

Hotel Pools Water Management

Technology Best Practices and State of the Industry

According to market research involving 250+ hotel IT and other professionals

Starfleet RESEARCH

VIVOAQUATICS

Table of Contents

Introduction: A Fable pg. 3

Chapter 1: Introduction to Hotel Pool Water Management Technology pg. 4

Chapter 2: Why Hotels Need Pool Water Management Technology pg. 7

Chapter 3: Benefits of Hotel Pool Water Management Technology pg.11

Chapter 4: Hotel Pool Water Management Technology Success Story pg.14

Chapter 5: Winning with Hotel Pool Water Management Technology pg.18

Appendix: Research and Underwriter Notes pg. 21



A Fable

Once upon a time, in a luxurious seaside hotel, there was a magnificent swimming pool overlooking the ocean. The pool was renowned for its pristine waters and drew guests from around the world.

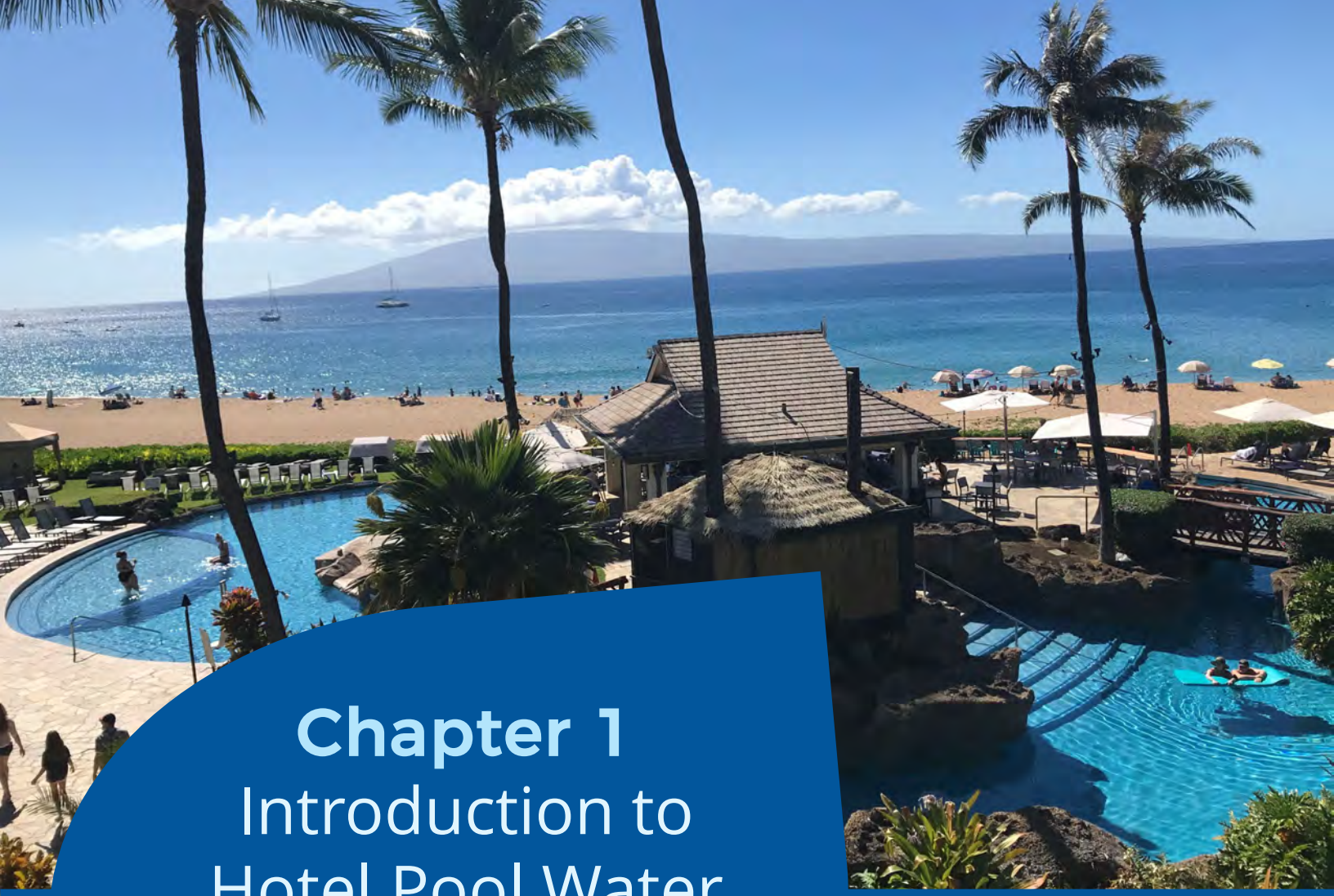
One fateful summer, the hotel's maintenance team decided to cut corners and neglect the pool's regular cleaning and chemical treatments. As the days passed, the water started to lose its sparkle, and a faint greenish tint appeared. The pool's pump also began making strange noises.



One morning, as the hotel's manager strolled by the pool, a guest approached with a disappointed look on her face. She said, "I was really looking forward to a refreshing swim, but the pool looks rather murky."

The manager realized the gravity of the situation and immediately called in a team of expert pool technicians. It took several days of intense cleaning, chemical adjustments, and repairs to restore the pool to its former glory. During this time, the disappointed guest had shared her experience on social media, and word spread quickly. The hotel's reputation took a hit, and potential guests started canceling reservations.

The moral of the story? Neglecting pool maintenance can lead to a tarnished reputation and lost business opportunities. Proper maintenance ensures that guests enjoy their stay and come back for more, making it a key aspect of hotel operational performance and financial success.



Chapter 1
Introduction to Hotel Pool Water Management Technology

Hotels are incorporating a plethora of technology solutions to improve operational performance and enhance the quality of the guest experience across all parts of their properties. These range from seamless online booking and contactless check-in options to automated back-end operating systems and personalized smart room features.

Swimming pool facilities are no exception to this trend. Today, a growing number of hotels are adopting various advanced technologies for pool water management — with almost half (46%) of hotels having implemented automated water monitoring solutions, according to research conducted for this study, and another 32% planning to do so within the next year. The most common form of remote monitoring is real-time alerts and notifications, used by 34% of properties. Almost one-quarter (23%) of properties have fully automated their water chemistry monitoring while another 31% report partial automation. Even laggards that may be slow to upgrade their other hotel technologies are coming to recognize the outsized benefits of swimming pool water monitoring and automation solutions.

Today, a growing number of hotels are adopting various advanced technology solutions for pool water management.

The fact that hotels are increasingly adopting technologies for pool water management is not surprising. After all, by automating maintenance activities while increasing control and oversight of pool operations, they can quickly and easily improve guest safety, satisfaction and loyalty. They can also reduce labor and utility costs while increasing pool equipment longevity, all of which should ultimately lead to increased business revenue, and profitability.

That being the case, it stands to reason that a technology-driven approach to pool water management, encompassing real-time chemical management, round-the-clock remote monitoring, and workflow optimization, is transitioning from being merely a nice-to-have option to becoming a competitive necessity. The shift is further underscored by the need for hotels to mitigate reputational harm, legal liabilities and other potential risks associated with suboptimal pool maintenance. With hotels contributing to 15% of overall water consumption in commercial buildings, according to The American Water Works Association Research Foundation, technology adoption is also being driven by a growing awareness on the part of guests of the importance of sustainable water resource management.

A comprehensive pool water management system allows hotels to maintain the highest standards of water quality, safety, and aesthetic appeal in an integrated, automated, and turnkey manner. The best of these platforms make it dramatically more efficient and effective to manage and track the upkeep of a pool — or any number of pools, across any number of properties. As it turns out, the technology is not only easy to implement but also surprisingly economical, with hotels reporting that the investment typically pays for itself within a period of 15 months.

While different standalone solutions offer different benefits and different capabilities, a fully-integrated pool water management platform should encompass a comprehensive range of features and functionality, including:

- **Digital maintenance logs** to record all maintenance activities, including water quality tests, cleaning schedules, equipment checks, and safety inspections
- **Remote monitoring capabilities** that deliver real-time data on water chemistry (pH levels, chlorine levels, etc.), temperature, and filtration system status, and alert staff to any issues requiring immediate attention
- **Scheduled maintenance alerts** for routine tasks like water testing, filter cleaning, chemical balancing, and equipment checks to ensure consistent maintenance and prevent potential issues
- **Mobile accessibility** enabling staff to monitor and manage pool maintenance tasks from anywhere, providing flexibility and immediate access to information
- **Analytics and reporting tools** to gain insights into maintenance trends, identify recurring issues, and optimize maintenance schedules, to help make informed decisions about upgrades or changes to maintenance protocols
- **Safety and compliance tracking** to conduct regular safety audits and provide updates on compliance requirements in accordance with local safety regulations and standards

The advent of a next-generation platform that combines these features into a unified connected system speaks to the future of hotel pool maintenance.

A comprehensive pool water management system allows hotels to maintain the highest standards of water quality, safety, and aesthetic appeal.



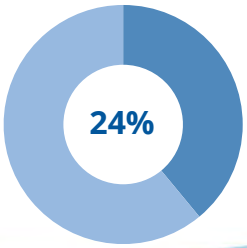
Chapter 2
Why Hotels Need Pool Water Management Technology

The fact that hotels need to strive for excellence in their swimming pool water management practices — above and beyond simply complying with all regulatory standards — cannot be overstated. It is a non-negotiable aspect of hotel operations. The seriousness of the matter is highlighted by alarming statistics from the Center for Disease Control and Prevention (CDC). The CDC reports that one in three swimming-related illnesses in the U.S. is linked to hotel pools, primarily due to Cryptosporidium, Pseudomonas, and Legionella. Cryptosporidium, a resilient parasite, can survive in even well-maintained pools, while Pseudomonas and Legionella bacteria thrive in slimy environments — often including popular waterparks — showing resistance to common disinfectants.

Hotel swimming pools, continuously exposed to large crowds of people, risk becoming illness transmission hotspots if not properly maintained. Older swimmers and smokers are particularly susceptible to Legionella, which can lead to pneumonia-like symptoms. The financial impact of guest illnesses or injuries should not be taken lightly. These can include medical costs, compensatory damages, and, in the worst cases, damages for wrongful death. Even minor pool-related health incidents related to poor water management will invariably lead to reputational damage, including negative guest comments on popular review sites like TripAdvisor, Yelp, Google Reviews, Booking.com, Expedia, etc., ultimately resulting in decreased hotel occupancy, revenue and profitability.

Hotel pools, exposed to large crowds, risk becoming illness transmission hotspots if not properly maintained.

Traditional approaches to swimming pool water management generally fail to mitigate these risks. While pool maintenance is typically conducted by hotel staff with a sufficiently good understanding of water chemistry, filtration systems, and compliance protocols, the never-ending task of ensuring water safety tends to be time-consuming, intermittent, and error-prone when done manually using age-old tools and practices and without the benefit of today's technology capabilities.



Percentage of hotels that perform hourly or daily testing of pool water for pH and chlorine levels, with many still recording disinfectant and pH levels using manual logs

There is also the matter of data collection. Accurate, consistent, and complete swimming pool water record-keeping is vital for the purpose of hotel management oversight and data tracking. It allows hotels to monitor water quality effectively and identify issues promptly. Importantly, in the event of a pool-related lawsuit, detailed documentation will likely be needed to defend against allegations of wrongdoing. Traditional record-keeping methods, often involving manual logs and irregular monitoring, are often lacking. That means hotels are compromising guest safety while potentially exposing themselves to a host of negative consequences, including, in some cases, costly litigation and loss of revenue.

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Fortunately, technology implementation can virtually eliminate these negatives. Automated filtration and chemical treatment solutions ensure consistent water quality, reducing the risk of waterborne infections and enhancing guest safety. Real-time water chemistry readings allow the aquatics maintenance staff to monitor a pool's safety score, water, and chemical usage closely. Add to the mix network-connected chemical controllers, using ORP, PPM, or chlorine probes, to automatically ensure precise measurements, keeping the pool open and healthy without the need for human oversight.

A next-generation water management system with advanced platform capabilities allows for real-time monitoring of pH, chlorine levels, temperature, and flow. It provides data access from any mobile device, offering a comprehensive view of water maintenance status and current conditions across any number of hotel pools and properties. It proactively notifies the maintenance staff of irregularities, including possible leaks, ensuring chemical balance, water conservation and preventive maintenance for compliance. A state-of-the-art system also offers flexibility. Software settings can be customized, modules can be added, and IoT devices can be integrated to meet specific hotel needs. A good example is a leak sensor. Water usage and conservation is a critical concern for hotel pools in some geographic areas — e.g., where drought is prevalent — and not in others.

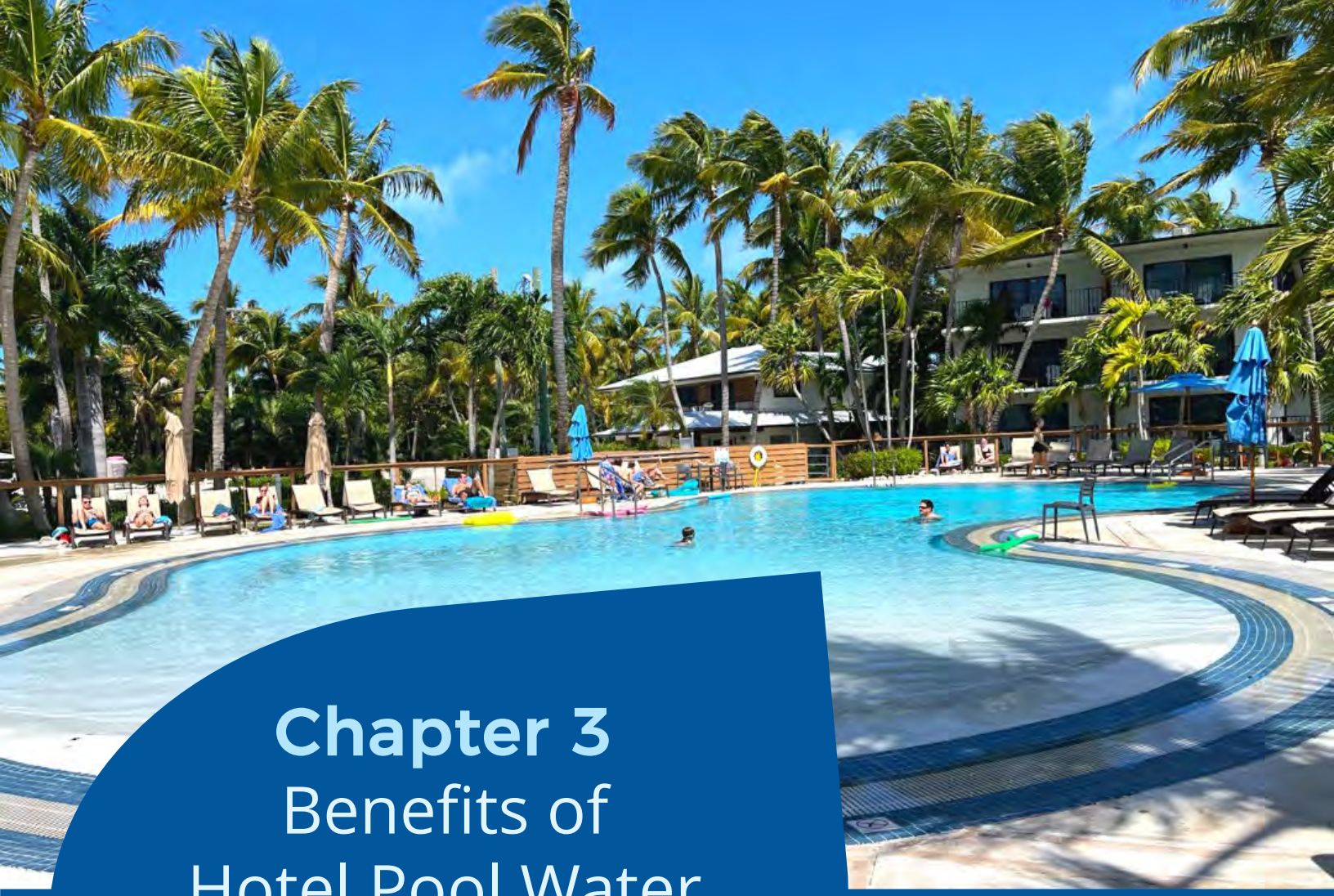
In addition to offering all necessary software and hardware components, some solution providers deliver educational coursework and certification, offering remote support. Staff training ensures that a maintenance team is using the technology to achieve optimal performance, automating day-to-day tasks, improving resource utilization, and optimizing processes across the board.

The best of today's water management systems provide a transparent view of a team's performance, uncovering issues and inefficiencies, and emphasizing accountability in operations. This allows hospitality groups and individual hotels alike to easily organize, track, and streamline all water management processes, ensuring adherence to health advisories and the Model Aquatic Health Code (MAHC) recommendations from the Center for Disease Control (CDC). To that point, a next-generation system manages all aspects of compliance and safety. It tracks compliance status and coordinates preventative maintenance, allowing fully-automated maintenance to prevent costly repairs.

The benefits of remote data access, seamless integration with existing systems, and ability to organize facilities across all properties on a single platform are multifold. The system collects, stores, and interprets all key data, enabling a better understanding of operations and performance. It tracks actions, and identifies improvement areas, and alerts the team to low supplies. It sets reminders for preventative maintenance, providing a clear picture of task lifecycles, accountability, and staff efficiency, offering regular facility updates. Tasks can be managed with a simple tap, eliminating manual processes. Notifications and corrective actions ensure follow-ups when needed, maintaining pool safety without 24/7 management. Individual staff are assigned flexible permissions, empowering the team as a whole and driving continuous performance improvement.

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Allowing solution provider access to hotel pool water data can further increase efficiency, providing data-driven insights and recommendations for continuous performance improvement. Here it should be noted that top-tier solution providers offer top-tier customer support, including chat, email, and phone, using color-coded, icon-based software for clear communication even across language barriers. Simply put, a fully-integrated system revolutionizes hotel pool water management. It enhances efficiency, productivity, reduces costs, ensure safety and drives top-line revenue growth while paving the way for future technology innovation and even greater financial success.



Chapter 3
Benefits of Hotel Pool Water Management Technology

When it comes to hotel swimming pool water management, there is no room for slacking off. Effective management contributes significantly to the overall value of a hotel property. Meanwhile, poor management can spell disaster, for reasons discussed in previous chapters. Research conducted for this study reveals that the vast majority (86%) of hotel managers and staff agree that keeping their swimming pools in pristine condition attracts more guests, improves the quality of the guest experience, and even supports premium pricing.

It's surprising, then, that not all hotels are doing everything possible to ensure optimal maintenance. In fact, according to the research, fewer than half (48%) of respondents are "satisfied" or "extremely satisfied" with their current pool water management practices, while more than one-third (36%) admitting to being "dissatisfied" or "extremely dissatisfied." Despite the availability of affordable and user-friendly pool water management solutions, many hotels have yet to upgrade their capabilities in this area or do much of anything to improve their outdated processes.

A unified reporting dashboard as part of a comprehend-sive platform marks a new era in hotel pool water management.

A unified reporting dashboard as part of a comprehensive platform marks a new era in hotel pool water management. It provides the data and insights that hotel operators need to modernize their pool water management practices, make informed decisions, and fully realize the potential of their swimming facilities. An ideal reporting dashboard should offer the following key features:

Compliance and Documentation: A unified dashboard that streamlines the recording and storage of data related to water chemistry, filtration systems, and compliance protocols, ensures efficient oversight and regulatory compliance and eliminates the fear of inspection failures due to inadequate pool logs. It facilitates the monitoring of manual water testing frequencies, ensuring compliance with daily manual readings. It ensures that pool-related information is always readily available for audits and inspections.

Historical Data Tracking: A centralized location for historical data storage and access is crucial. It allows maintenance staff to monitor water quality, chemical levels, and maintenance records over time. This wealth of data enables the identification of long-term trends, assessment of maintenance procedures' effectiveness, and informed decision-making to improve pool performance.

Simultaneous Management of Multiple Pools: Unlike traditional chemical controllers, a comprehensive reporting dashboard should enable users to monitor and manage several pools at once. This capability simplifies the process of identifying trends and establishing operational baselines, significantly enhancing the ease and efficacy of pool management.

The adoption of advanced solutions for hotel swimming pool water management results in substantial cost savings and increased efficiencies that translate into measurable financial outcomes. According to one recent study, this includes an average 32% reduction in pool maintenance-related labor costs, a 15% decrease in pool water usage, a 31% extension in pool equipment lifespan, and a 20% reduction in chemical costs.

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To drive additional savings as well as more unified and efficient management practices, a growing number of hotels are integrating their pool management solutions into their hotel property management systems (PMS). Audit practices, which are essential for monitoring efficiency and ensuring compliance with environmental regulations, are typically conducted annually by 28% of respondents. The incorporation of technology can significantly simplify this process by offering real-time data and analytics. Approximately 40% of hotels reported partial PMS integration with manual oversight, while 20% are investigating options for full integration.

Looking ahead, respondents identified advanced automation and AI (60%), sustainable and green technologies (48%), and Internet of Things (IoT) device integration (40%) as the primary trends set to transform swimming pool management in the hotel sector. These survey results underscore the vital role of effective pool water maintenance. While current practices vary, there is a noticeable shift towards utilizing technology to enhance efficiency, boost guest satisfaction, and address the myriad of challenges that hotels have long faced with traditional water management practices.



Chapter 4
Hotel Pool Water Management Technology Success Story

DAVIDSON
HOSPITALITY GROUP

Davidson Hospitality Group is a leading hospitality management company — and a top-performer when it comes to swimming pool water management. With 85 hotels and resorts, over 200 restaurants, bars, and lounges, and more than 2 million square feet of meeting space across the United States, Davidson is renowned for its personalized service and extensive experience in the hospitality industry.

In 2023, Davidson Hospitality Group was ranked #1 in Guest Satisfaction among Third-Party Hotel Management Companies by J.D. Power for the second consecutive year. Davidson is committed to delivering value and excellence in all aspects of its operations.

A smart and connected platform for pools, spas, water parks and more has played a pivotal role in Davidson's success in swimming pool water management. The platform ensures the safety and appeal of the water for guests in a sustainable and cost-effective manner. It serves as a central hub, offering real-time monitoring, 24/7 alerts and notifications, leak detection, chemical automation, work order and asset management.

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According to Chris Richardson, Davidson's Vice President of Engineering & Sustainability, the transition from manual processes and labor-intensive tasks to full automation, requiring minimal human capital involvement, has been a game-changer.

In the past, dedicated personnel were tapped to distribute chemicals and take readings, but the need for such resources has been greatly reduced. "This automation not only ensures compliance with local and state health district standards, but it also guarantees the availability of safe and well-maintained water facilities for guests," he said.

The initial success of the technology was demonstrated through a beta test at a Davidson-operated resort on Mackinac Island, Michigan. This historic property, which is only open for five months each year due to extreme weather conditions, was experiencing issues with its aquatic facilities.

After implementing the advanced water management platform, the property reported no issues for over two years. Encouraged by this outcome, Davidson gradually implemented the technology across its portfolio as contracts expired, ensuring access to the latest and most advanced water safety management program available.

One of the key advantages is its real-time monitoring capabilities. While most cities and municipalities require three daily tests for chemical levels, this advanced technology enables continuous monitoring every 30 seconds.

This frequent data collection not only exceeds regulatory guidelines, but it also provides consistent valuable insights. Additionally, the software offers a global view, allowing Richardson and his team to assess the performance of all aquatic facilities across the United States.

At the property level, individual teams can access a dashboard displaying information specific to their pools, including temperature, chlorine levels, alkalinity, pH, and flow rates. This comprehensive monitoring system ensures prompt identification of any issue and facilitates efficient maintenance and response times.

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In addition to streamlining operations and reducing labor requirements, the technology has proven to be instrumental in liability mitigation. The software's real-time data and reporting capabilities enable Davidson to address guest feedback promptly and effectively. By accessing the chlorine and chemical values during a guest's stay, the company can validate or invalidate claims related to water chemistry. This level of transparency and accountability not only protects guests, but also safeguards Davidson’s reputation.

The benefits extend beyond operational efficiency and guest satisfaction. Consider the positive impact on equipment longevity. By avoiding over-chlorination, which can damage heat exchangers, the technology helps to extend the lifespan of critical equipment. This reduction in deterioration translates into substantial cost savings, as heat exchangers can range from about $8,000 to $50,000.

It's important to also consider the reduction in labor hours. With the automation provided by the software, staff previously assigned to aquatics tasks can be reallocated to other departments, enhancing overall operational efficiency. The positive impact on personnel and the elimination of human error rank as obvious benefits.

Richardson and his team are currently in the process of integrating the water management platform with the company's existing work order management software. This integration aims to further streamline operations, enhance communication, and improve response times.

Automation and real-time monitoring have not only improved operational efficiency and guest satisfaction but have also ensured compliance with health and safety standards. Additionally, the reduction in labor hours and extended equipment lifespan further demonstrate the value of this technology.

Davidson is proud to be a leader in swimming pool water management within the hospitality industry.

Automation and real-time monitoring have not only improved operational efficiency and guest satisfaction but have also ensured compliance with health and safety standards.



Chapter 5
Winning with Hotel Pool Water Management Technology

Maintaining a pristine swimming pool is more than just a luxury; it's key to ensuring guest satisfaction and safety as well as reputational and financial success. As the previous chapters made clear, pool water management has evolved beyond traditional approaches, with the integration of technology now playing a pivotal role. The following are a few recommendations to help hotels harness the full potential of technology to optimize pool water management.

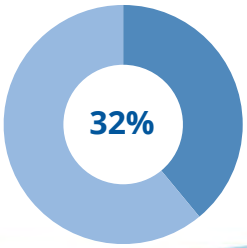
Choose User-Friendly Software: Select pool management software that is easy to install and use, ensuring a smooth implementation and minimizing the learning curve. This allows the hotel team to quickly benefit from the technology.

Provide Training and Support: Ensure the team receives comprehensive training on the new technology. Proper training maximizes the benefits of the technology and supports efficient, effective use.

Implement safety monitoring tools: Automated water safety monitoring is a cornerstone of advanced pool management. Such tools enable vigilant oversight of pool water and equipment, facilitating early detection of issues for timely maintenance. They also monitor critical chemical levels, protecting guests from waterborne diseases and hazards, thus ensuring safety and satisfaction while streamlining maintenance.

Elevate energy management practices: Embracing devices like Variable Frequency Drives and Variable Speed Pumps enhances energy efficiency and pool pump performance. LED lighting reduces energy consumption and extends system lifespan. Flow meters support efficient facility management, and high-efficiency heaters allow for year-round enjoyment with reduced energy use. These practices not only lower operational costs but also appeal to eco-conscious guests.

Automated water safety monitoring is a cornerstone of advanced pool management.



Average reduction in pool maintenance-related labor costs with the implementation of an integrated hotel pool water management system

Promptly address issues that arise: Use operational software to uncover issues in pool management processes. Transparency in operations allows for the prompt addressing of problems, maintaining smooth operations. Quickly address issues with software support to prevent escalation and maintain smooth operations.

Automate chemical control and monitoring: Automated chemical controllers ensure precise measurements, maintaining pool health. Real-time monitoring of pH, chlorine levels, temperature, and flow allows for proactive adjustments, reducing the risk of chemical imbalances. Automating routine processes allow staff to focus on more meaningful work, enhancing efficiency.

Track timestamps for accountability: Use timestamps for chemical feed, manual readings, and controller calibration to ensure tasks are completed correctly and on time, providing documentation for sanitation. Enable staff to manage tasks digitally, streamlining communication and task allocation. Maintain transparency in task management to hold individuals and teams accountable, promoting efficiency and compliance. Also, analyze data to assess staff efficiency and identify areas for improvement, fostering continuous improvement.

By selecting the right software and hardware components and harnessing the power of automation and data-driven insights, hotels gain the ability to easily and effectively maintain and capitalize upon one of their property's greatest assets: their swimming pool facilities. As sustainability becomes increasingly important, the role of technology in supporting eco-friendly practices will continue to grow, making the investment in an advanced, automated, and fully-integrated swimming pool water management system all the more compelling for any forward-thinking hotel or hospitality group.

Hotels gain the ability to easily and effectively maintain and capitalize upon one of their property's greatest assets: their swimming pool facilities.

To recount the moral of the fable presented at the beginning of this eBook:

Neglecting pool maintenance can lead to a tarnished reputation and lost business opportunities. Proper maintenance ensures that guests enjoy their stay and come back for more, making it a key aspect of hotel operational performance and financial success.



VivoAquatics provides a smart and connected technology platform for pools, spas and water features. Providing real-time chemical management, monitoring and work-flow tools, VivoAquatics helps deliver the safest and most appealing water for guests in a more sustainable and cost-effective way. The platform is the center of the aquatics program which also includes expert support, training, certification and procurement optimization. VivoAquatics partners with the world's leading hospitality, real estate and fitness brands to help manage their water that is enjoyed by millions of guests each including Hilton Supply, MGM Resorts International, Omni Hotels, Westgate Resorts, In-Shape Fitness, The Irvine Company, G6 Hospitality and many more.

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This best practices market research report is the result of primary and secondary research conducted by subject matter experts at Starfleet Research, which is the IT market research arm of Starfleet Media. Starfleet Research is a world leader in benchmarking best practices in technology-enabled business initiatives. Our research reports, focusing on how companies can maximize performance and achieve their desired objectives with respect to specific technology-enabled business initiatives, are read by thousands of industry practitioners and others around the world. Our digital content assets, including our Smart Decision Guides, benchmark reports and co-branded eBooks, are widely considered to be the most authoritative industry resources for IT decision makers charged with evaluating and making technology purchases.

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Research notes: In Q4 2023, Starfleet Research conducted an online market research survey to capture the perspectives of hospitality leaders, IT staff, and other industry practitioners with firsthand experience with swimming pool water management practices at their hotel or other lodging properties. 257 qualified respondents participated, from the following geographic locations: North America (62%); Europe (22%); Asia (10%); Other (7%). The job levels / roles of survey respondents varied, with 22% serving in leadership positions, including hotel general managers, chief technology officers and other C-level executives; 44% serving as directors and managers, including facilities managers, maintenance managers, and IT managers; and 34% in staff positions, including maintenance staff, front office staff and systems administrators.