

POOL & SPA

MARKETING

AQUATIC SAFETY

The Role of Certified Surfaces

It's Here: AI in the Pool Industry
Ozone Technology: An Essential
How PVC Creates Luxury Design

IF UNDELIVERABLE RETURN TO:
KENILWORTH MEDIA INC.
201-30 LEEK CRESCENT
RICHMOND HILL ON L4B 4N4

A KENILWORTH MEDIA PUBLICATION | \$7.95

INDUSTRY-FIRST MICROCHANNEL TECHNOLOGY.

THE FUTURE BELONGS TO MICROCHANNEL.



CHILLS DOWN TO 40°F

Chills to low temperatures for your next cold plunge.*



INDUSTRY-LEADING COOLING CAPACITY*

Ideal for warm or desert climates with 30% increased cooling capacity.**



IMPROVED HEATING IN COOL WEATHER

Extend swim season with improved heating capacity at 50°F and below.



Scan to
learn more.



HEATPRO® SERIES:
HEAT AND HEAT+CHILL PUMPS

*Only available on Heat+Chill models.

**Compared to competitive technology.

Hayward, Hayward & Design, the H logo, HeatPro, Hayward We Build Better, and We Build Better, are registered trademarks of Hayward Industries, Inc. © 2025 Hayward Industries, Inc.

 **HAYWARD®**
We Build Better.™

contents

POOL & SPA
MARKETING
VOLUME 49 • NUMBER 3 • APRIL 2025

in this ISSUE:

- 6 Editor's Comment
- 49 Marketplace/Classifieds
- 50 Last Drop

on the cover



The outdoor pool at this idyllic beach resort boasts an impressive safety surfacing that is NSF/ANSI/CAN 50 certified, ensuring a secure environment both in the island play area and along the gently sloping underwater bench shallows. A thoughtfully designed custom blue curve motif weaves throughout the space, inviting guests to engage in playful movement while enjoying the vibrant atmosphere and stunning surroundings.

PHOTO COURTESY LIFE FLOOR AUSTRALIA + NEW ZEALAND



8

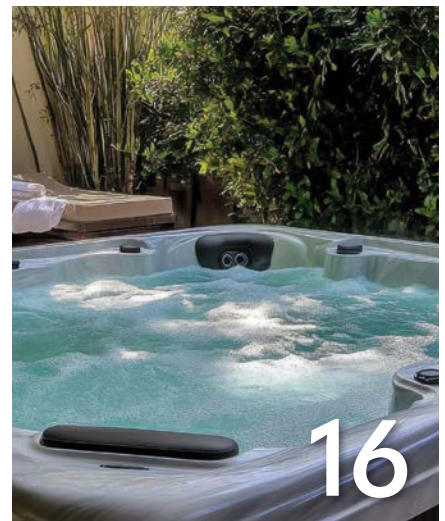
How AI is Transforming the Industry Innovations, Trends, and Future Potential



14

Industry Report: Executive Summary

A snapshot of the 2024 Pool Permit Report and 2025 Salary Survey.



16

Selling Ozone as the First Accessory

Relaxation Starts with Safety



20

How to Identify Pool Heater Problems

Why Installation Mistakes Lead to Failures



34

Designing for Wellness

Reinforced PVC Membranes Transforming Luxury



26

Water Through the Years

One Pool Pro's Journey from Fascination to Expertise



42

Safer Surfaces

The Future of Aquatic Flooring

Editorial Advisory Committee

Terry Arko, product training consultant, HASA Pool Inc.

Clayton Ditzler, CLD, The Landscape Artist Inc.

Ted Lawrence, vice-president of sales excellence, Biolab

Crystal Lengua, vice-president, SMP Ultralift

Frank Solda, senior partner, Solda Pools Ltd.

Follow us on Social Media



Pool & Spa Marketing magazine



@poolspamarketing



@PoolSpaMktg



@PoolSpaMarketing

EDITORIAL

Editorial Director
Blair Adams
Executive Editor
Jason Cramp
Associate Editor
Farheen Sikandar
Online Editor
Tanya Martins

DESIGN

Senior Graphic Designer
Catherine Howlett
Graphic Designers
Alfi Ichwanditio
Elaina Adams
Lisa Greco
Steve Maver

POOLSPAMARKETING.COM

Andrei Kurpatov
Hon Mun Mak
Lillian Hu
Sanjeev Deshar
Boyang Qian
Krina Li

AUDIENCE DEVELOPMENT

Mei Hong
Blanca Arteaga
Camille Garcia
Catherine Ho
CheukWai Chan
Frances Li
Irene Yu
Sonam Bhardwaj

ADVERTISING SALES

(800) 409-8688
sales@kenilworth.com
Vice-president of Sales
Joseph Galea
Publisher
Linda Dalke
Account Manager
Heidi AlBarbary
Sales Operations Manager
Tim Broderick
Sales Co-ordinator
Ines Abbey

PRODUCTION

Director of Production and Projects
Matthew Buckstein
Senior Production Co-ordinator
Melissa Vukicevic
Production Co-ordinators
Falon Folkes
Heather Donnelly
Justin Chan
Digital and Marketing Specialist
Alvan Au
Administrative Assistant
Bess Cheung

KENILWORTH MEDIA INC.

Group Publisher/CEO, Erik Tolles
Chief Financial Officer, Philip Hartung
Senior Director of Operations, Krista Taylor
Director of Business Development, John MacPherson
Accounting Manager, Bocho Shi
Accounting Assistant, Audrey Tang
Administrative Assistant, Helen McAuley

Founding Publisher Richard Hubbard

HOW TO REACH US

30 Leek Crescent, Suite 201, Richmond Hill, ON, L4B 4N4; (905) 771-7333

SPEAK TO THE EDITOR

We want to hear from you! Please email editorial inquiries, story pitches, press releases, and letters to the editor at: jason@poolspamarketing.com.

SUBSCRIPTION

To subscribe to *Pool & Spa Marketing*, call: (800) 409-8688; email: circulation@poolspamarketing.com

Rates

Canada 1 year: \$49.00 (incl. taxes)
U.S. 1 year: \$77.00 US
Foreign 1 year: \$98.00 US

Publications Mail Agreement #40663030

Postmaster: Return undeliverable Canadian addresses to: Kenilworth Media Inc. 30 Leek Crescent, Suite 201, Richmond Hill, ON, L4B 4N4 Tel: (905) 771-7333; Fax: (905) 771-7336

Pool & Spa Marketing (ISSN 0711-2998) is published seven times a year, including an annual directory, by Kenilworth Media Inc., 30 Leek Crescent, Suite 201, Richmond Hill, ON, L4B 4N4. Copyright © 2025 Kenilworth Media Inc. All rights reserved, including World Rights and Electronic Rights. No part of this publication may be reproduced without permission from the Publisher, nor may any part of this publication be reproduced, stored in a retrieval system, or copied by mechanical photocopying, recording, or other means, known or hereafter invented, without permission of the Publisher. The publisher shall not be liable for any of the views expressed by the authors of articles or letters published in *Pool & Spa Marketing*, nor shall these opinions necessarily reflect those of the publisher. This magazine is strictly for information purposes only. The content and expert advice presented is not intended as a substitute for informed professional advice. No action should be taken on information contained in this magazine without first seeking specific advice from a qualified professional. The electronic addresses contained in this magazine are for inquiring about a company's products and/or services or to contact an author, and not to be used for sending unsolicited marketing or promotional messages.

Printed in Canada



azoria

INGROUND FIBERGLASS POOLS MANUFACTURER



The Art of Pool Design, Made in Canada



Azoria, the largest fiberglass pool manufacturer in Canada, designs and produces its products locally in its facilities in Daveluyville, Quebec, and Trenton, Ontario. Born from the merger of Aquarino and Dolphin, the company relies on 100% Canadian expertise to offer durable, high-quality pools.



[AZORIA.CA](https://www.azoria.ca)



Charting the Course Ahead

Change is nothing new in the pool and spa industry, but 2024 proved to be a year of recalibration. After the boom of the pandemic years, the market is settling into a more sustainable rhythm. While pool permit registrations declined again, the slowdown was far less dramatic than in previous years—suggesting the industry is finding its footing. Businesses are adjusting to this shift by refining inventory management, optimizing staffing strategies, and improving operational efficiencies to navigate economic pressures. And while salaries remain competitive, hiring skilled workers remains an ongoing challenge.

Looking ahead, consumer spending trends are shifting. Homeowners are still investing in their outdoor spaces but with a growing focus on efficiency and technology. The demand for smaller, smarter pools and automation continues to rise. At the same time, workforce stability remains top-of-mind, with many professionals reassessing their long-term career paths. Turn to page 14 for an overview of the year-over-year analysis of pool building permits alongside insights from the latest salary survey results. These findings provide a snapshot of industry growth and/or decline, workforce dynamics, salary benchmarks, and hiring challenges shaping the industry. For a comprehensive look at these trends, purchase the 2025 *Pool & Spa Marketing* State of the Industry and Salary Survey report at poolspamarketing.com/industry-report.

Technology continues to be a game-changer in the industry. Artificial intelligence (AI) makes pool and spa ownership more seamless, with smart water monitoring, predictive maintenance, and AI-powered robotic cleaners taking centre stage. AI also transforms sales and customer service, helping businesses improve efficiency and enhance customer experiences. Industry expert Crystal Lengua-Rowell, vice-president of SMP Specialty Metal Products/Ultralift, shares her insights on the impact of AI and what's next for the industry on page 8.

Troubleshooting pool heaters remains a crucial skill for those in the field. Installation mistakes are among the most common reasons for failures, often leading to costly repairs and unnecessary downtime. Tom Soukup, principal of Patriot Water Works Co., walks us through the top installation missteps and how to fix them. His experience working with residential pools and large-scale waterparks makes this a must-read for service professionals looking to improve their expertise. Turn to page 20 for his expert advice.

Of course, safety is always a priority, and flooring surfaces play a bigger role than many realize. New standards for pool perimeter finishes under NSF/ANSI/CAN 50 are reshaping how operators think about aquatic flooring. These new standards are designed to improve safety, hygiene, and durability, from slip resistance and impact absorption to UV and chemical resistance. Briana Valente, the marketing manager for Life Floor, looks at what this means for the industry and how these advancements influence aquatic facility design. Read more on page 42.

As we move further into 2025, the industry will continue to adapt to economic conditions, shifting consumer expectations, and workforce challenges. Businesses that stay ahead of these changes—embracing innovation, investing in employees, and understanding emerging trends—will be best positioned for success. This issue provides valuable insights to help you navigate the road ahead.

Making waves, together. 

Jason Cramp
EXECUTIVE EDITOR



Have you heard there's a new kit in town?
A pool kit.



Better than anything you've tried—at a price
no one can beat.
Get your first one at cost price.



**Sign up for a free account and see
what you've been missing!**

ppex.ca • info@ppex.ca • 416 613 7808





How AI is Transforming the Industry

Innovations, Trends, and Future Potential

By Crystal
Lengua-Rowell

PHOTOS ©ADOBE
STOCK PHOTOS

Artificial intelligence (AI) is revolutionizing

various industries, and the pool and spa sector is no exception. From smart automation to predictive maintenance and enhanced customer service, AI is making pool and spa ownership more convenient, cost-effective, and efficient. As more businesses and homeowners seek innovative ways to manage their pools and spas, AI-powered solutions are becoming essential tools for maintenance, safety, and sales.

So, what is AI?

AI is a set of technologies that allow computers to perform tasks that are usually done by humans. AI systems use algorithms, data, and computational power to simulate human intelligence. What does that mean, exactly? AI can see, understand, and translate spoken and written language, analyze data and make recommendations, respond to human conversations in customer support, and so much more.

The integration of AI into the pool and spa industry has been a gradual process, with early forms of automation and control systems establishing the foundation. Automated control technology, often regarded as an early iteration of AI, has been used for years to manage various pool functions, including filtration, heating systems, and

smart water monitoring. Advancements have also been observed in design renderings, predictive maintenance, and other areas.

Here are five main areas/ways that AI has been integrated into the pool and spa industry:

Smart pool and spa monitoring: AI-driven automation

Smart water monitoring is one of the most significant (and original) AI advancements in the pool and spa industry. AI-enabled sensors and systems can continuously analyze water chemistry, ensuring the right balance of chemicals, temperature, and filtration.

AI-powered devices, such as some proprietary automated pool water monitoring systems, continuously measure key water chemistry parameters, such as pH, chlorine, and temperature, providing real-time insights, sending alerts and recommending precise chemical adjustments to reduce the need for manual testing.

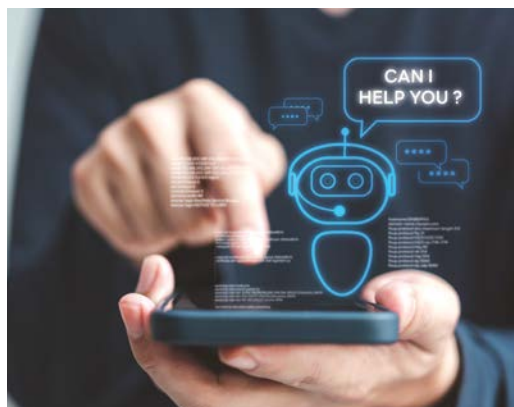
Similarly, AI-driven pumps and filtration systems optimize water circulation based on real-time data, enhancing efficiency and lowering energy costs. Automated dosing systems streamline pool maintenance by dispensing the exact amount of chemicals needed, preventing overuse and ensuring

water remains safe and balanced. This takes the guesswork out of balancing and maintaining pool and spa water and is undoubtedly a step up from traditional test strips.

AI in robotic cleaners: Smarter and more efficient

With AI-driven improvements, robotic pool cleaners have made great strides. These intelligent machines no longer follow random cleaning patterns but instead learn the pool's layout, optimizing their paths to ensure complete coverage.

AI-powered robotic pool cleaners use advanced mapping technology to detect and remove debris with increased efficiency. Equipped with machine learning capabilities, many of these robot cleaners adapt their routes based on dirt accumulation patterns and past cleaning sessions. Many models feature AI-driven obstacle avoidance systems, allowing them to recognize and navigate around ladders, steps, and other obstructions. These smart cleaners can also self-diagnose maintenance needs,



Artificial intelligence (AI)-powered chatbots enhance customer service by handling inquiries, providing maintenance recommendations, and scheduling service appointments.

alerting owners when filters require cleaning or if mechanical issues arise. This leads to the next point.

Aiding in predictive maintenance and energy management

AI is also helping pool and spa maintenance be more proactive than reactive. Predictive analytics can anticipate potential issues before they become major problems, helping owners save on costly repairs and downtime.



WaterLink SpinTouch

Simple · Fast · Precise - Learn more...



WaterLink Spin Touch



WaterLink Solutions PRO Water Analysis Program



- Rugged & portable for on-site testing
- Measure 10 tests in just 60 seconds
- Premeasured testing reagents, so no guessing
- Precise and simple to use
- Multilingual full-color touchscreen
- Connects with WaterLink® Solutions PRO software



Certified to NSF/ANSI/CAN 50



LaMotte
Water Testing Leader Since 1919!

WaterLinkSpinTouch.com



Artificial intelligence (AI)-driven automation allows homeowners to monitor and control pool functions remotely, optimizing efficiency and reducing costs.



AI-driven systems continuously monitor pump, heater, and filter performance, detecting anomalies that may signal potential malfunctions. Smart energy management tools optimize heating and filtration cycles based on weather conditions, reducing electricity consumption and operational costs. Some AI-enabled pool systems even suggest the best times to run pumps and heaters to take advantage of lower energy rates. (Which in today's economy is a selling feature of its own). Additionally, AI-driven maintenance platforms analyze historical performance data to recommend scheduled service, helping to extend equipment lifespan and maintain efficiency.

The customer experience: Chatbots and virtual assistants

Many pool service companies are leveraging AI to enhance customer interactions through chatbots and virtual assistants.

AI-powered chatbots (e.g. Facebook's business chatbots) enhance customer service by handling inquiries, providing maintenance recommendations, and scheduling service appointments. Cloud-based field service management software helps businesses streamline operations by automating scheduling, invoicing, payments, dispatching, and customer communication. Commonly used by service professionals in the pool and spa industry, this technology improves efficiency and simplifies daily task management.

When integrated into a customer relationship management (CRM) platform, virtual assistants help pool businesses manage leads, automate

follow-ups, and personalize customer interactions. AI-driven analytics further improve the customer experience by predicting needs based on usage patterns, allowing businesses to offer proactive service solutions. Additionally, AI-based chatbots provide troubleshooting assistance, enabling users to resolve minor pool issues without requiring an on-site technician.

Pool and spa design and sales

Thanks to AI-powered tools, the sales and design process for pools and spas is also evolving. AI-driven 3D design software and augmented reality (AR) and virtual reality (VR) tools enable customers to visualize their pools and spas before construction, providing a realistic and immersive visualization of the final design that helps homeowners select the perfect layout for their space. Machine learning enhances sales by analyzing customer preferences and recommending the most suitable products based on their needs and budgets.

AI-powered sales analytics tools assist manufacturers, retailers, and service providers in predicting market trends, optimizing inventory, and refine pricing strategies. Additionally, AI-based recommendation engines personalize the customer experience by suggesting custom pool features such as lighting, heating, and water enhancements based on individual preferences and climate conditions.

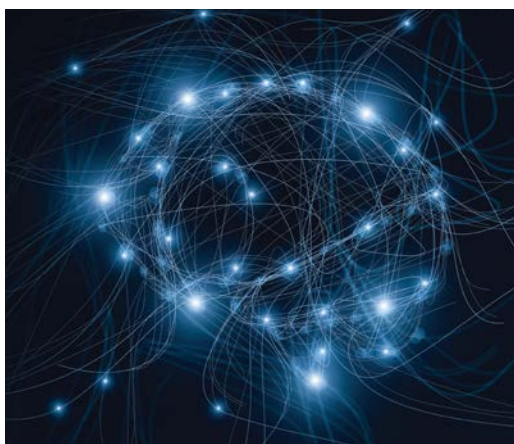
Aside from the areas listed above, one of the most important ways AI is assisting the industry is drowning prevention. Water safety is a critical concern, and AI is vital in enhancing security

measures. AI-enabled camera systems detect drowning risks in real-time by continuously tracking swimmers' movements, analyzing their posture, position, and activity in the water, and immediately alerting lifeguards, homeowners, or emergency responders to help prevent accidents. AI drowning prevention systems can recognize normal swimming patterns versus unusual or erratic movements.

Some AI-powered monitoring systems integrate with smart home assistants such as Alexa, sending alerts about unsafe water conditions or unauthorized pool access for added security when homeowners are away. Allowing motion detection systems to differentiate between accidental and intentional pool entries reduces false alarms and improves overall safety.

While AI offers the industry numerous benefits, like everything in business, there are some challenges to consider:

- High initial costs: Many AI-enabled systems require a significant investment, which can be a barrier for small businesses and homeowners.



Artificial intelligence (AI) is revolutionizing the pool and spa industry by optimizing maintenance, energy management, and customer interactions.

- Data privacy and cybersecurity risks: AI-powered systems collect and store data, raising concerns about potential security breaches.
- Dependence on internet connectivity: Many smart systems rely on Wi-Fi or cloud-based services, which could lead to downtime if connectivity is lost.
- Need for human oversight: While AI automates many processes, human intervention is still necessary to manage unexpected situations or system failures (which is not necessarily bad as it creates jobs).

CHOOSE YOUR COLORS

A new perspective on aquatics access.

In-House Powder Coat Experts
Custom Color Matching
Exceptional Service & Support
Family Owned & Operated
Best Industry Warranties
Handcrafted in Montana, USA



Aqua Creek Products

Leaders in Recreation, Fitness and Ability

aquacreek.com • sales@aquacreek.com • (888) 687-3552 •      

Smart water monitoring systems use artificial intelligence (AI)-enabled sensors to analyze and maintain proper water chemistry in real-time.



What is next for the industry?

Exciting innovations that make maintenance easier, improve efficiency, and enhance the user experience will remain a priority. The development of pool surface coatings capable of autonomously repairing minor damages may emerge, reducing maintenance efforts and extending the lifespan of pool structures. AI-powered water conservation systems will adjust water levels based on weather and usage, helping save resources, especially during heat waves. Smart pool and spa covers may even be deployed independently to minimize heat loss and cut energy costs.

For entertainment, AI-enhanced poolside systems will personalize music, lighting, and visuals to create a customized atmosphere. Personalization has been a driving marketing force, and that continues through AI spa features that will remember user preferences for jets, temperature, and aromatherapy.

And most importantly, AI-integrated wearables will track swimmers' vitals for drowning prevention and water safety. For example, wearable devices are available that monitor swimmers' movements and vital signs, detecting irregular patterns that may indicate distress. It sends immediate alerts to lifeguards or caregivers, facilitating prompt intervention. Similarly, wearables (e.g. bracelets) are designed for children, and monitor vital signs and movement, detecting prolonged submersion or lack of motion.

AI is transforming the pool and spa industry by making maintenance, cleaning, energy management, and customer interactions smarter and more efficient. As technology advances, embracing AI will be crucial for companies looking to stay ahead in this competitive industry. Now is the time for pool professionals to explore AI-powered tools and integrate them into their operations to enhance efficiency, reduce costs, and improve customer satisfaction.

As AI continues to revolutionize the pool and spa industry, its rapid advancement raises broader discussions about its impact beyond business operations. This rapid progress has sparked debates about the balance between innovation and regulation. Some argue that AI is evolving faster than laws and policies can keep up, raising concerns about potential misuse if left unchecked. Others believe imposing regulations could stifle innovation and lead to overly complex or ineffective rules. What do you think? 🐡



Crystal Lengua-Rowell serves as the vice-president of SMP Specialty Metal Products/Ultralift. Her extensive experience in the pool and spa industry spans 24 years, cementing her status as a seasoned veteran. Lengua-Rowell's expertise extends beyond the confines of her office, as she actively participates in in-class seminars, delivers captivating speeches on trade show platforms, and contributes written work to publications such as *Pool & Spa Marketing*. In recognition of her accomplishments, *Spa Retailer Magazine* featured her as a "Power Woman" in her field during her illustrious career. Alongside her professional endeavours, she is a devoted mother of four, a recent graduate of York University, a passionate yogi, and an advocate for female empowerment. Her educational journey boasts many achievements, including graduation in marketing management, public relations and corporate communications, professional sales, social media marketing, and event management. She also holds a certification in mindfulness meditation from the University of Toronto, equipping her with valuable tools for self-care and personal growth.

HIGH HEAT Diverter Valves



HIGH HEAT Diverter Valves



OV3 - 1500 - 1.5" I.D. 2" O.D.
OV3 - 2010 - 2" I.D. 2.5" O.D.



OV2 - 1500 - 1.5" I.D. 2" O.D.
OV2 - 2010 - 2" I.D. 2.5" O.D.

HIGH HEAT Diverter Valves C/W Unions



OV3 - 1500U - 1.5" I.D.
OV3 - 2010U - 2" I.D.



OV2 - 1500U - 1.5" I.D.
OV2 - 2010U - 2" I.D.

- Position indicator clearly marked OPEN/CLOSED
- Universal spline accepts all popular actuators
- Superior flow rate
- Permanently lubricated rotor seal with extreme wear resistance, exceeds 3000 dry cycle requirement

MAXIMUM SERVICE SPECIFICATIONS
80°C/176°F @ 3.5 BAR/50PSI

705 725 1100

praherplastics.ca

Praher Plastics Canada Ltd. 101 Saunders Rd. Barrie ON L4N 9A7

MADE IN CANADA



Editor's note: This is a summary of our 16th annual industry survey and our 46th annual report on the state of the Canadian pool industry, including statistical information and market analysis. Information is based on Pool & Spa Marketing's reader survey results, as well as Statistics Canada's building permit records for swimming pools with an overview of new pool permits for census metropolitan areas (CMAs). The figures are conservative and do not reflect many of the rural areas that do not require building permits for pool construction.



Pool Industry Stabilizes

Market Adjusts after Years of Rapid Change

By Jason Cramp

PHOTO ©/SHANE BUTT/
BIGSTOCKPHOTO.COM

The predominant trend of 2024 reflects a period of transition as the pool industry moves beyond the pandemic-induced surge of 2020 to 2022. While pool permit registrations continued their decline from peak levels, the pace of reduction slowed significantly compared to the previous year, suggesting a stabilization in demand.

Nationwide, swimming pool permit registrations declined by 10 per cent in 2024, following a steeper drop in 2023. Although totals have tapered off, the industry remains on stronger footing than in pre-pandemic years, with businesses adjusting to a more predictable market. Industry professionals note that 2024 was marked by careful inventory management, strategic hiring, and refined operational efficiencies.

Navigating economic pressures and consumer trends

Economic conditions in 2024 significantly shaped consumer behaviour, with inflation and interest rates influencing spending decisions. While initial demand was slower, the latter half of the year showed resilience as homeowners continued to invest in their outdoor spaces. Industry experts observed a growing interest in smaller, more efficient pools and advanced automation technology, signalling a shift in consumer priorities.

Regional trends and market performance

Quebec remained the dominant market, accounting for the majority of nationwide pool permits. Ontario



followed despite a decline in total registrations. Other regions experienced varying degrees of change, with some urban centres outperforming others. Certain cities saw unexpected growth, indicating pockets of strong demand even amid a broader market slowdown.

Technology and industry adaptation

Advancements in pool automation and energy-efficient equipment gained traction in 2024. Industry professionals adapted by enhancing their digital marketing strategies and focusing on service excellence to differentiate themselves in a competitive landscape. Businesses that invested in innovation and customer experience found themselves better positioned for long-term success.

Industry trends and workforce stability

The 2025 *Pool & Spa Marketing* Salary Survey provides an in-depth look at employment trends, compensation structures, and workforce dynamics across the industry. This annual report highlights shifts in career outlooks, job satisfaction, and the ongoing challenges businesses face in retaining skilled workers.

A clear picture is emerging of an industry that is resilient and evolving. While a strong percentage of professionals remain committed to the field, a growing number are reassessing their long-term career paths. Workforce stability remains a key discussion point, with employee retention trends reflecting positive employer engagement strategies and persistent hiring challenges. Although tenure within the industry is strong, with many professionals dedicating decades to their careers, new entrants under the age of 40 are shaping the future workforce at a slower pace than some industry leaders anticipated.

Compensation, benefits, and job satisfaction

Salaries remain competitive across most roles, with notable variations based on experience, job function, and geographic region. Many professionals reported salary increases, though wage growth has been inconsistent depending on sector and position. Compensation concerns remain a focal point for employees, with rising costs affecting overall job satisfaction. Employers that offer strong benefits

packages, including health care, paid leave, and retirement plans, tend to see better retention rates, underscoring the growing importance of non-monetary compensation.


Work-life balance and industry challenges

Despite a deep commitment to their roles, many professionals continue to struggle with work-life balance due to seasonal fluctuations, staffing shortages, and increasing workloads. The demand for skilled labour remains high, and businesses are actively exploring strategies to attract and retain talent in an increasingly competitive job market. For those with decades of experience, long hours and job-related stress remain major factors influencing career longevity. However, a strong sense of professional fulfillment continues to drive many to stay in the industry.

Employer loyalty and retention

Employer loyalty remains a defining theme, with a significant percentage of respondents reporting long-term commitments to their current companies. Many professionals have remained with one or two employers throughout their careers, suggesting that businesses that invest in employee engagement and career development are better positioned to retain top talent. However, organizations that fail to address compensation and work-life balance concerns may see higher turnover rates in the future.

Looking ahead

As the industry progresses through 2025, economic conditions and consumer confidence remain uncertain. Government policies related to taxation, home improvement incentives, and energy efficiency mandates may influence consumer purchasing decisions in the coming year. Additionally, Canada's trade relationship with the U.S., particularly concerning potential tariff changes on materials and equipment, could have cost implications for the industry and, ultimately, for consumers. Meanwhile, workforce dynamics will continue to evolve, with compensation trends, employee engagement strategies, and hiring challenges shaping the industry's future. Refer to the full report for a deeper analysis and detailed market insights. A full copy of the report can be purchased by visiting poolspamarketing.com/industry-report. 

Selling Ozone as the First Accessory

Relaxation Starts with Safety

By Jim Lauria

PHOTO ©YURIY NEDOPEKIN/
DREAMSTIME.COM

A relaxing soak in a spa or pool can be enhanced by a wide range of features and accessories, from a simple floating cup holder to elaborate aromatherapy, audio, and lighting packages. One key feature that can grant owners peace of mind and allow them to enjoy their water environment thoroughly is an ozone system that helps ensure their water is clean and healthy.

Highlighting the premium value of a spa with an ozone system can enhance a business's appeal and demonstrate a commitment to customer satisfaction. It serves as a strong statement about prioritizing the user experience with pools and spas while creating an opportunity to introduce additional accessories that further enhance enjoyment and provide protection from pathogens.

Perfect environment

A state-of-the-art ozone sanitation system is not the first thing most spa buyers think of when they imagine lounging in the jet stream. However, it may be the most important choice they do not even realize they need to consider.

An average bather brings 100 million bacteria into the water and all sorts of oils and chemical compounds from personal care products. Considering that the volume of a spa or home pool is only a fraction of that of large public pools, it becomes clear that spa owners must manage a significantly higher concentration of bacteria.

Some bacteria can pose serious health risks. For instance, in Canada, an average of 438 confirmed

cases of *Legionella pneumophila*, the bacteria responsible for *Legionnaires' Disease*, were reported annually between 2015 and 2019. However, considering underdiagnosis and underreporting, the estimated number of cases is approximately 1,113 per year, with around 1,008 requiring hospitalization.¹ In the U.S., the disease causes an estimated 8,000 to 18,000 cases requiring hospitalization each year, according to the Centers for Disease Control and Prevention (CDC).²

Legionnaires' Disease is particularly dangerous for individuals over the age of 50, smokers, and those with lung disease or weakened immune systems. The outbreak that led to the discovery of *Legionella* occurred at a 1976 American Legion convention, sickening more than 200 attendees and resulting in 34 deaths. Between 2015 and 2019, the CDC recorded 65 outbreaks associated primarily with public pools and spas, with multiple reported fatalities.

Unfortunately, few environments provide a better breeding ground for *Legionella* than a hot tub or a warm pool. The bacterium thrives in water temperatures between 20 and 50 C (68 and 122 F). Even more concerning, it can shelter beneath a protective layer of biofilm, shielding itself from the oxidation effects of chlorine and bromine. A homeowner might easily overlook this, or it may remain hidden deep within the plumbing, out of sight.

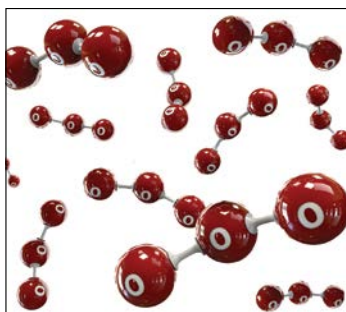
Since biofilm is an invisible but persistent problem in spa sanitation, hands-on demos, or visual aids can make its impact—and ozone's ability to eliminate it—tangible for customers. Interactive demonstrations

such as the “foggy pipe test,” where biofilm-mimicking residue remains in untreated tubing but dissolves with ozone-infused water, provide a clear visual contrast. Additionally, scientific comparisons such as a petri dish bacteria test, time-lapse videos, or a UV light biofilm reveal can reinforce how ozone penetrates contaminants that chlorine alone cannot, making spa maintenance easier and more effective.

Crypto on the rise

Cryptosporidium is another pernicious pathogen on the rise. A CDC report analyzing data from 2015 to 2019 documented 208 reported outbreaks of illness associated with treated recreational water. Of these, 76 outbreaks, accounting for 2,492 cases—or 84 per cent of the reported illnesses with a confirmed etiology—were linked to *Cryptosporidium*.

These statistics are sobering, but it is important to note that private spa owners are not required to report illnesses contracted in their homes. As a result, many more cases linked to private hot tubs likely go unreported.



Ozone (O₃) is a highly reactive oxidizer that breaks down contaminants and biofilm more effectively than traditional disinfectants. By disrupting biofilm that shelters harmful bacteria, ozone enhances the performance of other sanitizers, helping keep pool and spa water clean and safe.

PHOTO ©TUSSIK13/ISTOCKPHOTO.COM

Spa dealers should present ozone as a preventative, long-term investment that enhances water quality, reduces maintenance, and protects health—rather than a reactionary fix for existing problems. Customers can see it as a cost-saving and wellness-enhancing upgrade by emphasizing its ability to prevent biofilm buildup, reduce harsh chemical use, and extend spa component lifespan. Common objections, such as concerns about cost or maintenance, can be addressed by explaining how ozone lowers chemical expenses, minimizes upkeep, and works automatically without extra effort. Framing ozone as essential—such as premium jets or LED lighting—ensures customers value it as a key part of a high-quality spa experience, rather than an optional add-on.



When flexibility & quality matter, choose...



KSPA



MADE IN
CANADA

(519) 753-6717 • sales@kuritec.com
140 Roy Blvd. Brantford, ON N3R 7K2

KSPA Series
from



Kuri Tec

Scan to find
a distributor



Sales conversation script

Sales rep: "When people think about hot tubs, they imagine relaxation and enjoyment but did you know that every time someone steps into a spa, they introduce millions of bacteria into the water? Some of these, like *Legionella* and *Cryptosporidium*, can be difficult to remove with standard chlorine alone—especially since they can hide in biofilm deep in the pipes."

Customer: "That sounds concerning. Wouldn't my regular chlorine or bromine be enough?"

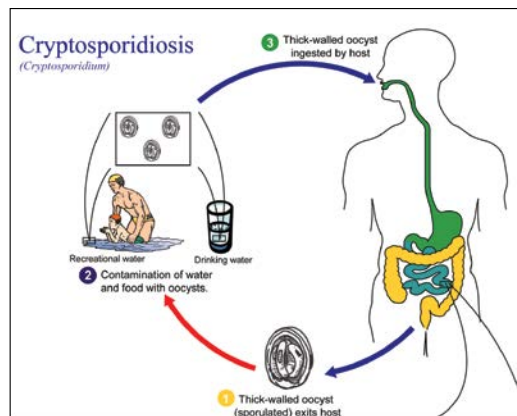
Sales rep: "Chlorine and bromine are essential but have limitations. Some bacteria, like *Legionella*, can survive by hiding in biofilm, which regular sanitizers struggle to break down. That's where ozone comes in. Ozone destroys biofilm and eliminates bacteria, providing an added layer of protection—so you can truly relax without worrying about what's in the water."

Customer: "I don't want to overcomplicate maintenance, though."

Sales rep: "That's actually the best part! Ozone works automatically, reducing the amount of chlorine or bromine needed and minimizing harsh chemical smells. Plus, it helps keep the water clear and fresh for longer, reducing the time and money spent on maintenance."

Customer: "That makes sense. But is it really necessary?"

Sales rep: "Think of it this way—many premium spa owners invest in high-end jets, sound systems, and lights. However, none of that matters if the water isn't as clean and safe as it should be. Ozone isn't just an upgrade; it's one of the best investments you can make for your health, spa enjoyment and the longevity." 🌊



Cryptosporidium is a chlorine-resistant parasite that spreads through contaminated pools and spas, causing severe gastrointestinal illness. Ozone is the most effective defence, breaking down *Cryptosporidium* oocysts where chlorine and bromine fall short.

IMAGE BY U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION (PUBLIC DOMAIN)

that can harbour germs and stain spa surfaces while cleaning pipes and hoses to extend longevity.

The most compelling talking points for spa buyers are health and safety, water clarity, and reduced chemical use, as each addresses a key customer concern. Buyers value ozone for its ability to eliminate harmful bacteria such as *Legionella* and *Cryptosporidium*, ensuring a safer, more hygienic spa experience. In addition, ozone enhances water clarity by breaking down contaminants and reduces reliance on chlorine and bromine, making maintenance easier while providing a more natural, skin-friendly soak.

Using ozone reduces the need for customers to handle large amounts of chlorine or bromine, as these chemicals serve as residual disinfectants after ozone treatment. By minimizing chlorine, spa owners also reduce the chance of creating harmful disinfection byproducts (DBPs). It is a win-win situation: more comfortable, convenient, and environmentally friendly than old-fashioned systems relying solely on chlorine or bromine.

Beyond the oxidants themselves, the system's effectiveness in dissolving them in spa water is crucial. Spa dealers can provide customers peace of mind by highlighting how leading manufacturers strategically design and position injectors and nozzles to maximize ozone transfer. By creating the smallest possible bubbles to increase the reaction area, maintaining proper pressure differentials, and optimizing mixing, these systems ensure maximum contact between water and ozone for effective disinfection.

Further, highlighting the ease of installation and automation of ozone systems can help close the sale,



A properly engineered ozone delivery system—featuring a Venturi injector, flash reactor, and nozzle—ensures maximum ozone transfer with minimal off-gassing for superior spa sanitation.

PHOTO COURTESY
MAZZEI INJECTOR COMPANY

Best investment

As many spa customers gravitate toward premium jet packages or top-quality sound systems, it is worthwhile to emphasize that they can relax in greater comfort knowing that they have also invested in a top-quality disinfection system. What could be more relaxing for a homeowner than knowing their spa is equipped with a system that significantly reduces the risk of inhaling pathogens? The experience becomes even more enjoyable when the water stays fresh and inviting—without the harsh smell of a public pool or the eye irritation caused by chlorine or bromine.

Spa dealers can emphasize the benefits of a high-quality disinfection system with the same attention to detail given to an advanced entertainment setup. Just as customers are guided toward the ideal combination of lights and speakers, they can also be introduced to the right mix of disinfectants. Ozone, a powerful oxidizer, rapidly eliminates pathogen cells and inorganic contaminants. It also breaks down biofilm

as customers prefer low-maintenance solutions that work seamlessly. Ozone systems operate automatically alongside existing spa filtration, reducing the need for frequent chemical adjustments and hands-on upkeep. Additionally, by emphasizing long-term cost savings—such as reduced chemical expenses, extended equipment lifespan, and fewer water changes—dealers can position ozone as a smart, hassle-free investment for any spa owner.

Greatest accessory

High-quality accessories for pools and spas provide strong profit margins and a valuable opportunity to enhance customer satisfaction. While many upgrades focus on high-end experience enhancers such as entertainment systems, aromatherapy dispensers, or fitness kits, emphasizing premium spas' advanced disinfection systems can set them apart—positioning superior water quality as the ultimate accessory.

Bundling ozone systems with premium spa features enhances perceived value by positioning it as a luxury, health-focused, or low-maintenance



Legionella is a dangerous bacteria that thrives in warm water environments like spas and hot tubs and can cause *Legionnaires' Disease*, a severe respiratory illness. Unlike chlorine, ozone technology effectively destroys *Legionella*, ensuring cleaner and safer spa water.

PHOTO ©GILNATURE/ISTOCKPHOTO.COM

package rather than just an add-on. Effective combinations include hydrotherapy jets, LED mood lighting, Bluetooth audio, saltwater systems, and automated filtration, aligning with customer priorities for relaxation, cleanliness, and ease of use. By integrating ozone into high-end spa packages, dealers can create a compelling offer emphasizing wellness and convenience, making it easier for buyers to justify the investment. 🌊



Jim Lauria is vice-president of sales and marketing at Mazzei Injector Company, a leader in mixing and contacting technologies for water treatment. A chemical engineering graduate of Manhattan College, Lauria has extensive expertise in the recreational water space. He can be reached via email at jlauria@mazzei.net or connect on LinkedIn at [linkedin.com/in/jimlauria](https://www.linkedin.com/in/jimlauria).

COMPLETE YOUR POOL JOBS FASTER WITH

MAX **TV/INTIER®** REBAR TIERS





**TIES WIRE MESH x WIRE MESH
UP TO #7 X #7**

- NEW LOAD ASSIST MECHANISM
- NEW FASTER TYING
- NEW EASY PULL TRIGGER
- BUILT TO LAST
- COST EFFECTIVE

**TV/INTIER®
RB443T**



SCAN TO VISIT WEBSITE

MAX

maxusacorp.com

All MAX products are protected by registered patents and design rights including trademarks. For details, please contact MAX.

Identifying Pool Heater Problems

Why Installation Mistakes Lead to Failures

By Tom Soukup

PHOTOS COURTESY
PATRIOT WATER WORKS CO

Identifying and resolving pool heater malfunctions was the initial step that led the author's company into the aquatic industry. Originally specializing in commercial and residential hydronic heating, the business focused on boilers and water heaters as its core expertise. While services in that sector continue, the company's capabilities have expanded.

Fifteen years ago, the idea of designing, installing, and troubleshooting pool heating systems for homeowners and some of the largest waterparks in the mid-Atlantic would have seemed improbable. However, the principles of thermodynamics remain constant, regardless of the application.

The company's entry into the aquatic industry began when a local YMCA reached out after finding its name listed as an authorized service provider for

the heating appliance serving their indoor pool. The unit in question was a volume water heater capable of functioning as both a boiler and a pool heater—an area where the company already had extensive experience. The facility had been replacing the heat exchanger on its old heater annually, and despite installing a new unit, the system required a new burner tray after only eight months. After diagnosing and correcting the issues, the unit remains fully operational nearly a decade later.

It all starts with proper installation

More than 90 per cent of pool heater failures the company encounters result from a safety device responding to an installation issue. These problems often originate during system design and continue



An example of undersized gas piping, and the heater is not installed per code and manufacturer specifications.

to compound over time. When troubleshooting a heater, it is essential never to assume it was installed correctly—more often than not, it was not.

A common installation mistake is failing to read and follow the manufacturer's manual. Manufacturers provide detailed installation guidelines for a reason—they are essential for ensuring proper setup and preventing issues down the line. The three most common causes of failure include improper gas supply, water flow issues, and venting mistakes.

Gas supply

One of the most frequent problems the company encounters is an undersized gas line or improperly regulated gas pressure. For example, a 750,000 BTU/h pool heater may have a 25.4-mm (1-in.) gas stub-out,

but that does not mean the entire supply line can be 25.4 mm (1 in.) in diameter. While a 25.4-mm (1-in.) pipe may be sufficient for the final 457.2 mm (18 in.) within the appliance cabinet, it is inadequate for the entire gas supply line.

The correct pipe size depends on the developed length of the pipe from the meter and the appliance's firing capacity. Guidelines are supplied in the manual.

Some installers assume that the job is done once the appliance fires up. However, pool heaters must be commissioned following the manufacturer's start-up procedures, including checking manifold and static and dynamic gas pressure. High-efficiency condensing units typically require even more detailed commissioning.

Venting

Improper venting (exhaust piping) is another leading cause of heater failures, particularly in indoor installations. Venting issues are doubly critical



An example of improper vent material. This is a Category 3 positive pressure vent appliance with Category 1 venting for a negative draft appliance. The manufacturer calls for AL29-4C or equivalent venting.



The manufacturer of this high-efficiency condensing pool heater specifies a polyvinyl chloride (PVC) vent system. Still, the installer ran PVC for about 1.52 m (5 ft) before transitioning into the existing vent system. The corrosion on the galvanized transition is indicative of condensate damage.



An example of improper vent material. This is a Category 3 positive pressure vent appliance with Category 1 venting for a negative draft appliance. The manufacturer calls for AL29-4C or equivalent venting.

because they pose a risk of damage or downtime and a threat to the health of building occupants.

It is extremely important to follow the manual and local codes exactly. Improper venting material, vent sizing, and vent lengths will cause problems that are both expensive and dangerous. Flue gas leakage inside a building is a severe, life-threatening issue.

Hydraulics

Improperly installed or obstructed pool water piping is another likely culprit when a pool heater goes down. Lack of flow can cause the appliance to shut off or damage the heat exchanger and system pumps.

A common mistake is misunderstanding developed length versus linear distance. For instance, if the manual states that the filtration loop must be within 4.57 m (15 ft) of the unit, that includes every bend and fitting, not just straight pipe length. An elbow, for example, might equate to 1.52 m (5 ft) of developed pipe length. It is all about the head (or resistance to pumping).

Regardless of the reason, if the pump cannot overcome the resistance of the attached piping system at a given flow rate, the volume of water moving through the heat exchanger will be lower than intended. Insufficient flow through the heat exchanger can cause damage, or the appliance may shut off. Lack of flow is a real concern.

Water quality

Water chemistry can be a major issue for bathers and mechanical components alike. If the pH is allowed to fall too low, it can deteriorate the appliance heat exchanger. Water quality concerns can result from negligence or improper installation.

For example, spikes in treatment chemical concentration can occur if the installer fails to place a check valve between the heater and the chemical injection points. These chemicals can get into the heat exchanger and remain there for a long time. Most treatment chemicals are very corrosive in high concentrations.

MAKE A SPLASH

WITH THE INDUSTRY'S TOP
WATERTEST SOFTWARE AND CHEMICAL LINES



WHY CHOOSE pool360[®] water test

- **Pro-Quality Results**

Create prescriptions for sparkling, balanced water with confidence.

- **Time-Saving Technology**

Quick results to get your customers back to relaxing by the pool

- **Support When you Need it**

We're available Monday-Saturday, 8 am-7:30 pm EST and Sunday 9:30-5:30 EST

Pool360 WaterTest gives you the tools to test like a pro and treat with precision, helping you spend less time on testing and more time helping customers.

GET AHEAD
OF THE GAME
SIGN-UP TODAY!



SCP

Help Associates Sell Chemicals With Confidence



The author is in a partially completed mechanical room that serves two outdoor pools at a large condo facility.

High levels of calcium or other dissolved solids can lead to another set of concerns. When exposed to high temperatures, dissolved solids come out of solution and adhere to nearby surfaces, often called scale. This frequently causes buildups and blockages within the heat exchanger. Early on, this causes a drop in thermal efficiency, but as it develops further, it negatively impacts the flow rate through the heat exchanger and can cause major failures.

Troubleshooting and maintenance best practices

The company is often called to troubleshoot pool heaters not installed by its team. Of those, more than 80 per cent receive a red tag, indicating an issue that cannot be overlooked from a liability standpoint.

Whenever the company installs a heater, a start-up form is completed—a practice now required by most

manufacturers for warranty validation, particularly for commercial units. Documenting maintenance and troubleshooting is equally important. When diagnosing an issue, it is essential to continue investigating even after identifying one problem, as multiple issues often exist simultaneously.

Before leaving the office, the team downloads and prints the installation and operation manual specific to the heater's model and serial number. This is followed by a process referred to as the "flashlight and highlighter" evaluation. While reviewing the manual, the entire heating appliance, along with its connected gas piping, venting, and primary filtration loop, is inspected. Any discovered issues are highlighted in the manual, and the evaluation continues. Discrepancies between the manual and the installation are then systematically addressed.

Proper maintenance

Maintaining a pool heater is much like maintaining a car. A vehicle would not be driven year after year without an oil change or tire replacement, and the same principle applies to these appliances. Pool heaters should be routinely inspected and maintained by a professional who performs a full evaluation, cleans the unit according to manufacturer guidelines, and completes recommissioning by checking gas pressures, flow rates, and other critical parameters.

The company's approach to system protection includes offering long-term maintenance agreements and extended warranties. When clients invest in a heating system from the company, they are also investing in ongoing service and warranty protection, ensuring reliable performance and longevity.

Manufacturers design heaters to last, not to fail. Proper installation and maintenance depend on installers and service professionals reading and following the manual. 📖



Tom Soukup is the principal of Patriot Water Works Co., and he has more than 20 years of experience as a hydronic designer and installer. He specializes in high-efficiency and green technology and brings his expertise to custom hydronic work, pool heating, and agricultural projects. He can be reached at twsoukup@patriotwaterworks.com.



THE RICOROCK ADVANTAGE

Predictable, easier to sell and to install
Proven, over 12,000 kits installed since 2003.
Profitable, most models install in one day
Professional, not homemade or cheap foam



RicoRock kits are cast concrete pieces that are mortared to a concrete pad, usually as a one day installation. Grottos like the Component Grotto, below, require concrete backfill; 3 men can install in 3 days.



MAXIMUM \$600 SHIPPING TO CANADA
some restrictions apply, no additional discounts.

888.717.3100

ricorock.com



Water Through the Years

One Pool Pro's Journey
from Fascination to Expertise

By Terry Arko

PHOTO ©GALITSKAYA/
BIGSTOCKPHOTO.COM

For many, water is a basic necessity—a resource used for drinking, cleaning, or recreation. However, for some, it holds a much deeper significance, shaping experiences, careers, and even personal philosophies. The author's journey with water began long before he ever serviced his first pool. From childhood moments spent splashing in wading pools to summers by the lake and the rhythmic crash of ocean waves, his fascination with water was more than just a passing interest—it was a calling.

Over the years, this connection evolved from a simple love of being near water to a profound understanding of its adaptability, power, and essential role in nature and human life. His career in the pool

industry deepened this relationship and sparked a passion for studying water on a broader scale, from environmental conservation to the science of water movement. This is the story of the author's lifelong bond with water—how it shaped his path, work, and perspective on the world around him.

My first connections to water

I grew up in a small town in Southern California. We were not close to the ocean or a lake; however, I was fascinated with water from an early age. Some of my earliest memories are splashing in a small wader pool in my front yard. Though not near a beach, we often packed the car with my four other siblings and



mom at the wheel and headed for the ocean to escape the summer heat. The sound and feel of the waves were one of my favourite experiences. My family also had a cabin near a beautiful cool lake in the Southern California mountains. We spent weeks there during the summer, mainly at the mountain lake. The lake is where I learned to swim in the glacial water underneath the shining blue skies. It is hard to put these experiences I had into words. I can only say that I was drawn to and loved water.

Pool service

Fast forward to when I was a young man in Southern California looking for a job. A friend of mine invited

me to get into the pool service business. My initial interest in servicing pools was the thought that I would be around water all day. At this time, I am not sure I really understood the connection of water to my own life. I only knew that I loved being near or in the water. While cleaning backyard swimming pools was challenging work, being around water helped make it more worthwhile to me.

Learning more about water

As my career continued, I became a lot more involved with water. While servicing swimming pools, I had an innate curiosity about what was really going on with the water and how to treat it best. As a service and retail pool supply store manager, I dealt with owners who continually needed to understand and fix their pool water. Later, I was hired by a specialty chemical company in Seattle, Wash., and the parent company was an environmental water treatment organization. As a result of this, I was exposed to all types of water on a global level. I began studying the relationship between environmental water and swimming pools. I read around 25 books about water, some included in the resources section at the end of this article.

The wonder, malevolence, and adaptability of water

One main concept I learned in my studies was how vital water is to everything and everyone on this planet. I learned about water's incredible ability to function as a universal solvent, how water has shaped our world and landscape (think about the Grand Canyon), and how water can become a carrier of beneficial minerals and harmful disease-causing microorganisms.

One of my favourite people from history is John L. Snow. He was a doctor who lived during the deadly outbreaks of cholera in Victorian-age London. Dr. Snow is solely responsible for discovering that contaminated water from the river Thames was the culprit for the spread of cholera. He was one of very few in the medical association of the time who suspected that diseases could be carried and spread by water. This breakthrough led to the practice of filtration and chemical treatment of water. The pool industry can thank John L. Snow for the innovations and systems that keep pools safe today. Throughout most of my pool service career, I have seen constant

A career in pool service deepened the author's understanding of water, from maintaining clarity to learning its chemistry and movement.

PHOTO ©GALITSKAYA/
BIGSTOCKPHOTO.COM



examples of how adaptable and renewable water could be. Transforming a green algae pool back to clear blue exemplifies how adaptable and renewable pool water can be. Water has the amazing ability to wash, cleanse, soothe, carry, disperse, cool, heat, and be eternally renewed. Water never wears out.

Water shortage or misuse?

While there may appear to be water shortages due to droughts, we have always had an equal supply of water on our planet thanks to the hydrological cycle of water evaporating and returning to the earth. The shortages come from water that is polluted, misused, or overconsumed by industries such as industrialized agriculture and big tech.

A recent article in Forbes¹ states that the projected water usage of artificial intelligence (AI) processing could reach 6.6 billion m³ (233 billion cf) by 2027. There are 999 L (264 gal) of water in 1 m³ (35 cf). More than 6.44 trillion L (1.7 trillion gal) of water will be used to process this latest technology. The next time we hear swimming pools are responsible for water shortages during drought, think about this. As a pool professional, I realized early on the vital resource that water brings. I have worked throughout my career to educate the proper treatment and best practices that lead to the conservation of water in swimming pools.

How water moves – Leonardo da Vinci

Recently, I read a blog² by Jim Lauria about Leonardo da Vinci's connection to water. The most amazing thing about how da Vinci viewed water in nature was his comparison to the human body. He described the flow of rivers as similar to the flow of blood through our bodies.

da Vinci was a genius in his comparison to the microcosm of the human body and the connection to the macrocosm of water throughout the earth. In many ways, before modern swimming pools existed, da Vinci perfectly described the hydrology of water moving through a system of pipes. If we take this analogy further, we can envision the circulation system of a swimming pool as much as that of the human body. The pipes are arteries, the pump is the heart, and the filter acts like the kidneys. Disinfection is the immune system, and chemical controllers are the brain. This analogy of the microcosm and the macrocosm resonates with pool pros because it perfectly describes how water moves through a swimming pool. Also, it sheds light on the fact that a sound swimming pool system must be one in which all the various organs are in good health. da Vinci compared the blocked arteries of a dissected human cadaver to that of rivers with a reduced flow due to a sediment build-up. The best water in a swimming pool is good flow, strong circulation, clean filtration,

Raypak
A Rheem® Company



LEARN MORE



POOL AND SPA HEATER

900% MORE NICKEL

Compared to cupronickel in critical surfaces



Download the free Raymote App today!

1. Connect to Wi-Fi
2. Register your units and set your preferences
3. Add additional users

You are set to remotely access your Raypak equipment

KEY FEATURES



Smart Heater Control VOC

Smart heater built right into the AVIA. Enables you to automate and manage your pool temperature.



Smart Operation Manager VOC

Enables you to manage your heater, one accessory, and scheduling.



Smart Scheduling VOC

AVIA heats and learns the size of your pool and will let you know when your pool is ready at your set temperature.



Integrated Wi-Fi VOC

Provides a smart connection for real-time service alerts & control from anywhere.



Water's immense power is seen in its ability to shape landscapes, erode rock, and transform from one form to another with ease.

PHOTO ©FOUR OAKS/
BIGSTOCKPHOTO.COM



and proper sanitization. If da Vinci were alive today, he would be a great pool designer and builder. He might design a pool shaped like the *Vitruvian Man*.

Water must be coaxed

One of the greatest quotes that applies directly to water in swimming pools comes from da Vinci. He stated that “water must be coaxed.” Pool professionals may not have heard this quote, yet instinctively, we know it is true, especially in swimming pools. Water must be managed and properly treated, or the water quality will be challenging. First, water in pools needs proper flow and circulation. There is the right balance, following the proper Langelier Saturation Index (LSI) and treating with chlorine sanitizer to ensure purity and cleanliness.

Water naturally is not always cooperative. It seeks its own balance. It will take from plaster or cementitious surfaces to suppress its appetite for minerals. Water will collect contaminants, bacteria, and viruses from the swimmers and the surrounding environment. In short, water can be chaotic if not properly coaxed into behaving in a way that allows for clear, safe swimming pools. So, we filter the water, balance it according to LSI, and always keep a proper sanitizer residual.

Blue mind

In October 2016, I attended the World Aquatic Health Conference (WAHC) in Nashville, Tenn. The keynote speaker was the best-selling author Dr.

Wallace J. Nichols. The inspiring keynote address from Nichols, a marine biologist, was based on research he had conducted with neurosurgeons on the remarkable effects of water on our health and well-being. This valuable information was published in his book *Blue Mind*. Dr. Nichols discussed proven research and his experiences in and around the water. He concluded that water, in all its forms, has a unique relationship with the human psyche.

One main point is that humans are 70 per cent water, and our brains float in water. There is a strong connection between the water within us (the microcosm) and the water around us (the macrocosm). It is fascinating how much Dr. Nichols says lines up with da Vinci's claim that water is the force of all life. This enlightened me and made me understand why I felt calm and at peace around the pools I serviced in Southern California. Also, why anytime I was near water, I felt more alive and in tune with all of the surrounding nature. The connection of the microcosm to the macrocosm becomes increasingly palpable as we draw closer to water.

The shape of happy water

Around the same time, I discovered Dr. Nichols' *Blue Mind* writings, I also came across another book by a Japanese scientist, Masaru Emoto titled *The Hidden Messages of Water*. Emoto developed a system of freezing differing water sources from the environment and photographing them through a microscope. What he discovered was unbelievable;

he saw that water's crystal shapes and formation differed based on where the water came from.

Water taken from a pure mountain stream produced a beautifully shaped perfect crystal. However, the water crystal taken from a dam was distorted and misshaped. The scientist took this experiment a step further and began exposing water to different environments and even words. The results were astounding. Water exposed to classical music like Beethoven or Mozart had perfect crystals. However, the crystals were distorted when the water was exposed to heavy metal music (Sorry, all AC/DC fans).

They then did experiments where groups were brought in to say different words such as "love and gratitude" or "you fool." Some groups would sing peaceful songs, and others would yell hateful words. The water exposed to positive words and emotions resulted in beautiful and perfect crystals, while the water exposed to negative words and emotions was misshaped and distorted. The thesis of this work is published in Emoto's book, and there are actual photographs of the different crystals under varying



Scientific studies show that being near water has profound psychological effects, offering calmness, clarity, and connection to nature.

PHOTO ©YULIYA TRUKHAN/
BIGSTOCKPHOTO.COM

conditions. I highly recommend this book to anyone who works in the field of water.

Emoto's theory is one we all should contemplate. He states that the human body and brain, made up of water, are deeply connected to the surrounding environments. In other words, the water within us could be the driving force behind our emotions and thoughts. One quote from the book that I found connected astoundingly to the water in swimming pools was this, "Water in a river remains pure because it is moving. When water becomes trapped, it dies."

NEW FROM USA

Made in the USA.

Premium Pool & Spa Solutions

We make water and surface protection for swimming pools and spas EasyCare!

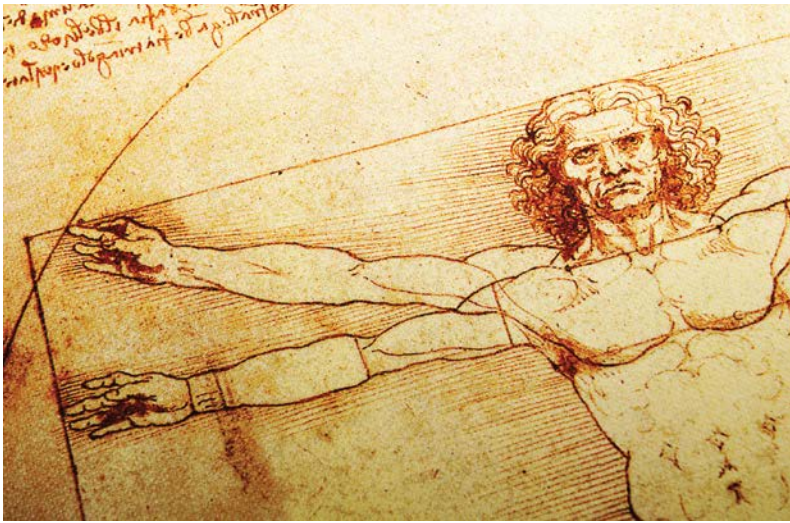
Algatec™
Synergy Algaecide-Water Clarifier

Pooltec™
Algaecide-Clarifier-Chlorine Booster

Beautec® Spa
Spa Surface Treatment Monthly

Brought to you by the same company that makes **Scaletec Plus™** & **Beautec™**

www.easycarewater.com



Leonardo da Vinci compared water's movement to the human circulatory system, much like a pool's filtration system mimics bodily functions.

PHOTO ©LUCIAN MILASAN/
BIGSTOCKPHOTO.COM

This is absolutely true of water in a swimming pool. When the system in a pool works effectively with proper filtration and chemical treatment, the water looks and feels alive. However, any pool professional can attest that the water looks dull and dead when the filters and pump systems are wrong. Water must move to truly exert its energy and life force.

A deeper connection

From my childhood experiences with water to my time servicing pools, I have felt a more profound and greater connection to water. I wonder how many pool professionals have also experienced a deeper connection to water. Have you experienced a connection to water in the pools you service or the environment, such as the ocean or a river? Water is the most essential element on earth, but it still has a mystery and aura that is difficult to explain. Yet so much information exists that we, as human beings, have a deep connection to water. In our thoughts, emotions, and even spiritually, water speaks to us and causes us to wonder about life and the universe. I have experienced an amazing connection to water throughout my life's journey, and it continues to this day. Water still amazes, confuses, and fascinates me. 🌊

Notes

¹ Gordon, Cindy. 2024. "AI Is Accelerating the Loss of Our Scarcest Natural Resource: Water." *Forbes*, February 25, 2024. forbes.com

² Lauria, Jim. 2024. "What the Ken Burns Documentary on Leonardo da Vinci Reminded Me About the Power of Water and Curiosity." *To Know Water Is to Love Water*, December 11, 2024. toknowwateristolovewater.com

Resources

- Fishman, Charles. 2011. *The Big Thirst: The Secret Life and Turbulent Future of Water*. Free Press.
- Wick, Walter. 1997. *A Drop of Water*. Scholastic Press.
- Sedlak, David. 2014. *Water 4.0: The Past, Present, and Future of the World's Most Vital Resource*. Yale University Press.
- Egan, Dan. 2017. *The Death and Life of the Great Lakes*. W.W. Norton & Company.
- Morris, Robert D. 2007. *The Blue Death: Disease, Disaster, and the Water We Drink*. Harper.
- Nichols, Wallace J. 2014. *Blue Mind: The Surprising Science That Shows How Being Near, In, On, or Under Water Can Make You Happier, Healthier, More Connected, and Better at What You Do*. Little, Brown, and Company.
- Emoto, Masaru. 2005. *The Hidden Messages in Water*. Beyond Words Publishing.
- McGuire, Michael J. 2013. *The Chlorine Revolution: Water Disinfection and the Fight to Save Lives*. American Water Works Association.
- Salzman, James. 2012. *Drinking Water: A History*. Overlook Press.
- Glennon, Robert. 2009. *Unquenchable: America's Water Crisis and What to Do About It*. Island Press.



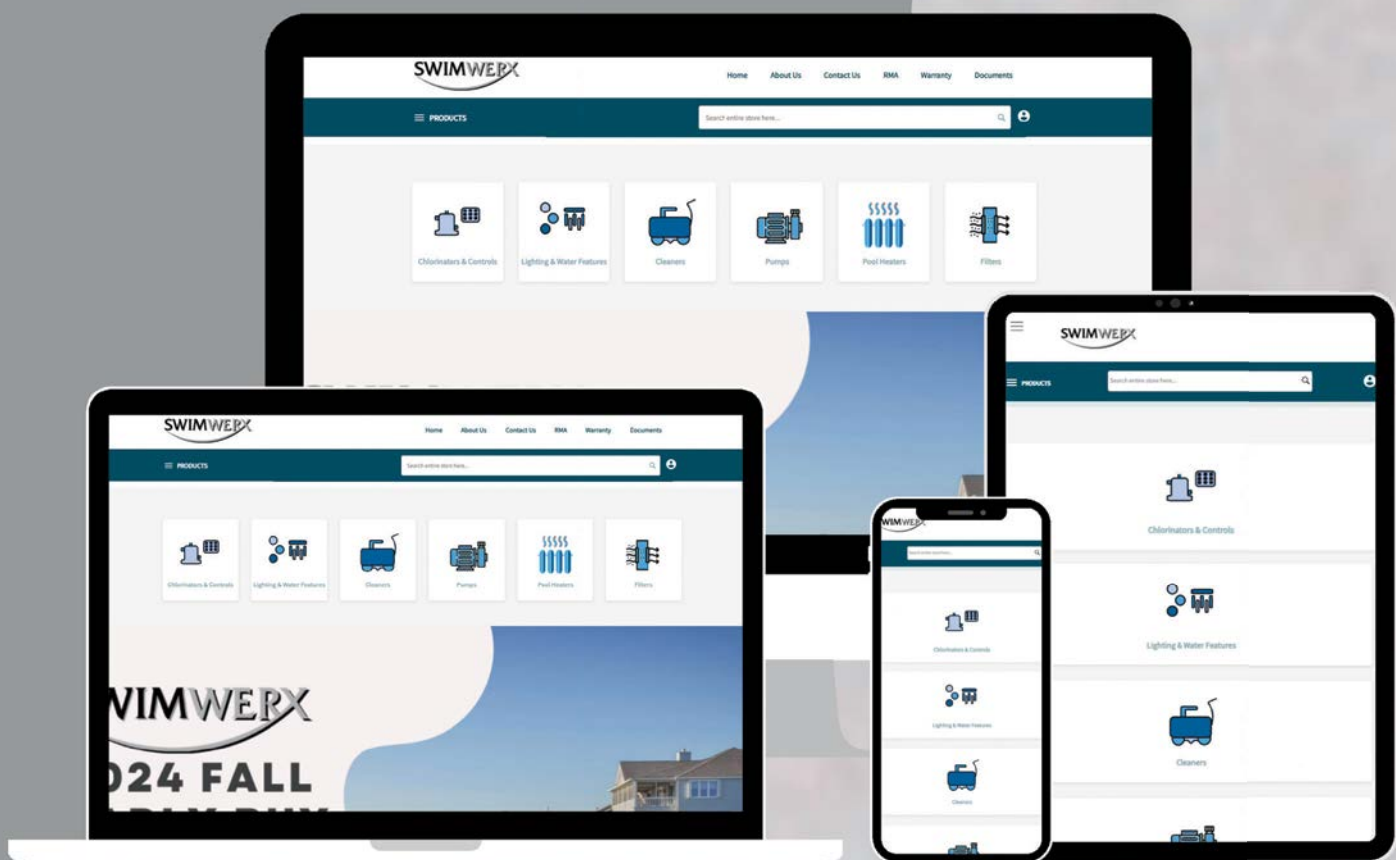
Terry Arko is a product training and content manager for HASA Pool Inc., a manufacturer and distributor of pool and spa water treatment products in Saugus, Calif. He has more than 40 years

of experience in the pool and spa/hot tub industry, working in service, repair, retail sales, chemical manufacturing, technical service, commercial sales, and product development. He has written over 100 published articles on water chemistry and has been an instructor of water chemistry courses for more than 25 years. Arko serves as a voting member on the Recreational Water & Air Quality Committee (RWAQC) board. He is a Commercial Pool Operator (CPO) course instructor, a Pool Chemistry Certified Residential course teacher for the Pool Chemistry Training Institute (PCTI), and a *Pool & Spa Marketing* Editorial Advisory Committee member. Arko can be reached at terryarko@hasapool.com.

SWIMWERX

WE'RE LIVE!

Visit our new website



<https://www.swimwerx.com>



Let's work together to meet your clients' needs! Our new website makes it easier than ever to order all your pool equipment from your job site to the poolside.

We proudly distribute all major pool brands and are here to support dealers with professional service and expert advice. Dive in and explore today!

 **SWIMWERX | 1-866-449-9379**





Designing for Wellness

Reinforced PVC Membranes Transforming Luxury Design

The growing consumer interest in health and wellness has significantly impacted the hospitality, tourism, and rehabilitation sectors. As luxury resorts and rehabilitation centres expand their wellness offerings, the demand for high-quality, durable, and esthetically pleasing aquatic facilities has surged. Reinforced polyvinyl chloride (PVC) membranes have emerged as a transformative solution, offering superior waterproofing, safety, and design flexibility. Their textured finish, designer colours, chemical resistance, and low maintenance make them ideal for swimming pools, spas, cold plunge pools, and therapy pools in wellness environments.

This surge in wellness demand aligns with the booming global wellness tourism market, valued at

\$639 billion in 2020 and projected to reach \$1.1 trillion in 2025, growing at a 7.8 per cent compound annual growth rate (CAGR). International wellness tourism alone is expected to grow 10.6 per cent annually. Leading brands such as Six Senses and Aman are heavily investing in wellness resorts, responding to the 2019 Global Wellness Institute's findings that 68 per cent of travellers prioritize wellness when selecting destinations.

To meet this growing demand, wellness resorts increasingly integrate aquatic facilities such as hydrotherapy pools, thermal circuits, and mineral baths. The 2019 SpaFinder Wellness 365 Report identifies hydrotherapy as a top wellness trend, with rising interest in thermal pools and aquatic fitness

By Tony Jordan

PHOTOS COURTESY RENOLIT



Top: Hot tubs and spas featuring reinforced polyvinyl chloride (PVC) membranes ensure durability, watertightness, and an esthetic appeal, even in high-temperature and chemically demanding environments.

Right: Reinforced PVC membranes provide a sleek, waterproof finish in wellness showers, combining durability with esthetic appeal for high-moisture environments.



programs. Supporting this trend, a 2020 Business Insider report notes that more than 200 wellness hotel projects were under development globally. Rehabilitation centres also expand their services with aquatic therapy pools to aid injury recovery and promote wellness.

Consumer preferences are a key driver behind this expansion. A 2018 Wellness Tourism Association report found that 40 per cent of travellers value wellness features, while a 2021 Tripadvisor survey shows nearly 70 per cent seek more wellness experiences. This growing demand underscores the need for hotels, resorts, and rehabilitation centres to expand their aquatic wellness offerings.

To effectively meet these evolving expectations, integrating aquatic wellness features with reinforced PVC membranes enhances guest satisfaction and ensures long-term durability and safety. Over the past five years, especially in Europe, a shift has been toward using reinforced PVC membranes to make wellness and rehabilitation pools watertight. Architects, designers, and installers prefer these membranes for their soft, textured finish, attractive designer colours, chemical resistance, and ease of maintenance across all temperatures. Additionally, many PVC membranes are class C slip-resistant, ideal for wet areas such as locker rooms and hallways where patrons walk barefoot.

Hot tub/spa wellness soaking

Reinforced PVC membranes are most commonly used for pool interiors, but they are also ideal for hot water soaking applications and spas with hydrotherapy pools featuring jets. Similar to its effects on other materials, chlorine becomes more aggressive at elevated temperatures. The focus is not solely on the material's benefits but on its ability to endure harsher water conditions. To ensure durability, PVC membranes undergo rigorous testing, passing a 20-year life-cycle laboratory assessment with chlorine at pH 7 and a temperature of 40 C (104 F). For instance, The Grand Bohemia Hotel in Prague, Czech Republic, boasts an elaborate wellness centre with a spa basin, adjacent walls, and showers entirely lined with PVC membrane.

In the Canary Islands, Gleomar Piscinas, a builder, opted for a PVC membrane that provided rich colours and textures, resulting in a unique esthetic that complemented the surrounding hotel's architectural style. The hot tub and spa basin were lined with a light-coloured membrane that mimics the appearance of marble, while the adjacent showers and walls were finished with a dark PVC that resembles slate. The client was highly satisfied with the outcome and appreciated the product's watertightness guarantee.

The recommended water temperature for maintaining the colour stability of PVC membranes is 32 C (90 F), a standard determined by the interaction between chlorine and temperature—recognized as the primary factor affecting colour retention. Specific precautions are advised for installations operating at higher temperatures to preserve the



membrane's integrity. The membrane should be installed under maximum tension on both walls and floors to prevent any potential movement, with contact cement on all wall surfaces for extra security. Opting for a thicker membrane, such as an 80 mil product, is also recommended instead of the standard 60 mil version to enhance durability. Further, end-users must be properly instructed to carefully monitor chlorine concentration levels, as

chlorine becomes more aggressive and corrosive at elevated temperatures, potentially damaging the protective coating of the membrane.

Rehabilitation pools

Many rehabilitation and therapeutic spas are now lined in PVC membrane not only because of their beauty, watertightness, and ease of installation but also because the material is soft on users' feet. One

Reinforced polyvinyl chloride (PVC) membranes enhance the charm and functionality of wellness spas, seamlessly blending modern technology with historic architecture.

AVAILABLE NOW & READY TO SHIP!



taylor®

XPRESS FLEX®

IN-STORE WATER TESTING!

**UP TO 11 TESTS
IN LESS THAN
1 MINUTE
FOR LESS THAN
YOU EXPECT**

**TO OBTAIN PRODUCTS IN CANADA
PLEASE CONTACT LOWRY & ASSOCIATES**

PHONE: (905) 836-0505
EMAIL: info@lowryassociates.ca



Reinforced polyvinyl chloride (PVC) membranes with protective lacquer coatings resist stains, chlorine, and UV damage, ensuring long-lasting beauty and durability in aquatic environments.

PHOTO COURTESY RENOLIT

Lacquer's role in extending PVC membrane lifespan

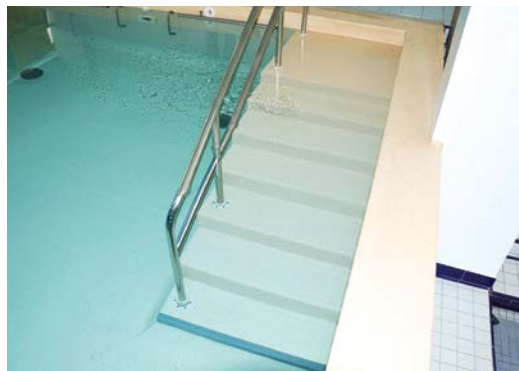
UV protection and weather resistance

The protective lacquer on PVC membranes significantly enhances their durability by offering strong UV resistance and weather protection. UV-resistant additives in the lacquer shield the membrane from UV radiation, preventing the degradation of the polymer structure, which could lead to brittleness and loss of flexibility. Additionally, the coating protects against harsh weather conditions, such as extreme heat, freezing temperatures, and heavy rainfall, reducing the risk of cracking or becoming brittle over time. This dual protection extends the membrane's service life in challenging environments.

Chemical and abrasion resistance

PVC membranes that are fortified with a protective lacquer offer exceptional chemical and physical abrasion resistance. The chemical-resistant barrier prevents damage from exposure to cleaning agents, oils, and other harsh substances, minimizing the risk of degradation or discolouration. Moreover, the lacquer improves abrasion resistance, safeguarding the membrane from

Rehabilitation pools lined with reinforced polyvinyl chloride (PVC) membranes ensure slip resistance, hygiene, and durability, providing a safe and comfortable environment for therapy and recovery.



example is the rehabilitation pool located in Padua, Italy, at a physiotherapy medical centre, lined with reinforced PVC membrane installed by Klant, a local designer and builder of pools. The facility is dedicated to neuromotor, speech therapy, and psychological rehabilitation treatment for outpatients suffering from neurovascular, traumatic, and postoperative orthopedic procedures. In the case of this therapy pool, a PVC membrane offers the look and feel of a golden sand surface that is soft to the touch.

PVC membranes have physical characteristics that can positively contribute to the safety and sustainability of these rehabilitation environments. Notably, PVC's non-porous surface can reduce up to 90 per cent of surface bacteria, enhancing hygiene. Since individuals with specific health conditions frequently use rehabilitation pools, the waterproof properties of PVC membranes are essential in

preventing issues such as mould, mildew, and water infiltration into surrounding structures. This supports stricter sanitation standards, which are vital in clinical settings. Additionally, PVC membranes offer several other benefits, including durability and longevity, effective waterproofing, flexibility for easy installation, and overall cost-effectiveness in building costs and maintenance.

The slip-resistant properties of this textured membrane make it safe for swimmers, especially those in recovery. It meets Class C slip resistance standards, the highest rating for wet areas, and is certified under several key safety standards. The *EN 16165:2022* standard, widely used across Europe, tests the slip resistance of flooring surfaces to ensure safety in both wet and dry conditions. Additionally, the membrane complies with *EN 13893*, a European standard that measures dynamic slip resistance in dry environments, making it suitable for indoor public and commercial spaces. It also meets the *ANSI A326.3-Dynamic Coefficient of Friction (DCOF)* standard, a North American guideline that assesses slip resistance in wet conditions, ensuring safety compliance in facilities throughout Canada and the U.S.

Myrtha Pools, an Italian pool contractor, partners with the author's firm to use its high-quality PVC membrane in the growing market of rehabilitation pools and wellness spas. The company's reinforced

wear and tear due to physical contact, making it ideal for high-traffic or rugged environments.

Moisture and stain resistance

The lacquer applied to PVC membranes enhances their natural waterproof qualities by adding an extra hydrophobic layer. This additional protection prevents moisture absorption from both sides, which is crucial for preventing mould growth and structural weakening in wet environments like pools. Further, the lacquer serves as a stain-resistant shield, stopping dirt, algae, and organic materials from adhering to the surface, thereby preserving the membrane's appearance and performance.

Enhanced flexibility and tensile strength

The protective lacquer also improves the membrane's flexibility and tensile strength, making it more resilient under mechanical stress. This flexibility helps prevent cracking or breaking during expansion and contraction caused by temperature changes, particularly important for structures like elevated pools. The lacquer further reinforces the membrane's durability, enabling it to withstand external stressors such as wind, vibration, and minor impacts, thus preventing tears and punctures.

Esthetic preservation

The protective lacquer preserves the colour and surface quality of PVC membranes to maintain visual appeal. It prevents fading and discolouration caused by prolonged exposure to sunlight and weather, ensuring the material remains vibrant in visible applications. Additionally, the lacquer resists dirt buildup, algae growth, and staining, maintaining a clean and smooth surface. This enhances esthetic appeal and promotes hygiene and safety in environments like pools where cleanliness is critical.

Increased performance in high-risk environments

In high-risk environments, the protective lacquer boosts the membrane's resilience against harsh conditions. It offers resistance to saltwater and chlorine, which is essential for maintaining integrity in chlorinated or saltwater pool settings. The lacquer also protects against heat-related degradation, ensuring the membrane retains flexibility and strength even in high-temperature areas like roofs or hot climates. This comprehensive protection ensures long-term performance and durability in demanding applications. ♡

slip-resistant PVC membranes are applied to all pool floors and stair surfaces to ensure maximum safety. Myrtha designs and builds pools specifically tailored to meet clients' therapy and rehabilitation needs, including aquatic rehabilitation pools that enable weightless exercises for joints, ankles, knees, and the back. This near-weightless environment is especially effective for recovery following lower limb surgeries.

Hotels, resorts, and luxury living pools and spas

Hotels and luxury resorts often feature elevated pools and spas that must be completely watertight. To ensure this, builders use weld-in-place PVC membranes, which have proven effective in maintaining watertightness. These membranes have been utilized in high-profile projects like the Porsche Design Tower and numerous other luxury towers in Miami, Fla., where private hot tubs are installed on balconies, sometimes up to 50 stories high. Builders and designers opt for PVC membranes for their reliability in these critical, high-end installations.

It is essential to recognize that reinforced PVC membranes fully seal the pool structure, ensuring it remains watertight. This makes them suitable for both renovating existing pools and constructing new ones. Importantly, these membranes are resistant to deterioration from acidic water conditions. Further, the commercial-grade reinforced PVC membranes



are coated with a protective lacquer that enhances their durability against tears, chemical exposure, water absorption, and UV damage.

Weld-in-place PVC membrane interiors are perfect for custom pools, as they are installed on-site, accommodating even the most challenging shapes. This capability enables builders to achieve an exact fit. The reinforced PVC comes in 60, 70, and 80 mil thicknesses, enhancing its durability.

Once the PVC membranes are installed, the underlying surface can continue to shift and crack

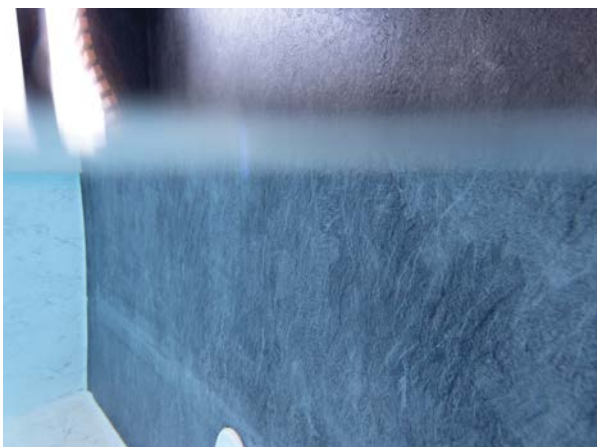
Indoor therapy pools lined with reinforced polyvinyl chloride (PVC) membranes are ideal for rehabilitation and wellness environments.



Top left: Reinforced polyvinyl chloride (PVC) membranes combine intricate design details with waterproof durability, ensuring a seamless and stylish finish for aquatic environments.

Above: Reinforced polyvinyl chloride (PVC) membranes are most commonly used for pool interiors, but they are also ideal for hot water soaking applications and spas with hydrotherapy pools featuring jets.

Left: Textured reinforced polyvinyl chloride (PVC) membranes bring durability and a sophisticated design to aquatic spaces, offering seamless integration with various styles and environments.



without affecting the membrane's integrity. These installations often come with a 20-year warranty on the material, making them ideal for high-end applications, such as luxury destination hotels and resorts with wellness centres.

Weld-in-place PVC membranes provide pool finishes with unique advantages that other systems (e.g. marbelite, stone-coloured quartz finishes, or thermoplastic coatings) cannot offer. A key benefit is that the membrane does not crack under freeze-thaw conditions or due to ground movement. The membrane fully seals the pool structure, ensuring it remains watertight. This makes it an excellent choice for new construction and renovating pools and spas, particularly for elevated designs.


The perfect combo of strength and waterproofing

The modern designer-reinforced PVC membrane waterproofing system is rapidly gaining popularity among pool builders, architects, and specifiers. This system combines strength and waterproofing, making it an ideal choice for constructing wellness and rehabilitation pools and spas.

In addition, there are decking solutions that feature a reinforced PVC membrane designed explicitly for water-prone environments, both indoors and

outdoors. This membrane is primarily used for decks surrounding pools, spas, and hot tubs, as well as in locker rooms, shower areas, and splash pads.

This material is suitable for new construction projects and renovations of existing decks, as it can be easily installed over most deck and floor surfaces, especially cracked, worn, or in disrepair. This makes it a perfect watertight solution. The slip-resistant textured surface provides superior comfort for bare feet, offering a more pleasant experience than concrete or wood, which can become uncomfortably hot or slippery when wet.

Additionally, this PVC membrane has a protective acrylic coating similar to that found on swimming pool liners, making it resistant to stains, chlorine, and UV degradation. 



Tony Jordan has more than 35 years of experience in the manufacturing, sales, and application of polyvinyl chloride (PVC) reinforced pool membranes for commercial and residential use. He is the business development manager at RENOLIT and can be reached at tony.jordan@renolit.com. For more information, visit www.renolit-alkorplan.com.

DEYS

FABRICATING

Founded in 1975, we are the oldest, independent vinyl liner manufacturer in Canada.

Adding pumps, filters, heaters and accessories in 1993 made Deys Fabricating a major supplier to the pool industry.

SERVICE IS OUR STRENGTH!

London

1.800.661.3397 • www.deysfab.com

Your Partners in Success!

Providing

- Experience
- Service
- Quality

POOLWERX

Custom Is Standard

Manufacturer of Quality swimming pool kits and vinyl liners where
CUSTOM IS STANDARD!

Toronto

1.866.887.9379

www.poolwerxfab.com

LINERWERX

The small independent vinyl liner manufacturer who understands the needs of the independent dealer and
PROVIDING THE PERFECT FIT!

St. Catharines

1.866.684.9379

www.linerwerx.com

SWIMWERX

Supplies ALL major brands of pool equipment, parts and accessories with same day shipping.

Our knowledgeable staff makes us
YOUR DISTRIBUTION PARTNER!

Brantford

1.866.448.9379

www.partswerx.com



AquaMate

Custom Fabricated Vinyl Pool Liners

Built on Quality, Service and Design.
100% Canadian Owned and Operated.
Your Trusted PENTAIR POOL Distributor.

Collingwood

416-919-6700

sales@aquamatepool.com



Safer Surfaces

The Future of Aquatic Flooring

By Briana Valente

PHOTOS AND
ILLUSTRATIONS
COURTESY LIFE FLOOR

Keeping safety, accessibility, and sound design considerations at the forefront of any aquatic design enables people of all ages and abilities to engage in meaningful ways. Risk mitigation often starts at the surface level with the literal ground that guests interact with as they step into a facility.

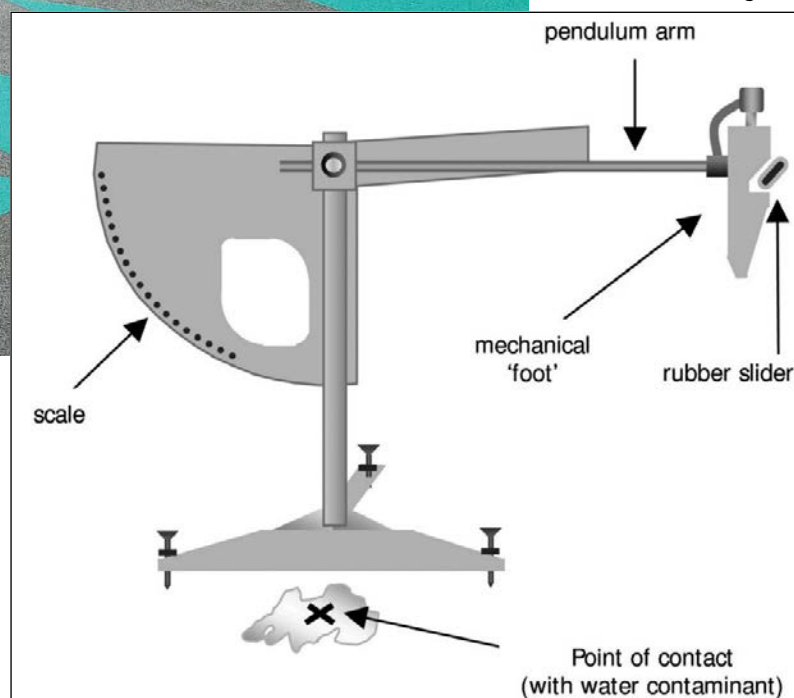
Guests will likely stay longer when they are comfortable and find a space thrilling. As a result of extended visits, extras such as food and beverage sales increase comparatively and can account for up to

25 per cent of a facility's revenue.^{1,2} The key is to find which components of guest experience will yield the best results. One avenue many consider is centred around the concept of safety surfaces. It is a broad term that encapsulates a floor that can mitigate risk, maintain a hygienic touchpoint, and withstand the harsh UV and chemicals in aquatic environments.

Aquatic environments are unique and host a variety of challenges that are not always present with dry play applications. These obstacles can directly



Figure 1



influence guest experience, including risks such as hydroplaning, varying swimming proficiencies, drowning, contracting waterborne illnesses, circulation concerns, and overall maintenance. Many products wear down quickly in chemically treated water and/or harsh UV climates and are susceptible to mould and bacteria in these uses.

Many of these challenges are directly linked to surfacing and become apparent when considering available options. Slip-and-falls due to hydroplaning are one of the most common injury reports at aquatic centres. However, having a durable and easily cleaned surface is also top-of-mind for many maintenance professionals. Centres often choose concrete since it is durable and initially low cost. Unfortunately, concrete offers no design benefits and presents safety challenges, which lead to other

concerns such as dangerously hot surface temperatures, increased hydroplaning risks, and cleanliness issues. It is also hard and abrasive, leading to anything from scrapes and bruises to broken bones and concussive injuries.

Currently, five popular types of aquatic surfaces are available in the market, which range in price, safety, durability, and hygiene. Those categories include

Illustration of test method device used in the British Pendulum Test.

Figure 2



Test method device for evaluating a product's impact absorption.

PHOTO BY DELTEC EQUIPMENT/COURTESY LIFE FLOOR

Figure 4

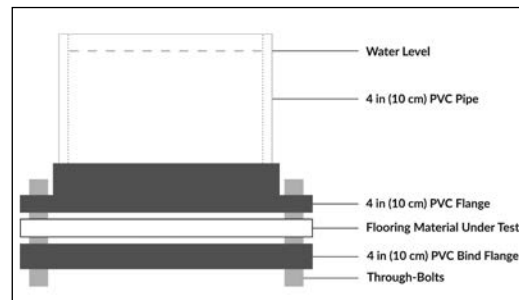


Illustration of the submersion chamber used during NSF International's impermeability test.

ILLUSTRATION BY NSF RECREATIONAL TASK GROUP ON SAFETY SURFACING/COURTESY LIFE FLOOR

reference in their code. This allows everyone to use the same criteria and empowers health departments to point to a specific set of resources to guide their work. Aquatics now have products that are certified and meet rigorous criteria which in turn benefit the end user," says Jonathan Keller, chair of NSF 50 task group on safety surfacing, co-chair of NSF task group on pool perimeter surfaces, member of the ASTM F24.61 working group for slip-resistance.

Slip resistance

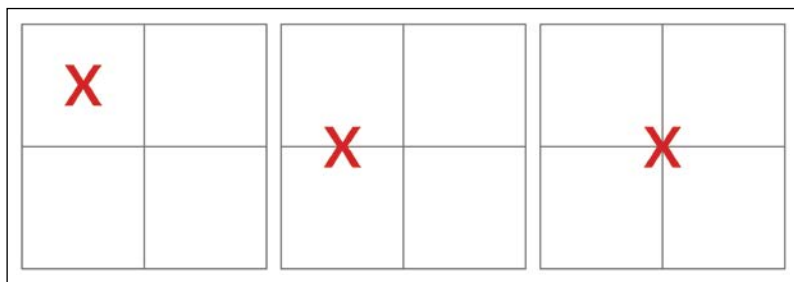
Slip-and-fall accidents are among the top injuries that aquatic facilities report. Most injuries are due to slippery surfacing, such as concrete or ceramic tile. Slip resistance was included in the standard as a feature that certified surfaces should have to reduce the number of injuries.

Meeting the criteria requires that products achieve a 40 British Pendulum Number (BPN) and a P4 on the Australian Standard. The Pendulum Test calculates that the BPN swings at the average speed a child runs. It has a softer rubber surface to mimic bare feet. It tests how the surface prevents hydroplaning. The Pendulum Test correlates best to real-world results and has been extensively used in the German Ramp Test and the Australian Pendulum Test. Testing is based on the degree to which the pendulum is slowed. For example, on ice, it may swing to 90 degrees on the opposite side due to low slip resistance, whereas on a dry surface, it may bounce backwards.

Impact absorption

Falls are inevitable regardless of slip resistance since tripping or becoming unbalanced also occurs. To address this, impact absorption (also known as cushioning) was added to the standard for splash pads to protect against falls.

Figure 3



Areas on a tile-type product where the testing occurs for impact absorption.

ILLUSTRATION COURTESY LIFE FLOOR

cementitious products, pour-in-place surfaces, ceramics, coatings/paint, and foam rubber tiles.

NSF International's NSF/ANSI/CAN Standard 50 outlines two standards for aquatic surfaces: Interactive Water Play Venues (published in 2019) and Pool Perimeters (published in 2024). For a product to be certified to this standard, it must meet or exceed six unique performance criteria and undergo third-party testing to verify its claims. The standard requires testing for slip resistance, impact absorption (relevant only for Interactive Water Play Venues), chemical resistance, UV resistance, impermeability, and cleanability.

"The biggest thing we've been trying to do is to get the aquatics industry to be in line with the dry-play industry. Specifically, there are so many pool codes that state surfaces should be slip-resistant, but they don't reference specific standards. Up until this point, there wasn't a standard that codes could point to and

TAKE THE PLUNGE!

Dive into the data that defined the pool industry last year with the *Annual Pool & Spa Marketing State of the Industry Report*.



The ***Annual Pool & Spa Marketing State of the Industry Report*** provides a thorough examination of the defining moments of the 2024 season that will impact the future.

Employing a data-centric approach, the report analyzes the challenges faced by industry leaders and trailblazers to provide valuable insights for businesses aiming to overcome a demanding season.



DOWNLOAD NOW!

www.poolspamarketing.com/industry-report

WHAT'S INSIDE:

Market research surveys:

Exclusive results on company profiles, staff, wages, and business financials.

In-depth analysis: A year-over-year break down of pool permit registrations in 2024.

Interviews: Insight from manufacturers, distributors, builders, and retailers who provide a unique take on the nation's pool industry.

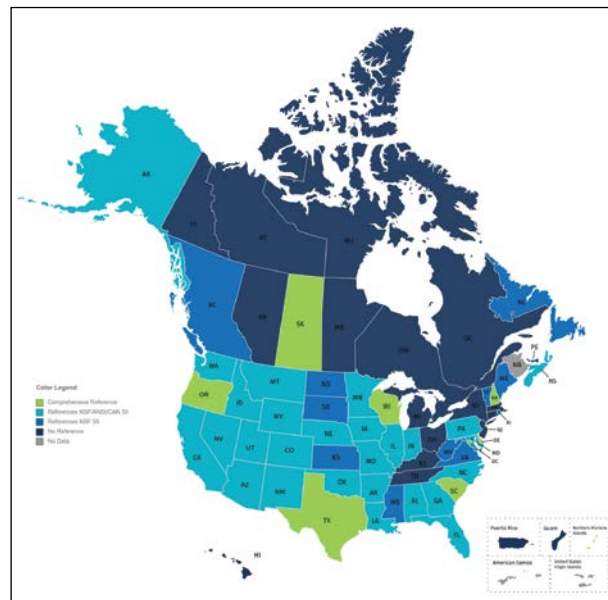
Future trends: A province-by-province look at exciting new trends to assist with planning for the 2025 season and beyond.

Figure 5



A representative model of a UV chamber that may be used during testing.
PHOTOS COURTESY LIFE FLOOR

Figure 6



Pool and spa codes currently reference NSF/ANSI/CAN Standard 50.

The standard requires that “the Head Injury Criterion (HIC) value used to calculate the critical fall height shall be [equal to or less than] 750. The measured critical fall height rating shall be 0.20 m (8 in) minimum.” This is comparable to EN-1177-2018, which requires a test value less than or equal to a 1,000 HIC rating. For reference, concrete has a 0.10-m (4-in.) critical fall height with 1,000 HIC. The lower the HIC number, the less damage is done. The Impact Absorption criteria is not required for pool decks.

Impermeability

Impermeability is important so foreign substances such as sunscreen, fertilizer run-off, and other hazardous substances do not absorb into the surface and cause issues for health or maintenance. This metric is also important for ease of maintenance since porous products would prove difficult to completely clean.

According to the standard, a surface must be at least as impermeable as concrete, which is rated as 97.4 per cent impervious, based on how much water a sample may absorb over 24 hours. The product is accepted if the average change in mass does not exceed more than 2.5 per cent. The joints between tiles are included in testing.

Cleanability

An easily cleanable surface is important for many facilities since it directly impacts guest experience. With COVID-19 in recent memory, the cleanliness of

a facility has become increasingly important for guests and staff alike.

During testing, surfaces must show at least a 99.9 per cent reduction of bacteria after being sanitized, including the joints of tiles, in accordance with the process detailed in the *Model Aquatic Health Code*. Testing is accomplished by separately applying dirty slurries with two challenging micro-organisms in aquatic environments (*Enterococcus faecium* ATCC 6569 and *Pseudomonas aeruginosa* ATCC 27313) to the flooring sample surface and any surface joints. The slurries incubate for 24 hours, along with a control variant. The challenge organisms are counted before placing the samples in a bleach solution. The micro-organisms are counted again after removal from the solution.

For reference, medium-finish broomed concrete averages a 99.7 per cent reduction of bacteria.

UV resistance

Resistance to UV radiation is essential, as many outdoor aquatic facilities experience intense, year-long sun exposure. To determine UV resistance, a surface is independently tested for 750 hours under a fluorescent UV light following ASTM G154, Table X2.1 Cycle 1—eight hours of UVA-340 at 0.89 W/m²/nm at 60 C (140 F) black panel temperature, then four hours of condensation at 50 C (122 F) black panel temperature. During testing, erosion is not acceptable if it compromises the surface’s traction, contrasting colours, or impact attenuation.



Chemical resistance

Pool chemistry is intense and critical to consider regarding guest health. To remove contaminants, it is often necessary to shock a pool system with higher-than-normal chlorine levels, which puts additional stress on systems and products within the water, such as surfaces.

During testing, the product samples are submerged for 100 days in typical pool water chemistry at 39 C (102 F) in accordance with APSP 11 with three shocks of 20 ppm chlorine. The shocks occur on days 21, 49, and 77. Certified surfaces must remain slip-resistant and cushioned after exposure to high chemical shock periods without showing signs of erosion or illegibility.

The pool perimeter finishes amendment in 2024

In 2024, NSF/ANSI/CAN 50 was updated to include pool perimeter finishes. This update borrowed many facets from the existing criteria for interactive water play venues but omitted impact absorption from the requirement set since pool decks tend to engage guests at a slower speed than waterparks or splash pads. The other difference is the criteria only applies to non-concrete surfacing materials.

What does this mean for pool operators in North America?

Complying with NSF/ANSI/CAN 50:26 is a best practice that facilities can follow to reduce risk, improve guest experience, and benefit communities. Since certified products are third-party tested through this internationally recognized standard, specifiers and operators have peace of mind knowing these options are reputable and validated through multiple accredited sources. Even though the standard is not a code requirement, it has the potential to influence codes and is recognized as a standard for operational excellence.

Concrete and other conventional surfaces restrict play and cleanliness. Activities such as running, jumping, and rolling are often dangerous and uncomfortable on a hard, abrasive floor. Certified safety surfaces encourage visitors to enjoy aquatic amenities more as they explore, connect, and play.

Only eight states and territories across the U.S. and Canada have comprehensive references for NSF/ANSI/CAN 50 with some callouts regarding surfaces. Eighteen states and territories have no reference to the standard, three report no data, and the rest lightly reference NSF/ANSI/CAN 50 but do not approach specifics.

Child running across safety surfacing installed with a hexagonal design.



An indoor facility with a shallow children's pool surrounded by safety surfacing.

An example of a comprehensive reference is found in New Hampshire's pool code found in Env-Wq 1103.06 PBF Application: Required Plans and Specifications. It states, "(6) Cut sheets for all equipment showing that all components are certified to NSF/ANSI 50 requirements as required by Env-Wq 1108.22(a)(1)."

NSF/ANSI/CAN 50 was not published without opposition. Counterarguments were raised with concern about whether this standard is rigorous enough to fully safeguard against all the harsh conditions found in aquatic environments. They drew parallels between the dry play safety code published by the Consumer Product Safety Commission (CPSC) and ultimately called for more stringent requirements, especially in the case of cushioning. When the standard went to vote, the majority ruled it should be passed as written, with the opportunity to amend it as technology continues to develop and improve.

Through the NSF 50 Task Group on Safety Surfacing, work continues to progress towards improving NSF/ANSI/CAN Standard 50 and, as a result, safety for the end user. Pool operators, municipalities, and aquatics staff can rely on NSF

International to provide certified third-party tested products to meet or exceed requirements. This ensures the highest-performing products mitigate risk at facilities and provide staff with peace of mind as they build out risk improvement processes. 🌊



Briana Valente serves as a marketing manager for Life Floor. She has been with Life Floor since 2018 and has more than seven years of experience in the aquatics industry. She works extensively with industry publications, conferences, and workshops that bring meaningful education to individuals spanning municipalities, resorts, waterparks, and more. She holds a bachelor's in marketing from the Carlson School of Management at the University of Minnesota.

Current certified products can be found on NSF International's website. For more information about the NSF 50 Task Group on Safety Surfacing and the team's current objectives, please contact Brian Howell at brian.howell@lifefloor.com.

AQUA-COMB™
#1 SPA & POOL FILTER CLEANING DEVICES!



- Fully cleans like new
- Saves water & electricity
- Saves time

Made in USA

Ph: 941-922-7786
 Fax: 941-922-2439
www.aquacomb.com

**To advertise
 in the next issue**

**CALL:
 1-800-409-8688**

Linda Dalke, ext. 240
ldalke@poolspamarketing.com

Heidi AlBarbary, ext. 217
halbarbary@poolspamarketing.com

Pool & Spa
 COLD CLIMATE HEAT PUMPS
 EFFICIENT, HIGH PERFORMANCE



WIDE-RANGE TEMPERATURE
 Full temperature range of -20°C/-4°F - 45°C/113°F

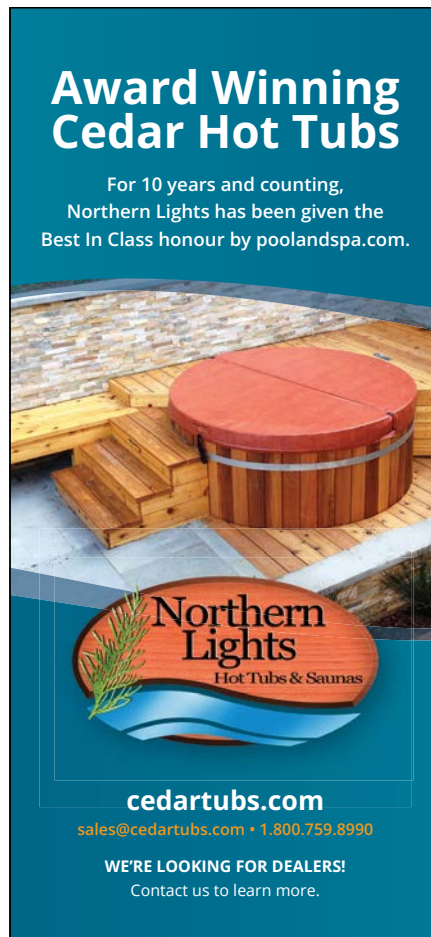
ENERGY SAVINGS UP TO 70%
 50% more efficient than a standard heat pump

HEATING OR CHILLING
 with ultra-quiet performance

ARCTIC HEAT PUMPS
arcticheatpumps.com • 1.866.800.8123

**Award Winning
 Cedar Hot Tubs**

For 10 years and counting,
 Northern Lights has been given the
 Best In Class honour by poolandspa.com.



Northern Lights
 Hot Tubs & Saunas



cedartubs.com
sales@cedartubs.com • 1.800.759.8990

WE'RE LOOKING FOR DEALERS!
 Contact us to learn more.


**IMMERSE
 YOURSELF**

Our website is aimed
 at giving you a more
 personalized experience.
 We've tailored it to help
 you find exactly what you
 need to boost productivity,
 maximize resources, and
 improve the bottom line—
 everytime you visit.

Register for your
FREE account on
poolspamarketing.com
 to gain unrestricted
 access to digital archives,
 exclusive ebooks, and
 bi-monthly e-newsletter

JOIN US TODAY AT POOLSPAMARKETING.COM

This thoughtfully designed backyard proves that limited space can still deliver a luxurious outdoor retreat. Featuring a 3.7 x 7.6 m (12 x 25 ft) fibreglass pool with a 27.9 m² (300 sf) water surface, the space is both stylish and functional. The pool seamlessly integrates into the landscape, surrounded by complementary interlocking patio stone. A raised wooden deck enhances the layout, offering a perfect transition between the lounging, dining, and swimming areas. Completed entirely by Blue Diamond Pools and Landscaping of Barrie, Ont., the landscaping and lighting add depth and ambiance, making the space inviting day or night. By maximizing every inch, this backyard blends elegance and efficiency, proving that even compact spaces can feel expansive and luxurious. 

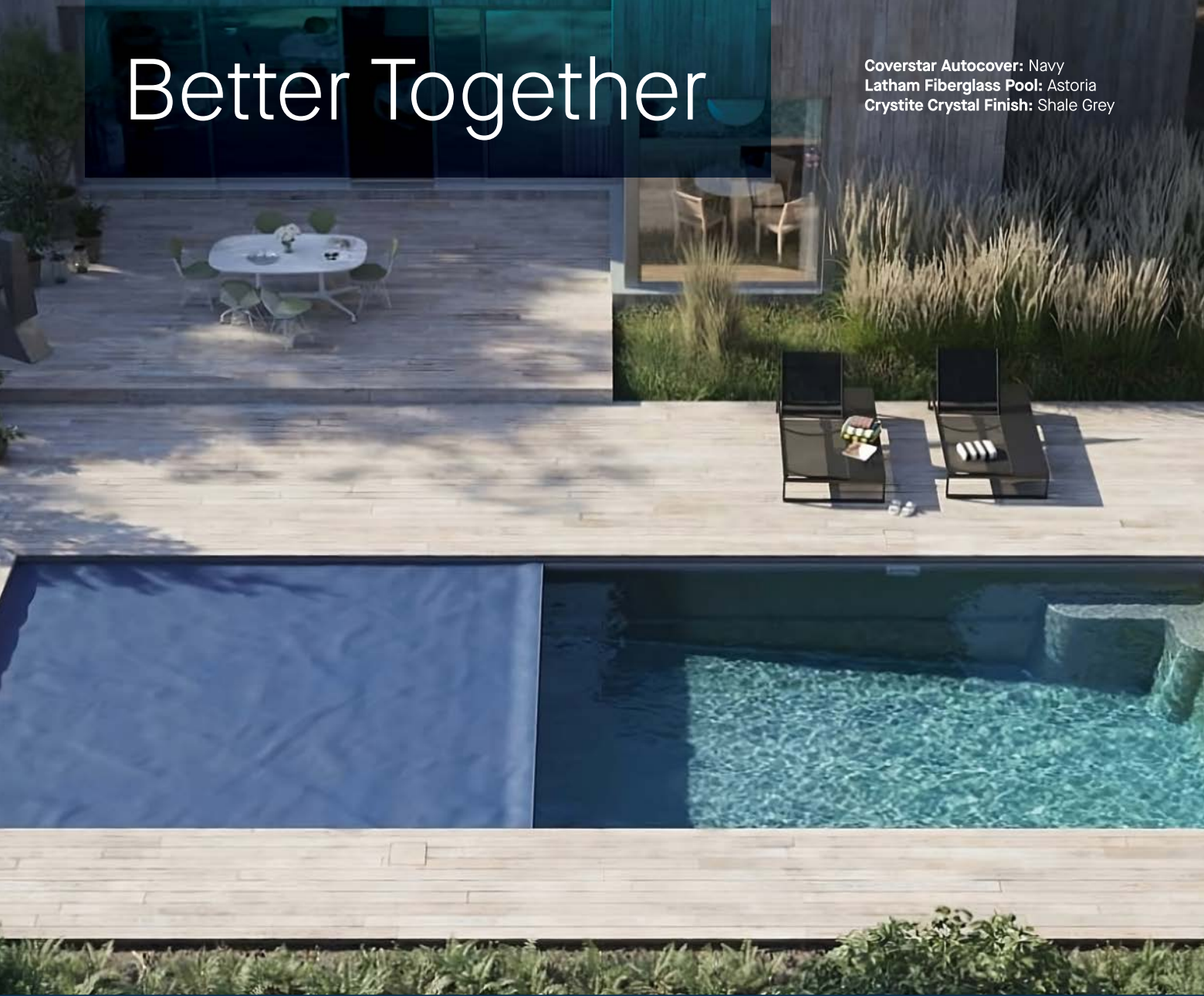
—Jason Cramp

PHOTO BY ANDREW HARRIS



Better Together

Coverstar Autocover: Navy
Latham Fiberglass Pool: Astoria
Crystite Crystal Finish: Shale Grey



A well-built pool isn't complete without a top-quality safety cover. Coverstar automatic safety covers set the industry standard with innovative engineering, unmatched strength, and long-term reliability. Designed for seamless integration and easy installation,

Coverstar provides a premium experience to your customers—while adding value to every pool you build. Plus, with a coast-to-coast network of distribution partners, you'll have the expertise, service, and support to complete every project with confidence.

To learn more visit www.coverstar.com or contact your sales representative to be connected to one of our Coverstar distribution partners.

COVERSTAR



The **SMARTEST** Way to Heat Your Pool and Spa



JXiQ™
GAS HEATER

Take the Guesswork out of **Pool Heating**

Engineered for installation ease and cost-efficient operation, the JXiQ™ gas pool & spa heater features SMART sensors to ensure proper installation and performance and provide convenient functionality.

A Fluidra Brand

©2024 Fluidra. All rights reserved. The trademarks and trade names used herein are the property of their respective owners. 49899.6_AD

Jandy.ca