Interclean

# The Future of Professional Cleaning & Hygiene:

## Top 10 Trends for 2025

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EUROPEAN
Cleaning
JOURNAL

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AMSTERDAM

## Sustainability and Environmental Consciousness

Biodegradable Cleaning Products, Energy-efficient Equipment, Green Certifications, IoT Sensors, Sustainable Battery Technologies.

## Cost Efficiency

Multi-functional Cleaning Machines, Concentrated Cleaning Products, Energy-efficient Systems.

## Smart Technology Integration

Smart Sensors, AI-driven Analytics, Integrated Maintenance Platforms, AR Enhancing Operational Efficiency, IoT Sensors, Smart Washroom Monitoring, Integration with Building Systems, Predictive Maintenance.

## Automation and Efficiency

Robotic Floor Cleaners, AI-powered Scheduling Systems, Automated Scrubbers and Sweepers, 24/7 Cleaning Service.

## Data Privacy Awareness

Secure Data Storage Solutions, Encrypted Communication Tools, Privacy-compliant Software.

## Health, Safety, and Wellbeing of Labourers

Ergonomic Equipment, Safer Chemicals, Wearable Safety Devices, Mental Health Support, Wellness Initiatives.
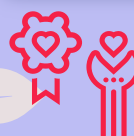
## Public Health and Hygiene

High-performance Disinfectants, UV-C Sterilisation, Air Purification Systems.

## Workforce Optimisation and Talent Management

Training Software and Simulations, Talent Management Software, Certification Programmes, VR and AR Staff Training.

## Focus on Ergonomics and User Experience

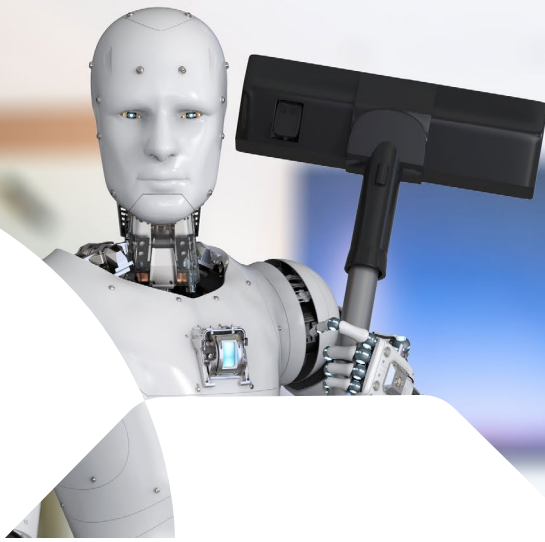Ergonomically Designed Tools, Lightweight Machines, User-friendly Interfaces.

## Customisation, Personalisation, and Flexibility

Customisable Cleaning Plans, Hybrid Cleaning Systems, Modular Cleaning Equipment, Quiet Machines.

# 2025 Trends in Professional Cleaning & Hygiene

# Contents

Sustainability and environmental consciousness have become fundamental driving forces within the professional cleaning and hygiene industry.

## Introduction

The professional cleaning and hygiene industry is undergoing a rapid and exhilarating transformation, driven by technological advancements, shifting consumer expectations, and increasing regulatory pressures. As we embrace this evolving landscape, the opportunities for growth and innovation are limitless. Highlighting the shift toward customised and flexible cleaning solutions and the rise of hybrid cleaning models. When researching and identifying these trends we collaborated with our colleagues at the European Cleaning Journal (ECJ) – this report builds upon their knowledge and insights. Join us as we navigate this exciting frontier, where the future of cleaning is smarter, safer, and more sustainable than ever before!

## What's on the hygiene horizon and in the cleaning crystal ball for the future?

Looking ahead into 2025, several key trends are set to reshape the industry, impacting businesses and consumers alike.

In this exclusive report we'll be exploring these trends and the associated product innovations revolutionising the global professional cleaning and hygiene industry in 2025.

The big question going forward is: how can the professional cleaning and hygiene industry continue to innovate and deliver sustainable, efficient, and effective cleaning solutions?

## Surfing the wave of opportunity

By identifying the most significant macro trends and the specific needs they address, we as industry professionals can accurately reflect the dynamic nature of the professional cleaning and hygiene

industry and highlight how groundbreaking innovations are driving solutions to meet these evolving needs.

The professional cleaning and hygiene industry is undergoing a major transformation, driven by technological advancements that are reshaping operations with a focus on efficiency, sustainability, and precision. Machine learning, data-driven solutions, and AI are at the forefront of this shift, optimising processes, improving accuracy, and enhancing operational decision-making. These innovations are not only speeding up cleaning tasks but also transforming how businesses approach everything from maintenance to resource management.

In 2025, these technological advancements will continue to drive the industry forward, promoting smarter, more sustainable practices. This report delves into emerging trends like Artificial Intelligence (AI), automation, sustainability, ESG and CSR factors are set to redefine the cleaning and hygiene sector, offering exciting new possibilities for the future.

## Leveraging these trends to boost your business!

By understanding these trends, we can anticipate future challenges and opportunities, and the impact these have on business – so that we can make informed decisions to stay ahead of the curve. Interclean is thrilled to be part of this journey, and we hope this report will help you navigate these challenging and rewarding times!

# Sustainability, Environmental Consciousness, ESG, and CSR

Sustainability and environmental consciousness have become fundamental driving forces within the professional cleaning and hygiene industry. As environmental concerns escalate, businesses are increasingly pressured to reduce their carbon footprint, adopt eco-friendly cleaning solutions, and meet evolving ESG (Environmental, Social, and Governance) criteria. Corporate social responsibility (CSR) is also gaining momentum, with companies committing to environmentally sustainable practices to maintain a competitive edge and attract eco-conscious consumers.

## Product Innovations

1. **Biodegradable Cleaning Products:**
   Cleaning solutions made from non-toxic, biodegradable ingredients are gaining popularity, reducing the harmful impact on the environment.

2. **Energy-efficient Equipment:**
   Advanced cleaning machines that use less energy and water while maintaining high performance, contributing to reduced resource consumption.

3. **Green Certifications:**
   Eco-friendly cleaning products and practices are being certified through various green standards, providing businesses with a reliable means to prove their sustainability claims.

4. **IoT sensors:**
   IoT sensors offer a powerful tool for meeting sustainability goals by enhancing resource efficiency and reducing environmental impact. Here's how:

**Reducing Waste:** IoT sensors can track the levels of consumables, such as soap, paper towels, and cleaning chemicals, in real-time. By monitoring the amount of product remaining in dispensers, sensors can trigger refills only when necessary, preventing overuse and minimising waste.

**Optimising Resource Use:** Smart cleaning systems enabled by IoT can monitor key metrics like water usage, energy consumption, and cleaning cycle times. This data allows facilities to adjust cleaning schedules based on real-time occupancy, ensuring resources are used only when needed. For example, cleaning operations can be reduced or postponed in areas with low foot traffic, conserving both water and energy.

**Waste Management:** IoT sensors placed in waste bins or trash compactors help track fill levels, optimising the timing of waste collection. By avoiding unnecessary trips to empty bins, these systems save fuel, reduce emissions, and ensure more efficient waste management.

**Predictive Maintenance:** IoT sensors can monitor the condition of cleaning machines and

equipment, predicting when maintenance is needed before a failure occurs. This helps extend the lifespan of equipment, reducing the need for replacements and lowering the consumption of raw materials and energy.

As the professional cleaning and hygiene industry moves toward 2025, the role of the Internet of Things (IoT) in driving sustainability goals is becoming increasingly critical. IoT technologies are revolutionising how cleaning operations are managed, enabling businesses to optimise cleaning schedules and resource use based on real-time data. By utilising sensors and connected devices, cleaning systems can gather valuable information about factors such as foot traffic, energy consumption, and cleanliness levels. This data-driven approach not only enhances operational efficiency but also significantly contributes to sustainability efforts by reducing waste and minimising the environmental impact of cleaning processes.

Examples of IoT's impact on sustainability can be seen in articles like "Intelligent Buildings: Be Smart About Opportunities" from the European Cleaning Journal (ECJ) [1], which highlights how IoT-driven systems in smart buildings can reduce energy consumption

Smart cleaning systems enabled by IoT can monitor key metrics like water usage, energy consumption, and cleaning cycle times.

and optimize cleaning schedules based on building occupancy patterns. With IoT sensors, building managers can adjust cleaning frequencies to match real-time occupancy, ensuring that energy-intensive cleaning processes are only conducted when truly needed. This reduces waste and maximizes efficiency, aligning with sustainability goals.

Similarly, the article *"Cleaning in the Digital World: Smart City of 2040"* [2] discusses how IoT-enabled smart cities can integrate cleaning operations into broader environmental strategies. In these cities, IoT sensors are used not only to manage cleaning tasks but also to monitor air quality, waste management, and energy use, creating an ecosystem where every aspect of the built environment contributes to sustainability. These connected systems ensure that cleaning operations are in harmony with other sustainability initiatives, optimizing resources and reducing the overall carbon footprint of urban spaces.

**5.  Sustainable battery technologies:**
Sustainable battery technologies such as lithium iron phosphate (LiFePO4) batteries, which offer longer life spans, reduced toxicity, and greater recyclability [3]. These advancements could help reduce the overall environmental footprint of battery-powered cleaning equipment, making it a more sustainable option [4].

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[1] "Intelligent Buildings: Be Smart About Opportunities"

[2] "Cleaning in the Digital World: Smart City of 2040"

[3] How Advanced Battery Technologies Are Revolutionizing the Cleaning Industry? - Energy Batteries (energy-batteries.com)

[4] How Batteries and Charging Solutions are Driving Sustainability in Floor Cleaning | Industry News | Delta-Q Technologies

## Challenges and Opportunities

While the shift towards sustainability offers substantial opportunities, businesses often face higher initial costs for sustainable products and technologies. Additionally, regulatory requirements and evolving standards present challenges in keeping up with the pace of change. However, this trend also presents new markets and customer segments for eco-conscious products, offering a significant competitive advantage for early adopters.

## Impact on the Industry

Stricter government policies are accelerating the adoption of eco-friendly cleaning products across industries, driving businesses to prioritize sustainability in their cleaning processes. These regulations not only mandate the use of safer chemicals but also push for cleaner, more efficient operations. Innovations in sustainable battery technologies are also transforming high-tech cleaning machines, making them more energy-efficient and reducing their environmental impact. As businesses increasingly focus on Environmental, Social, and Governance (ESG) considerations, there's a growing emphasis on evaluating the full product lifecycle, from manufacturing and water use to disposal. As highlighted in the ECJ article *"Innovation with Purpose"*[5], these innovations are not only reducing the carbon footprint of cleaning operations but also contributing to a circular economy by promoting sustainable practices throughout the supply chain.

Sustainability is becoming a critical differentiator, driving innovation in product development and cleaning practices. As consumers and businesses demand more sustainable solutions, the industry is responding with green certifications, energy-efficient machines, and eco-friendly chemicals. The increased focus on ESG and CSR has led to an overarching industry-wide shift toward environmentally responsible operations.

> While the shift towards sustainability offers substantial opportunities, businesses often face higher initial costs for sustainable products and technologies.

## Future Outlook

As sustainability continues to be a top priority, the demand for green cleaning products and services will grow, driving continued innovation. In 2025, more businesses in the cleaning industry will adopt comprehensive sustainability initiatives, aligning with environmental regulations and consumer expectations.

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[5] "Innovation with Purpose"

# 📊 TREND 2:

# Cost Efficiency

In 2025, cost-efficiency remains a central focus for businesses in the professional cleaning and hygiene industry. In a sector traditionally driven by low margins, companies are constantly searching for ways to balance rising demand with tightening budgets. As clients continue to push for lower costs, service providers are feeling the pressure to find savings in their operations.

One of the most significant challenges lies in the fact that labour remains the largest cost for cleaning businesses, with no indication that this will change, even with the rise of technological innovations. However, new strategies focusing on sustainability and cost savings are emerging as key solutions for businesses to maintain profitability while meeting the demand for high-quality service[6].

## Product Innovations

1. **Multi-functional Cleaning Machines:** Machines that offer various cleaning capabilities in one unit, reducing the need for multiple pieces of equipment.

2. **Concentrated Cleaning Products:** Concentrates that reduce transportation costs and packaging waste, offering a more cost-effective and eco-friendly solution.

3. **Energy-efficient Systems:** Cleaning solutions that consume less energy and resources, lowering overall operational costs for businesses.

## Challenges and Opportunities

The challenge lies in balancing cost reductions with maintaining cleaning standards. While automation and energy-efficient solutions can lower costs, the initial investment may deter smaller companies. However, these solutions present long-term opportunities by reducing labour costs and enhancing overall operational efficiency.
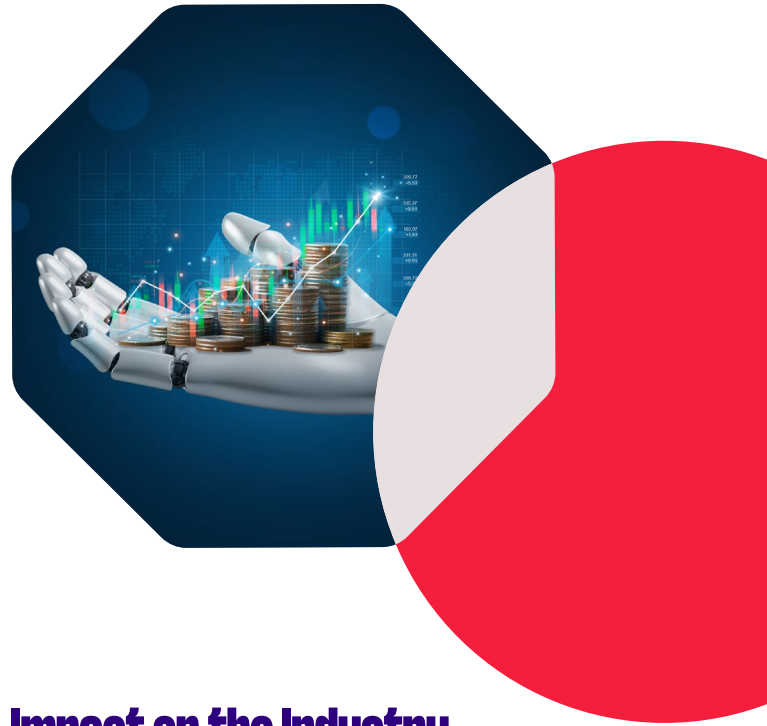
## Impact on the Industry

The drive for cost efficiency is spurring innovations in cleaning technology and product formulations, which help businesses reduce operational expenses. As companies adopt these technologies, they can achieve higher productivity and profitability, ultimately benefiting both the business and its customers.

Switching to eco-friendly cleaning products not only supports sustainability but also reduces costs by improving efficiency and minimising harm to employees. These products often require fewer chemicals and less water, making cleaning processes faster and more cost-effective in the long run. Additionally, while the cleaning industry is traditionally labour-intensive, the growing use of demand-driven cleaning technologies, including robotics and automated systems, can significantly lower costs. By using tech to optimise cleaning schedules and tasks, businesses can reduce waste, improve resource allocation, and reduce the need for excessive manual labour, creating a healthier, more efficient work environment for employees.

## Future Outlook

In 2025, cost efficiency will continue to be a priority, with businesses investing in technologies that streamline operations, reduce resource consumption, and improve productivity. The trend will drive further product innovations in cost-effective cleaning solutions.

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[6] https://www.issa.com/articles/11-ways-to-reduce-cleaning-operations-costs/

# Smart Technology Integration and Digital Transformation for Data-Driven Solutions

Predictive maintenance and data-driven solutions are revolutionising the cleaning industry by allowing companies to optimise their equipment usage and schedules. Machine learning and real-time data enable businesses to predict when maintenance is required, reducing downtime and improving operational efficiency.

Technological advancements, particularly in machine learning and data-driven solutions, are accelerating key macro trends across industries. These innovations are transforming how businesses approach efficiency, accuracy, and real-time decision-making. Unlike traditional automation, which focuses on streamlining processes, machine learning leverages data to optimise operations by continually improving decision-making and adapting in real-time. This shift is allowing companies to not only automate tasks but also enhance their precision, responsiveness, and overall effectiveness, creating new opportunities for smarter, more dynamic operations.

> By making training more accessible and adaptable, AI helps to reduce the risk of human error, improve compliance with safety regulations, and maintain high hygiene standards across facilities.

## Product Innovations

1. **Smart Sensors:**
   Devices that monitor equipment performance in real-time, detecting potential failures before they occur.

2. **AI-driven Analytics:**
   Software that analyses cleaning data to optimise schedules and predict maintenance needs based on usage patterns.

## AI in Health and Safety Applications

The application of AI in health and safety, particularly in high-risk areas, is one of the most exciting developments in the professional cleaning sector. In countries like India, where sanitation and hygiene challenges are especially prevalent, AI can play a critical role in improving safety standards and reducing risks. AI-powered tools can help identify high-risk areas in real-time, assess contamination levels, and recommend corrective actions. For example, AI systems can predict outbreaks of infectious diseases in areas with suboptimal sanitation and suggest targeted cleaning interventions to prevent the spread of illness. These technologies not only improve the quality of sanitation but also enhance worker safety by identifying hazards before they become serious threats.

Furthermore, AI is being used to enhance health and safety training programs. As highlighted in the European Hygienic Engineering & Design Group (EHEDG) conference, AI can be utilised to summarise complex cleaning protocols and translate them into simplified instructions for multilingual teams. In diverse, multilingual workforces, clear communication is crucial, and AI-driven solutions can ensure that staff across different regions and languages are on the same page when it comes to hygiene practices and health safety standards. By making training more accessible and adaptable, AI helps to reduce the risk of human error, improve compliance with safety regulations, and maintain high hygiene standards across facilities.

**3. Integrated Maintenance Platforms:**
Platforms that provide centralised data on equipment health, helping businesses track performance and schedule preventative maintenance.

**4. AR Enhancing Real-Time Operational Efficiency:**
While VR is gaining traction in training, AR holds significant potential for improving day-to-day cleaning tasks. AR provides real-time overlays of information, guiding cleaning staff in their tasks. For example, AR glasses or mobile devices can display information about the cleanliness of a specific area, the required cleaning process, or the location of cleaning supplies, allowing employees to perform tasks more efficiently [7].

AR can also assist with equipment maintenance and troubleshooting. If a cleaning machine malfunctions, AR can provide step-by-step instructions to help staff resolve the issue quickly, reducing downtime and improving operational efficiency. Moreover, remote assistance through AR can connect cleaning staff with supervisors or technicians who can guide them in real time.

**5. Tailoring Cleaning Services with IoT Sensor:**
IoT sensors embedded in buildings offer several advantages that can enhance the efficiency and responsiveness of cleaning services[8]. By collecting a wide array of data points, these sensors enable a more tailored approach to cleaning operations:

**6. Footfall Data:**
IoT sensors can track foot traffic and movement patterns in various parts of a building. With this data, cleaning schedules can be optimised to focus on high-traffic areas, such as washrooms or busy corridors, while less-used spaces can be cleaned less frequently. This approach ensures resources are allocated efficiently, reducing time spent on areas that don't require as much attention.

**7. Smart Washroom Monitoring:**
Sensors can track environmental factors like air quality, temperature, humidity, and odour in washrooms. This helps determine when additional cleaning or refills are required, ensuring hygiene standards are maintained without unnecessary interventions. It also enhances the user experience by keeping washrooms consistently clean and comfortable.

[7] https://elearningindustry.com/role-of-augmented-reality-and-virtual-reality-in-modern-training-programs

[8] https://www.issa.com/articles/data-driven-cleaning-putting-the-numbers-and-statistics-into-practice/

**8. Integration with Building Systems:**
IoT sensors in cleaning systems can communicate with other building management systems, such as HVAC (Heating, Ventilation, and Air Conditioning). This integrated approach ensures that cleaning efforts align with air quality, humidity, and temperature conditions, providing a more holistic and efficient way to maintain a building's cleanliness and comfort.

**9. Predictive Maintenance:**
AI is also transforming maintenance operations within the cleaning industry. Traditional maintenance approaches often rely on scheduled checks or reactive measures when equipment breaks down. AI-powered systems, however, use machine learning algorithms to analyse usage patterns and predict when cleaning equipment is likely to fail. This predictive maintenance capability helps businesses reduce downtime and optimise maintenance schedules, leading to longer equipment lifespans and significant cost savings.

AI algorithms can analyse factors such as usage frequency, environmental conditions, and wear-and-tear patterns to forecast maintenance needs before issues arise. This proactive approach not only minimises disruptions to cleaning operations but also ensures that cleaning equipment is always functioning at its best.

> AR provides real-time overlays of information, guiding cleaning staff in their tasks.

# Distinguishing Digitalisation and AI in the Professional Cleaning and Hygiene Industry

As the professional cleaning and hygiene industry continues to evolve, it is crucial to understand the distinction between digitalisation and artificial intelligence (AI), two key drivers of innovation. Digitalisation refers to the integration of technology into everyday cleaning operations through tools such as software systems, smart dispensers, and IoT-enabled devices. These systems provide real-time data, automate processes, and streamline operations. For example, smart dispensers can track usage and

alert staff when supplies are running low, helping to optimise inventory management. Similarly, digital cleaning management platforms can schedule tasks, monitor performance, and ensure compliance with hygiene standards, all based on collected data.

On the other hand, AI goes a step further by applying machine learning, predictive analytics, and advanced algorithms to analyse data and make autonomous decisions. Unlike digitalisation, which is primarily about improving operational efficiency, AI can predict future needs, optimise workflows, and even respond to real-time conditions in ways that go beyond human programming. For instance, AI can be used for predictive analytics to forecast cleaning requirements based on factors like foot traffic, environmental conditions, or historical cleaning patterns, allowing for more efficient allocation of resources. Furthermore, AI-powered platforms, such as ChatGPT, are beginning to assist in staff training, providing on-demand guidance and ensuring that employees are equipped with the knowledge to follow the best cleaning protocols consistently.

> Gathering vast amounts of information without clear insights can lead to inefficiencies or missed opportunities.

## Challenges and Opportunities

It is essential to emphasise that the value of IoT lies not just in the collection of data but in the meaningful analysis of that data. Gathering vast amounts of information without clear insights can lead to inefficiencies or missed opportunities. To achieve sustainability goals, cleaning businesses must focus on extracting actionable insights from the data collected. For instance, IoT systems can detect high-traffic areas in real-time, allowing cleaning operations to focus resources on those areas while avoiding unnecessary cleaning in less frequently used spaces. This level of precision reduces water and chemical usage, cutting down on environmental impact and operating costs.

Implementing predictive maintenance solutions may require significant upfront investment in technology and training. However, the potential benefits, such as reduced equipment failure rates and improved efficiency, far outweigh the costs. As data-driven

solutions become more accessible, businesses can gain a competitive edge by leveraging these technologies.



## Impact on the Industry

Data-driven solutions and predictive maintenance are changing how cleaning operations are managed, making them more proactive rather than reactive. Businesses are able to reduce downtime, extend the lifespan of their equipment, and optimise their operations, leading to significant cost savings.

## Future Outlook

In 2025, predictive maintenance and data-driven solutions will be fully integrated into cleaning operations, making businesses more efficient and reducing costs. These technologies will become standard practice, driving further automation and optimisation.

> Autonomous cleaning robots are particularly useful in large commercial spaces such as airports, hospitals, and office buildings.

# 🚀 TREND 4:

# Automation and Efficiency

Automation continues to reshape the professional cleaning industry, with robotic cleaners, AI-driven scheduling, and automated systems becoming increasingly common. These solutions are designed to improve cleaning efficiency, reduce labour costs, and enhance the precision of cleaning processes.

## Product Innovations

**1. Robotic Floor Cleaners:**

One of the most exciting advancements in the cleaning industry is the rise of AI-powered cleaning robots: autonomous machines capable of cleaning large areas without human intervention, enhancing productivity. These robots can autonomously perform a wide range of cleaning tasks, including floor cleaning, window washing, and disinfection, all while requiring minimal human intervention. AI enables these robots to navigate complex environments, adapt to changing conditions, and complete cleaning tasks with a high level of precision and efficiency[9].

Autonomous cleaning robots are particularly useful in large commercial spaces such as airports, hospitals, and office buildings, where maintaining cleanliness is critical. By taking over repetitive and physically demanding tasks, these robots free up human workers to focus on more complex responsibilities that require problem-solving or human interaction, such as supervising operations or managing customer relations.

**2. AI-powered Scheduling Systems:**

Software that automatically adjusts cleaning schedules based on real-time data, ensuring optimal use of resources.

**3. Automated Scrubbers and Sweepers:**

Machines that handle cleaning tasks traditionally performed by humans, increasing speed and consistency.

**4. 24/7 Cleaning Service with AI and Robotics:**

AI-powered robotics are revolutionising cleaning operations by providing around-the-clock services in large-scale commercial spaces, such as healthcare facilities, airports, and offices. These robots, designed to operate autonomously, perform tasks like floor cleaning, disinfection, and waste collection without human intervention. AI-enhanced robots are equipped with sensors and cameras that help them navigate complex spaces, learn from their environment, and optimise their cleaning routes for greater efficiency.

The potential of these robots extends beyond just performing cleaning tasks. With real-time data reporting and predictive analytics, they can alert building managers to maintenance needs or performance issues, enabling proactive management of cleaning operations. Additionally, cloud-based platforms are increasingly being used to coordinate multiple robots within a facility, ensuring that the cleaning process is continuous and synchronised. This shift towards AI and robotics helps businesses achieve seamless, efficient cleaning operations while minimising human labour and optimising resource use.

## Challenges and Opportunities

Automation reduces labour costs and increases operational efficiency but requires significant investment in equipment and technology. Additionally, the adoption of automation may lead to workforce displacement, though it can also create opportunities for workers to transition into higher-skilled roles.

## Impact on the Industry

Automation is significantly enhancing cleaning operations, reducing human labour requirements and boosting efficiency. It allows businesses to meet the increasing demand for cleanliness while minimising operational costs.

## Future Outlook

In 2025, automation will be further integrated across the industry, with advanced robotics and AI systems becoming commonplace. This trend will increase productivity and efficiency, allowing businesses to stay competitive in a rapidly evolving market.

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[9] https://www.castle.eu.com/insights/the-future-of-cleaning-how-ai-robotics-and-digitalization-are-transforming-the-industry/

# 🔒 TREND 5:

# Data Privacy Awareness

It's one thing to collect the data, but what do you with it? As the use of data-driven solutions increases, so does the need for businesses to protect sensitive customer and operational data. Data privacy awareness is critical as cleaning companies adopt new technologies that collect and process vast amounts of information.

## Product Innovations

1. **Secure Data Storage Solutions:**
   Technologies designed to safely store sensitive data and comply with privacy regulations.

2. **Encrypted Communication Tools:**
   Tools to ensure that data transmission between devices and platforms remains secure.

3. **Privacy-compliant Software:**
   Cleaning management software that adheres to data privacy laws, ensuring customer and business data is protected.

# Privacy Concerns in the Professional Cleaning and Hygiene Industry

As the professional cleaning and hygiene industry increasingly adopts digital and automated technologies, privacy concerns are becoming a key consideration, especially in public spaces and among cleaning staff. With the integration of IoT devices, AI-powered robots, and data-tracking systems, the collection of personal and operational data has raised significant ethical and privacy-related questions. For example, the use of employee tracking systems to monitor cleaning performance or foot traffic data can be seen as invasive, especially when the data is used to optimise schedules or evaluate individual workers' productivity. This raises concerns about the ownership of such data—who controls it, how it is stored, and who has access to it.

In the case of cleaning robots and sensors that collect data in public spaces, concerns about data ownership and potential misuse are compounded. Many clients are hesitant to adopt robots equipped with data-collecting capabilities due to fears about how data will be handled, particularly in terms of customer privacy and compliance with data protection laws such as GDPR. This issue is particularly sensitive when the technology is sourced from countries where concerns over data security and government access to personal information are prevalent. Clients may worry that the data collected by such robots could be used for unintended purposes or that it may not be stored securely, leading to a lack of trust in these solutions.

The resistance to adopting data-collecting robots is not solely about privacy. As highlighted in the European Cleaning Journal article "Why Apps Make Sense"[10], the use of technology in the cleaning industry is not only about efficiency but also about ensuring that client concerns are addressed. While apps and digital systems are gaining popularity for their ability to optimise cleaning schedules and monitor performance, their implementation must be done in a transparent and ethical manner. Apps that track cleaning progress or resource use should prioritise privacy, providing clear communication to both staff and clients about what data is being collected, how it will be used, and the measures in place to protect it.

[10] "Why Apps Make Sense"

## Challenges and Opportunities

The challenge lies in ensuring compliance with increasingly stringent data privacy regulations across different regions. However, businesses that prioritise data security can build trust with customers and mitigate the risk of data breaches.

## Impact on the Industry

As cleaning companies adopt more data-driven solutions, the need for robust data privacy measures will continue to grow. Adopting secure practices will ensure customer trust and prevent potential legal issues.

In the case of cleaning robots and sensors that collect data in public spaces, concerns about data ownership and potential misuse are compounded.

## Future Outlook

In the coming years, data privacy will become an integral part of the cleaning industry's technology infrastructure. In 2025, privacy compliance will be essential for businesses leveraging data-driven solutions to protect customer and operational data.

# Health, Safety, and Wellbeing of Labourers

The central role of people in the cleaning industry cannot be overstated. Workers are the backbone of the industry, and their health and well-being directly impact the quality and efficiency of cleaning operations.

As such, putting the needs of cleaning labourers at the forefront is key to maintaining high standards of service and ensuring a healthy workforce. Companies that invest in wellness initiatives, prioritise worker safety, and foster a supportive work environment will be better positioned to adapt to future demands while maintaining a loyal and productive workforce.

The safety and wellbeing of cleaning staff is increasingly recognised as a priority within the industry. With the ongoing focus on health, safety regulations, and worker welfare, businesses are adopting new technologies and practices to ensure cleaner, safer working environments.

## Product Innovations

**1. Ergonomic Equipment:**
Tools and machines designed to reduce strain on workers' bodies, improving comfort and reducing the risk of injury.

**2. Safer Chemicals:**
Cleaning products formulated with non-toxic, eco-friendly ingredients to reduce exposure to harmful substances.

**3. Wearable Safety Devices:**
Technology that tracks workers' health metrics in real time to ensure safety during shifts.

Wearable technology is becoming an emerging trend in the professional cleaning and hygiene industry, offering potential for enhanced efficiency and safety. Rather than purchasing entirely new devices, current mobile technology can often be upgraded with innovative software to integrate wearable features, helping to reduce costs while boosting functionality. For example, adding sensors to existing devices or incorporating mobile apps that sync with wearables can improve tracking of worker performance, monitor health metrics, and provide real-time data to optimise cleaning tasks.

However, hygiene challenges arise with shared wearable devices, such as exoskeletons or smart gloves, especially in environments where cross-contamination is a concern. These devices, used by multiple staff members, can harbour germs and bacteria, posing risks to both users and the spaces they clean. To address this, frequent sanitisation protocols and antimicrobial coatings can be implemented on wearables, while companies can explore more hygienic, single-user models or implement user-specific assignments to reduce shared device use. Ensuring proper cleaning and maintenance of these devices is key to preventing hygiene issues in the workplace.

**4. Health and Safety in the Sanitation Sector:**
AI and robotics are not only transforming cleaning operations but also improving health and safety standards, particularly in high-risk environments. In areas such as hospitals or facilities that use hazardous chemicals, robots can take over dangerous tasks, such as cleaning in high-altitude windows or confined spaces, allowing workers to focus on supervisory roles or other human-centric tasks.

# Improved Industry Conditions through Technology and Advocacy

Although automation and robotics offer clear benefits, many cleaning staff still face poor working conditions, such as long hours, low wages, and inadequate support. Industry surveys highlight the challenges faced by workers, emphasising the need for improved wages, better working conditions, and living wages.

On a positive note, industry bodies across Europe are actively campaigning for better wages and working conditions, pushing for a more sustainable, fair, and efficient cleaning industry. Businesses investing in technology that supports worker productivity and well-being are likely to see benefits.

While technology is changing the face of the cleaning industry, human workers remain essential[11]. Technology should not be seen as a replacement for human workers but as a tool to enhance their capabilities and reduce physical strain. Skilled, motivated cleaning staff are the backbone of the industry, and investing in their training and well-being

is crucial for long-term success. Companies that embrace both technological innovation and human support will be better positioned to thrive.

## Challenges and Opportunities

While improving worker safety involves costs related to new equipment and training, the potential for reducing injuries, increasing productivity, and enhancing worker satisfaction creates long-term value for businesses.

The widespread adoption of AI and robotics, however, does raise concerns regarding potential worker displacement. Addressing this requires a focus on upskilling workers to manage, troubleshoot, and optimise robotic performance while maintaining high hygiene standards.

Robots can also be equipped with real-time health and safety monitoring systems, which can alert supervisors if a worker enters an unsafe environment or mishandles equipment. This helps mitigate safety risks and ensures a safer working environment for cleaning staff.

In regions like India, where cleaning staff face numerous health and safety risks, the adoption of AI and robotics offers a significant improvement in working conditions. Robots and AI systems can take over dangerous tasks, such as cleaning hazardous environments, high-altitude windows, or areas contaminated with harmful chemicals. This shift allows human workers to focus on roles that require more judgment or supervision, thereby reducing their exposure to dangerous situations.

## Impact on the Industry

Quiet machines are becoming an essential innovation in the professional cleaning and hygiene industry, enabling day-shift cleaning without disrupting daily activities. These machines not only enhance operational efficiency but also make the industry more inclusive, offering better working conditions for all, including female cleaners who may face specific challenges with traditional equipment. In addition, there is growing advocacy for better working conditions and living wages within the industry, aiming to improve job satisfaction and retention rates. As highlighted in the ECJ article *"UNI Global Survey: Working Around the Clock"* [12], these efforts emphasise the importance of fair compensation and a healthier work environment, addressing the industry's labour challenges while promoting equality.

Despite the growing role of automation, the cleaning industry remains labour-intensive, with a critical shortage of workers. Employers are increasingly focused on supporting their workforce by providing: A focus on health and safety will drive the adoption of safer tools, chemicals, and technologies, creating healthier work environments and fostering greater employee loyalty.

## Future Outlook

In 2025, health and safety will be central to workforce management strategies, with businesses investing in equipment and practices that prioritise worker welfare while improving productivity.

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[11] https://govinsider.asia/intl-en/article/how-tech-can-ease-the-cleaning-industrys-manpower-crunch-robots-germii

[12] "UNI Global Survey: Working Around the Clock"

# 👫 TREND 7:

# Public Health and Hygiene

The global focus on hygiene has intensified, particularly in the wake of the COVID-19 pandemic. Cleaning and disinfection are now recognised as critical elements of public health, driving demand for professional cleaning services across sectors such as healthcare, hospitality, and food services.

## Product Innovations

1. **High-performance Disinfectants:** Products formulated to meet stringent hygiene standards and kill a broader spectrum of pathogens.

2. **UV-C Sterilisation Technology:** UV-C light used in cleaning to eliminate viruses, bacteria, and germs without the need for chemicals.

3. **Air Purification Systems:** Devices that improve indoor air quality and reduce airborne pathogens in public spaces.

> As hygiene standards become stricter, businesses must invest in cleaning technologies and stay compliant with health regulations.

## Challenges and Opportunities

As hygiene standards become stricter, businesses must invest in cutting-edge cleaning technologies and stay compliant with health regulations. This presents opportunities for companies to offer advanced cleaning services to meet rising consumer expectations.

## Impact on the Industry

In North America, trials of new air and surface purification technologies are gaining traction in healthcare clinics, prisons, and sports facilities, highlighting the growing recognition of cleaning's role in enhancing general public health, beyond just healthcare settings. These technologies are crucial in minimising infection risks and improving overall hygiene standards, particularly in high-traffic areas where the risk of contamination is high. As noted in the European Cleaning Journal articles *"Minimising Infection Risks"*[13] and *"Hygiene in Healthcare"*[14], advanced purification systems are being integrated into public spaces to reduce pathogen transmission, safeguarding both patients and the wider community. This trend underscores a broader shift towards cleaner, safer environments in diverse settings, promoting public health on a larger scale.

The heightened focus on hygiene has elevated the cleaning industry's profile, transforming it into a vital service for protecting public health. Businesses that can offer effective hygiene solutions will gain a competitive advantage.

## Future Outlook

The demand for high-quality hygiene solutions will continue to rise as public health concerns remain top of mind. In 2025, businesses will increasingly incorporate advanced technologies to meet the growing need for enhanced sanitation.

[13] "Minimising Infection Risks"
[14] "Hygiene in Healthcare"

# TREND 8:

# Workforce Optimisation and Talent Management + Enhanced Training and Education

As the professional cleaning industry evolves, workforce optimisation and talent management are crucial to ensuring high standards and operational efficiency. Enhanced training and education programs are essential to develop skilled workers capable of utilising new technologies and adapting to changing industry demands.

## Product Innovations

1. **Training Software and Simulations:**
   Platforms that provide interactive training, helping employees learn new skills and safety protocols.

2. **Talent Management Software:**
   Solutions designed to recruit, track, and retain skilled workers, improving workforce efficiency.

3. **Certification Programs:**
   Industry-specific certifications that help workers gain the skills needed to excel in the modern cleaning environment.

4. **Continuous Training for Cleaning Staff:**
   As the cleaning industry integrates more advanced technologies such as AI and robotics, it becomes essential to ensure that cleaning staff receive continuous training to keep up with these innovations. AI-driven platforms and tools like ChatGPT are streamlining training processes by providing real-time assistance to cleaning staff, delivering tailored content, and simulating real-life scenarios for practical training.

   AI can help make complex cleaning protocols more accessible by translating them into simplified steps or offering multi-lingual support for a diverse workforce. For instance, natural language processing can tailor training materials to different language proficiencies or learning levels, ensuring all workers are equipped to use new technology effectively.

   Additionally, as hygiene standards become more stringent, training must go beyond just operating new machines. It must also cover the updated hygiene protocols and safety standards, ensuring that staff understands the best practices for maintaining cleanliness and safety in the workplace.

5. **VR and AR Staff Training Platforms:**
   Currently, the most promising application of AR and VR in the cleaning sector is in staff training. Training and development are crucial areas of investment for businesses in the sector and research into VR has been positive about its results. VR enables the creation of realistic, immersive training environments that simulate real-world cleaning challenges. Employees can practice complex tasks, such as using hazardous cleaning materials or operating heavy machinery, without the safety risks of on-site training.

# Risks and Challenges of AR/VR in the Professional Cleaning and Hygiene Industry

While augmented reality (AR) and virtual reality (VR) technologies are increasingly being explored for their potential in the professional cleaning and hygiene industry, their implementation is not without risks and difficulties. One significant challenge is the sensory impact that VR can have on users. For some individuals, extended use of VR headsets can cause discomfort, dizziness, or motion sickness, known as "VR sickness." These sensory challenges may hinder the effectiveness of training programs, particularly for those new to the technology or who have sensitivities to visual and motion cues. Additionally, the initial cost of setting up AR/VR systems, as well as the ongoing maintenance of the equipment, could be barriers for small to medium-sized cleaning companies.

## VR Opportunities:

However, despite these challenges, VR has shown considerable promise in staff training within the cleaning sector. As highlighted in the article "Virtual Reality: The Future of Training" published by the European Cleaning Journal (ECJ)[15], VR allows for immersive, scenario-based learning that can simulate real-world cleaning environments. This technology ensures that employees can practice cleaning procedures in a safe, controlled environment without the risks or costs associated with live demonstrations.

Some of the key advantages of VR training in the cleaning industry include:

- **Hands-on Experience Without the Risks:** VR allows workers to perform high-risk tasks in a safe, controlled environment. Mistakes can be corrected in real time, allowing employees to learn from them without real-world consequences.

- **Consistency in Training:** VR ensures all employees, regardless of their location, receive the same high-quality training. This is especially important for large, multinational organisations that need standardised procedures across different regions and languages.

- **Scalability and Flexibility:** VR training programs can be easily scaled to accommodate large groups, reducing the need for physical training

> VR allows workers to perform high-risk tasks in a safe, controlled environment.

spaces and making training more cost-effective. One of the key advantages of VR in staff training is its scalability and consistency. By using VR simulations, cleaning companies can standardise training across multiple locations, ensuring that all employees receive the same high-quality, detailed instruction regardless of geographical location. This consistency improves the overall skill level of the workforce, reduces human error, and helps maintain high hygiene standards across the organisation. The ability to scale training programs efficiently also leads to cost savings in the long run.

- **Immediate Feedback and Assessment:** VR platforms can track progress and offer real-time feedback, allowing businesses to assess employee performance and identify areas for improvement.

For example, some companies have successfully implemented VR to enhance training processes. The results demonstrate improved employee performance, retention, and productivity, thanks to the immersive, hands-on nature of VR training.

The positive outcomes of VR-based training are already evident in industries like hospitality and healthcare, where hygiene standards are crucial. As VR technology continues to evolve, its integration into cleaning staff training promises to bring even more significant benefits, from increased retention of best practices to faster onboarding processes for new employees. Despite some initial challenges, the future of AR/VR in professional cleaning looks promising, particularly as solutions continue to become more user-friendly and cost-effective.

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[15] https://www.europeancleaningjournal.com/magazine/articles/latest-news/virtual-reality-the-future-of-training

# Challenges and Opportunities

The challenge lies in attracting and retaining skilled workers, particularly in a competitive labour market. However, investing in workforce development offers long-term benefits in terms of productivity, service quality, and employee retention.

# Impact on the Industry

A focus on workforce optimisation ensures that businesses can effectively manage their labour force, increase operational efficiency, and provide better services to clients.

# Future Outlook

In 2025, the cleaning industry will place even more emphasis on workforce development, integrating continuous learning and development programs to meet evolving industry demands.

## TREND 9:

# Focus on Ergonomics and User Experience

With a growing emphasis on worker safety and comfort, ergonomics and user experience are becoming central to the design of cleaning equipment and tools. Tools that are easier to use and less physically demanding are key to improving worker satisfaction and reducing injury rates.

## Product Innovations

1. **Ergonomically Designed Tools:**
   Equipment that reduces physical strain and enhances comfort, particularly for tasks requiring prolonged use.

2. **Lightweight Machines:**
   Machines designed to be easy to manoeuvre, minimising physical effort for cleaners.

3. **User-friendly Interfaces:**
   Digital interfaces on machines that are intuitive and easy to navigate, improving user experience and training efficiency.

## Challenges and Opportunities

The challenge is balancing cost and ergonomics, as some ergonomically designed equipment may come at a higher price point. However, focusing on ergonomics offers the opportunity to reduce workplace injuries and improve worker productivity.

## Impact on the Industry

In the professional cleaning and hygiene industry, ergonomics and design innovation must prioritise diverse, human-centred solutions that cater to a wide range of needs. This includes integrating multilingual functionality into tools and platforms to accommodate diverse workforces, as well as creating wearable tech that can be adapted to various body sizes for comfort and effectiveness. Ergonomically designed manual tools are particularly essential in addressing workforce challenges, such as an aging population, by reducing strain and improving ease of use. These innovations not only enhance worker productivity but also promote long-term health and safety in a physically demanding industry.

As ergonomics becomes a priority, the industry will see a shift toward more user-friendly, comfortable tools that support worker wellbeing and increase overall efficiency.

## Future Outlook

In 2025, the industry will increasingly prioritise ergonomic design in cleaning products and equipment, ensuring better outcomes for both workers and businesses.

# Customisation, Personalisation, and Flexibility + Hybrid Cleaning Models

As cleaning needs become more diverse, customisation and flexibility are becoming essential to meet the specific demands of different industries and environments. Hybrid cleaning models, which blend traditional and automated methods, are emerging as an effective solution for businesses seeking tailored cleaning solutions.

## Product Innovations

1. **Customisable Cleaning Plans:**
   Cleaning services tailored to the specific needs of individual clients, offering flexibility and adaptability.

2. **Hybrid Cleaning Systems:**
   A combination of manual labour and automated technologies, designed to provide optimal results for diverse spaces.

3. **Modular Cleaning Equipment:**
   Machines and tools that can be customised to handle different cleaning tasks and environments.

4. **Quiet Machines for Improved Work Flexibility:**
   Another significant development is the introduction of quiet machines, which have proven particularly beneficial for female cleaners who often work outside of traditional office hours. These machines offer several advantages [16]:

- Less disruption: Quieter operations mean that cleaners can work during regular business hours, avoiding disturbances in office spaces.

- Improved flexibility: With quieter machines, cleaners can enjoy better work-life balance and more flexible hours.

- Attraction of a broader talent pool: Facility managers can recruit more workers, including those who prefer day shifts or those who are concerned about the environmental impact of traditional noisy equipment.

> With quieter machines, cleaners can enjoy better work-life balance and more flexible hours.

## Challenges and Opportunities

The challenge lies in the complexity of offering personalised services at scale, particularly for smaller businesses. However, customisation and flexibility offer opportunities for differentiation, allowing companies to cater to a wide range of clients with specific needs.

## Impact on the Industry

The rise of customisation and hybrid models is transforming the cleaning industry by offering tailored solutions that meet the specific needs of various sectors, improving both efficiency and client satisfaction.

## Future Outlook

In 2025, cleaning companies will increasingly embrace hybrid models and customisation, providing more flexible, tailored solutions that cater to a diverse and dynamic market.



[16] Shaping The High-pressure Cleaning Industry - ECJ (europeancleaningjournal.com)

## Conclusion

# Shaping the Future of Cleaning – Embrace Innovation, Prioritise Wellbeing

The professional cleaning and hygiene industry is at a pivotal moment. The key trends we've explored – from the integration of smart technologies and automation to the emphasis on sustainability and workforce well-being are reshaping the industry's landscape. These innovations are not just about improving operational efficiency but also about creating safer, more flexible work environments, reducing physical strain, and enabling greater productivity for cleaning professionals.

The path forward requires us to adapt to these changes, while keeping the human element at the forefront. As technological advancements continue to evolve, the challenge will be to balance these innovations with a focus on sustainability, cost-effectiveness, and the overall well-being of the workforce. As we embrace the future, we must ensure that technology serves to enhance, not replace, the vital role of skilled, motivated cleaning professionals.

As Robert Stelling, Director Interclean, aptly puts it: "Industry professionals must remain proactive, staying informed and agile in the face of these changes. The ability to anticipate trends, address emerging challenges, and seize new opportunities will give businesses the competitive edge they need to thrive in an increasingly dynamic market. By doing so, they will not only keep their operations efficient but also continue to elevate the standard of cleanliness and hygiene globally.

Innovation is the key to progress, but it's the people behind the technology who will shape the future of our industry. By prioritising both technological advancement and human well-being, we create a more sustainable and prosperous cleaning industry for all.

At Interclean, we are committed to helping you stay ahead of the curve. As the ultimate facilitator, innovator, and knowledge partner, we offer the tools, insights, and support you need to thrive. Stay informed and connected with the latest trends, innovations, and developments through our events and resources."

Don't miss out – register for our newsletter at www.intercleanshow.com/newsletter. Here you can read about all our news and stay up to date with the latest developments, advances and industry insights from around the world.

We look forward to helping you navigate the evolving cleaning landscape and unlock the opportunities that will drive your business forward in 2025 and beyond.

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