8. This eliminates the need to add muriatic acid, and along with the elimination of chlorine, it eliminates the safety concerns.

Safety and Cost Considerations

With salt replacing chlorine, there is no need to build and maintain separate storage facilities for that volatile chemical. Indeed, some municipalities are mandating a move away from chlorine because of the safety factor and the costs to overcome it, or they are mandating separate storage facilities built to local codes. Restrictions can be imposed on when chlorine deliveries can be made, the types of delivery vehicles used and the routes they must follow, all to protect buildings and public safety.

Additionally, required storage facilities will require periodic inspection, again based on local ordinances, and there will be costs for those inspections and any resulting repairs to a facility.

In the pool itself, if the chlorine level gets too high in the water, it could release enough gas to affect breathing, especially in poorly vented indoor pools. Allergic reactions are rare, but in addition to breathing difficulties, some swimmers can experience skin irritation, and chloramines can cause red eyes and a strong chlorine odor.

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The people who work at any pool that uses chlorine need to be mindful of myriad safety factors. Breathing chlorine gas can knock out a person or even cause death in extreme circumstances. Chlorine must be handled with appropriate personal protection equipment to avoid respiratory exposure or contact with the skin. Labels on chlorine containers advise to never mix chlorine with any other chemicals, and workers must be sure to use dedicated scoops. They must also be sure to close containers tightly after using them.

The cost of bulk chlorine in any form—liquid, tablet or granular—can vary widely depending on market conditions. The salt used to produce on-site chlorine has been stable for many years. For the past few years, on-site batch chlorine generators have been able to produce a gallon of bleach for about one-third the cost of chlorine. The cost saving becomes greater when you factor in the reduced costs to transport and store the salt.

Any pool manager considering a move to a saline-based, on-site batch chlorine generator should be aware that the cost of the equipment may be slightly higher, but that should be offset



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With salt replacing chlorine, there is no need to build and maintain separate storage facilities for that volatile chemical. Indeed, some municipalities are mandating a move away from chlorine because of the safety factor and the costs to overcome it, or they are mandating separate storage facilities built to local codes.

by the lower costs for the raw material and for transportation and storage. Units are sized based on the number of gallons of water they treat, and a unit can serve multiple pools as long as it can produce enough chlorine.

Enhancing Sanitization

With pool water subject to increased bacteria and foul odors from chloramines caused by swimmers' sweat and urine, ultraviolet light (UV) systems provide a secondary treatment that can prevent excessive contaminate buildup from an overtaxed chlorination system. Because UV systems work only when water passes in front of them and not continuously

on the entire pool, they cannot be used as a stand-alone measure.

It should be noted that the most advanced UV systems use dual-output lamp technology to meet two needs at the same time. While UV is produced at 254nm, ozone is also produced at 185nm, adding to the sanitization of the water flowing through the chamber. This additional sanitizer helps reduce the amount of chlorine a pool requires. System sizes are based on the flow of gallons per minute past the light, and they can be slightly oversized if desired to ensure effective chloramine containment.

UV systems have been especially effective in competition pools, where the extra exertion

of swimmers can add a considerable burden to the sanitization system during a meet. And when combined with an onsite batch chlorine generator, there is no need to risk any safety problems from trying to add more chlorine during the height of competition and accidentally mixing chlorine and muriatic acid while trying to adjust the pH.

For colleges and universities that maintain pools both for athletic competition and recreational swimming, replacing bulk chlorine sanitization systems with salt-based systems—and adding UV—can pay quick dividends in stabilizing water quality, operational safety and hours of operation.



ABOUT THE AUTHOR: Steve Pearce is the Co-Founder and Group Executive Vice President of ChlorKing, Inc. and oversees all business activities. He is actively involved with NSF (National Sanitization Foundation), which is responsible for codes and policies directly related to the commercial swimming pool industry.

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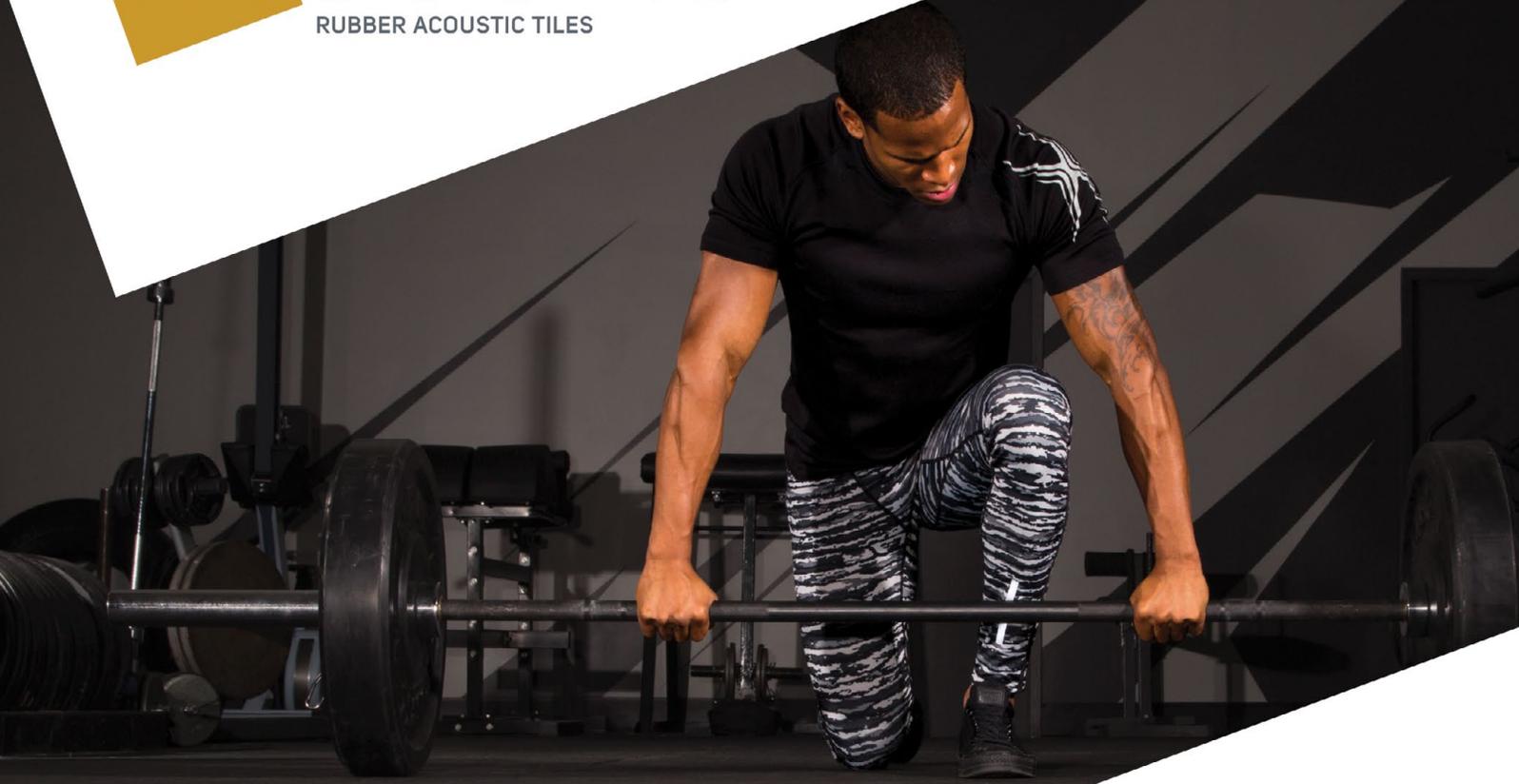


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