

# ECOLAB FACT BOOK

A LOOK INSIDE



**ECOLAB®**

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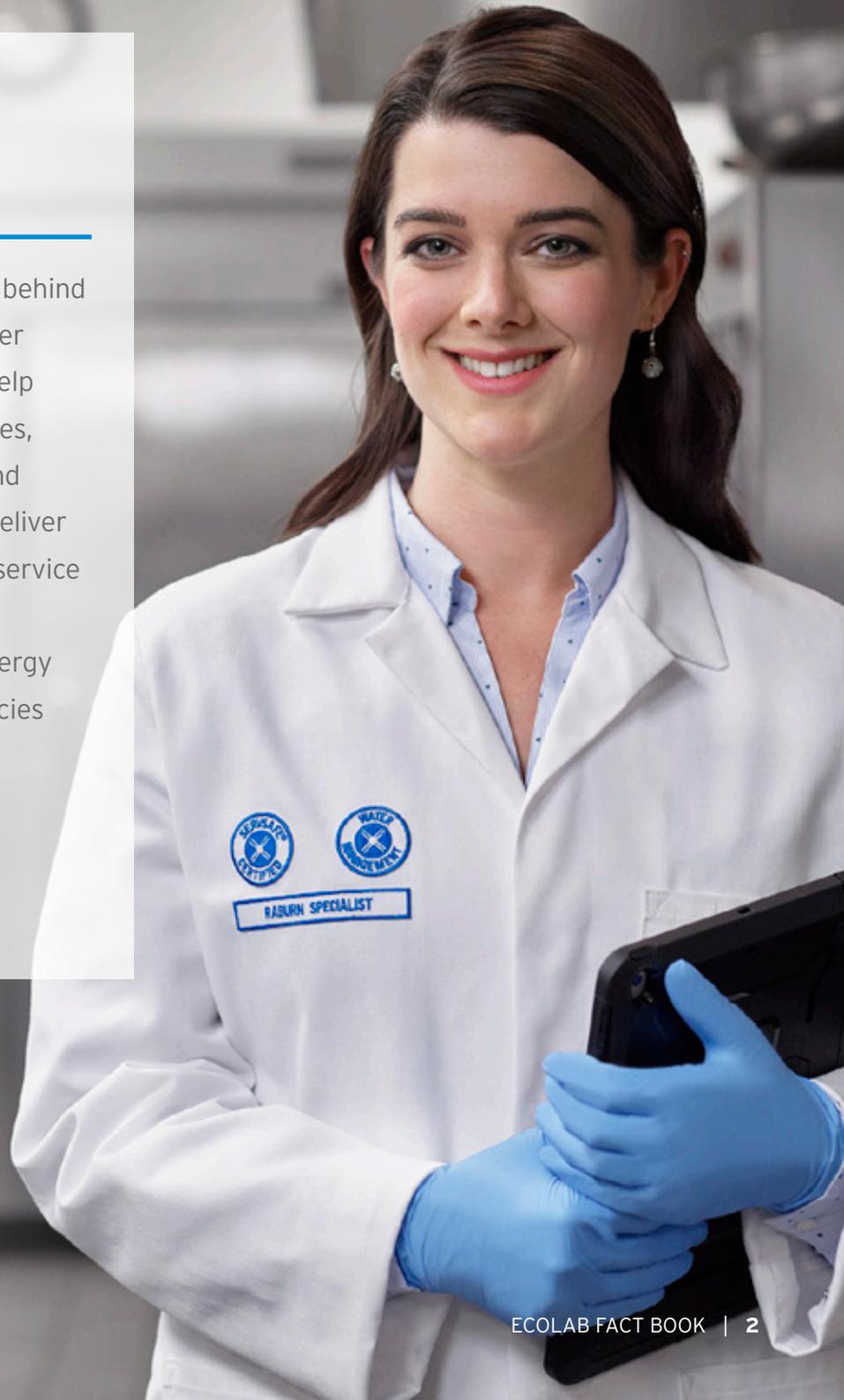
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## Ecolab Business Overview

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**Ecolab is a trusted partner** working behind the scenes at nearly 3 million customer locations throughout the world. We help customers solve operational challenges, reduce their environmental impact and protect their brands. Our associates deliver comprehensive solutions and on-site service to promote safe food, maintain clean environments, optimize water and energy use, and improve operational efficiencies in more than 170 countries.





**We are the global leader** in water, hygiene and energy technologies and services, protecting what is vital: clean water, safe food, abundant energy and healthy environments. Our sales and service team delivers innovative solutions to improve operational efficiencies and reduce water, energy and labor costs. Through personalized service enhanced by broad insights and advanced data analytics, we see a tremendous opportunity to further strengthen our relationships with the largest players in global business and help our customers meet their operational challenges anywhere in the world.

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**By 2030,** it is estimated that the world will need

 **40%**  
more water

 **35%**  
more food

 **30%**  
more energy

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## Solving Global Challenges

We live in challenging times – and face a future that will test us in new ways. Continued population growth, growing affluence, changing diets and other dynamics place added pressure on the world's natural resources, and create new and increasingly complex challenges for businesses.

Ecolab is in a unique position to help address the global trends shaping the future of business, particularly the growing demand for clean water, safe food, abundant energy and healthy environments. Behind the scenes, we're delivering expertise and solutions to help our customers effectively navigate the challenges ahead.

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The importance of our work has never been greater. We are well positioned to help customers solve their operational and sustainability challenges, and meet growing global demand for clean water, safe food, abundant energy and healthy environments.

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### CLEAN WATER

Diminishing access to clean water is one of the most serious risks facing the world today. Water is integral to many of our customers' key processes – including cleaning and sanitizing, food processing, boiler and cooling water treatment, influent and wastewater treatment, and oil and gas extraction and processing. That's why we're working to help customers optimize water use – and improve water availability throughout the world.



### SAFE FOOD

Food safety is critical to the health and well-being of people everywhere and to the reputations of businesses that manufacture, sell or serve foods and beverages. We know the leading causes of foodborne illness can be eliminated through effective cleaning and sanitizing – and we are committed to ensuring safe food by providing effective products, programs and services that protect people and businesses from the risks of illness-causing pathogens.



### ABUNDANT ENERGY

Around the world, the demand for energy is growing – and meeting that demand is becoming more difficult. With innovative programs and technologies, we help energy companies extract more energy with fewer resources. And we help all of our customers use less energy – and reduce their environmental footprints – by identifying and treating process-related challenges and providing them with products that minimize energy use.



### HEALTHY ENVIRONMENTS

Clean, safe and healthy environments are essential to the health of workers, guests and suppliers – and the reputations of businesses everywhere. That's why we provide innovative cleaning, laundry and warewashing solutions for restaurants, hotels, schools and many other settings. In healthcare facilities – where clean environments are critical – our solutions play an important role in helping to reduce healthcare-associated infections (HAIs) and improve patient safety.

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Our commitment is to meet today's challenges – and to develop new solutions to keep our customers at the forefront.

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## Superior Customer Service

Ecolab's ultimate competitive advantage is our industry-leading sales and service force. Backed by expert training, innovative technology and superior knowledge of industry best practices, our associates provide personalized service to help customers save time, labor and money using our comprehensive solutions to meet all of their cleaning, sanitation and service, and operational efficiency needs.

By partnering with Ecolab, global customers know that their location in New York will receive the same superior products and services – with the same exceptional results – as their facility in Shanghai. In other words, customers know they can rely on us to help them provide a consistent brand experience across their business worldwide.

We achieve superior results because we customize our programs and services around customers' specific needs. While on site, our field service teams consult with customers and their employees about any problems they may have, monitor systems and technologies to collect data and ensure they're working properly, share best practices, provide training, promote safety, and help customers realize the full benefits of our technologies and programs.

## Our Innovation Is the Product of Science and Customer Insight

Our customer relationships are built on two solid cornerstones: continuous, customer-centric innovation and personalized, on-site service.

Through millions of customer visits across a range of industries worldwide, we gain firsthand knowledge of the challenges that businesses face – knowledge that guides our innovation process. We supplement the information gathered by our field teams with data insights generated from advanced, real-time technologies used to monitor customer systems and processes 24/7.

We use this information to ensure that the new products and programs we develop solve customer challenges and address emerging issues. Our scientists, engineers and technical specialists bring broad disciplinary expertise to these challenges. To develop the industry's most innovative solutions, they draw upon our deep expertise in critical core technologies, including antimicrobials, dispensing and monitoring, personal and environmental hygiene, polymers, surfactants, solid chemistry and water management solutions.

As we develop new products, we pay close attention to sustainability, focusing on ingredient responsibility, human health and environmental impact over the product life cycle. Our commitment is to meet today's challenges – and to develop new solutions to keep our customers at the forefront.



We invest hundreds of millions of dollars each year in research and development to introduce products and programs that increase safety, minimize customers' water and energy use, and reduce waste.

## Markets and Needs Served

Ecolab has consistently led the industry in the design of products and services that help customers operate their businesses more efficiently. We invest hundreds of millions of dollars each year in research and development to introduce products and programs that increase safety, minimize customers' water and energy use, and reduce waste. Our attention to the total impact our products have on our world – from manufacture, through use, to disposal – sets us apart from competitors and continually spurs the development of solutions that address our customers' ever-evolving needs.

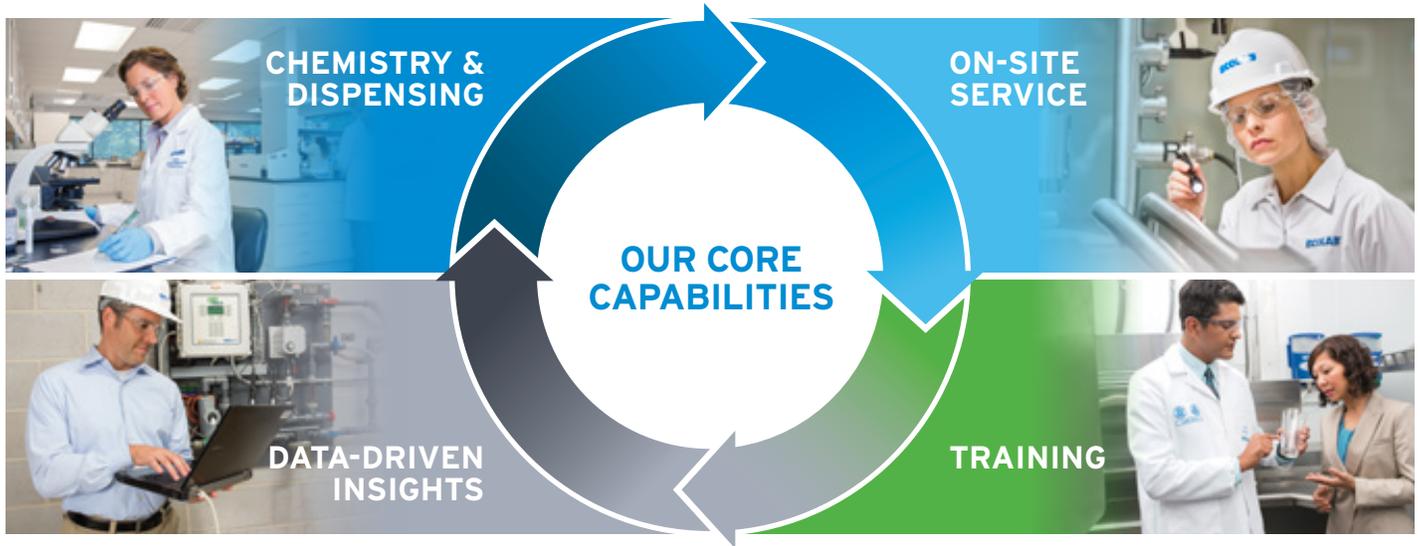
Our core technologies include:

- Antimicrobials
- Clean-in-place (CIP) technology for food processing lines
- Scale, deposit and corrosion control
- Hard surface cleaners
- Polymers
- Food safety interventions
- Solid warewashing and sanitation product lines – expanded to include applications in laundry, food processing, dairy and healthcare
- Water and process treatment programs
- Dispensing, monitoring
- Digital solutions

## Ecolab Model Drives Value to Our Customers

Ecolab has a well-balanced business, with leading market positions, a broad geographic footprint and a strong and compelling customer value proposition. Whether we're servicing a restaurant, hospital, food and beverage plant, commercial water facility or an energy services customer, our core capabilities of chemistry innovation, data insights, service and training work together to deliver the best results at the lowest total cost.

## CORE CAPABILITIES THAT DRIVE THE BEST RESULTS AND LOWEST TOTAL COSTS



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Every day, we seek ways to expand our ability to serve customers with a range of effective product and service solutions.

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### Circle the Customer – Circle the Globe

Ecolab’s powerful, proven growth strategy is straightforward: Circle the Customer – Circle the Globe. This strategy drives us to provide customers with the most comprehensive and sustainable solutions needed to run a clean, safe and healthy business – no matter where they’re located. Every day, we seek ways to expand our ability to serve customers with a range of effective product and service solutions. This translates to a win-win situation – as our customers grow and succeed in their businesses, so do we.

Our global strategy is designed to meet our customers’ desires to drive global results. To accomplish this, we have global businesses that are reported within four segments: Global Institutional, Global Industrial, Global Energy and Other.

### Future = Growth

With a modest share of large and growing market opportunity and leadership position in all of our key end markets, Ecolab is well-positioned for future growth. We’ll continue to partner with customers to address fundamental concerns such as food safety, healthcare-associated infection (HAI) prevention, and increasing water and energy demands.

Our passion to provide consistent, global solutions has driven steady growth in the past. Moving forward, we’ll continue to pursue sustainable, long-term objectives that support our position as the global leader in water, hygiene, and energy technologies and services.

# eROI<sup>SM</sup>

The exponential value of **improved performance, operational efficiency and sustainable impact** that our services and technologies deliver to our customers.

## SUSTAINABILITY INDICATORS



SAFETY

We strive to create cleaner, safer and healthier operating environments for employees and customers.



WATER

Our solutions conserve water and optimize water quality.



ENERGY

Our solutions save energy by enabling more efficient operations, or help produce more energy by uncovering oil and gas reserves.



AIR

We manage GHG emissions and improve indoor and outdoor air quality.



WASTE

Our solutions help keep waste out of landfills.



ASSETS

Our programs and services improve asset use and increase asset life.

## Committed to Operating Responsibly and Sustainably

Resource scarcity is becoming an increasing global issue, and Ecolab is working to help customers rethink processes to reduce water and energy consumption, and utilize resources more wisely. Our commitment to protecting vital resources is ingrained throughout our company, from how we operate and innovate to the way we work with customers and support communities.

### EXPONENTIAL IMPACT

We develop sustainable solutions to help customers ensure cleaner, safer and healthier operations. And we measure the impact of our solutions, helping customers quantify their return on investment and track operational improvements and progress across a range of performance goals.

Our proprietary eROI<sup>SM</sup> approach credibly documents operational, economic and resource savings related to water, energy, air, waste, asset protection and safety. By starting with what matters most to our customers – performance – and linking performance outcomes to sustainability metrics and cost savings, we quantify the triple-bottom-line benefits of our solutions.

### CUSTOMER IMPACT GOAL: BY 2030, ECOLAB AIMS TO CONSERVE

**300  
BILLION  
GALLONS  
OF WATER**

annually by reducing water consumption within our own and our customers' operations



Equaling the annual drinking water needs of more than

**1  
BILLION  
PEOPLE**

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From the beginning, our company has focused on saving customers time, labor and money.

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## Milestones in Ecolab History

### 1923 | ECONOMICS LABORATORY FOUNDED

Merritt J. Osborn develops Absorbit®, a new product that cleans carpets on the spot and eliminates the need for hotels to shut down for cleaning. He calls his company Economics Laboratory (EL), reflecting its mission to save customers time, labor and money with “economic” solutions developed through “laboratory” research.

### 1924 | A WAREWASHING PIONEER

Osborn incorporates the company and acquires a non-sudsing cleaning compound from a chemistry student. He soon discovers it performs much better than ordinary soap in the mechanical dishwashers that restaurants are using. The product, called Soilax®, sets the stage for EL’s warewashing expertise.

### 1928 | TOTAL SYSTEMS APPROACH

EL introduces its first product dispenser, setting the stage for a “total systems” approach to cleaning and sanitation, which includes technologically advanced equipment as well as superior products.

### 1935 | SERVICE TRADITION BEGINS

M.J. Osborn’s son, E.B., serving as the company’s sales manager, turns salespeople into dishwashing consultants who not only sell EL products, but train kitchen employees, analyze dish-handling procedures and recommend ways to minimize breakage. These salespeople are on call 24 hours a day.

### 1955 | INTERNATIONAL EXPANSION

By 1955, there is enough business in Canada to form a sales territory and contract with a Canadian manufacturer to handle production. In 1956, the first European subsidiary, Soilax® A.B. Sweden, forms, opening the door for European expansion. The formation of Soilax® de Mexico follows in 1958, triggering a rapid expansion in the Western Hemisphere.

### 1957 | EL GOES PUBLIC

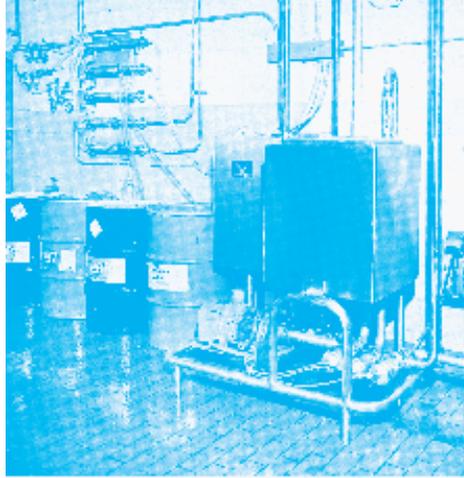
M.J. and E.B. Osborn decide to turn their family-owned business into a publicly held company. At the time, associates controlled at least 25 percent of the company’s common stock.

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In 1986, Economics Laboratory Inc. changed its name to Ecolab Inc., providing a unifying world identification.

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## Milestones in Ecolab History *(continued)*

### 1961 | REVOLUTIONARY CIP TECHNOLOGY

EL acquires Klenzade and its pioneering Clean-in-Place (CIP) technology for the dairy industry. CIP eliminates the need to break down and hand wash dairy pipes and valves. When paired with EL's rinses and cleaning solutions, the CIP system allows dairy plant operators to clean miles of pipe with the push of a button.

### 1970 | INTERNATIONAL GROWTH

International sales exceed \$30 million in 40 world markets. EL establishes a European satellite headquarters in Brussels, Belgium, to guide efforts in 15 countries. In 1977, area headquarters are set up in Latin America and Hawaii. By the end of the decade, EL conducts business in more than 50 countries.

### 1981 | SOLID POWER® INTRODUCED

EL introduces Solid Power®, a patented state-of-the-art warewashing detergent capsule that delivers unprecedented control, safety and cost savings to customers. Sales soar, and within two years of its debut, Solid Power is the top-selling institutional warewashing detergent in the U.S.

### 1984 | BUILDING THE PORTFOLIO

EL acquires the first of a series of regional pest service firms to create a national Pest Elimination business, pioneering the concept of pest elimination for the \$2 billion U.S. commercial pest market.

### 1986 | ECOLAB INC. ON THE NYSE

In December, Economics Laboratory Inc. changes its name to Ecolab Inc., providing a simple and unifying worldwide identification. That month, Ecolab is listed on the New York Stock Exchange.

### 1987 | CONSUMER SALE

Ecolab sells its consumer products business, which markets the dishwasher detergents Electrosol® (now known as Finish®), Jet-Dry® and Lime-A-Way®. Ecolab then acquires ChemLawn®, a provider of residential lawn care services. The business is sold in 1992 to allow Ecolab to focus completely on its commercial product and service businesses.

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In 1992, Ecolab defines its fundamental business strategy, Circle the Customer – Circle the Globe.

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## Milestones in Ecolab History *(continued)*

### 1991 | JOINT VENTURE IN EUROPE

Ecolab forms a strategic alliance with Henkel KGaA – a major chemical company based in Germany – to better position both companies for a united European market. The Henkel-Ecolab joint venture sets up headquarters in Düsseldorf, Germany. Combined European sales exceed \$750 million.

### 1992 | CIRCLE THE CUSTOMER CIRCLE THE GLOBE GROWTH STRATEGY DEFINED

Ecolab defines its fundamental business strategy: Circle the Customer – Circle the Globe. The strategy's intent is to more broadly serve customers by offering a greater range of cleaning and sanitizing products to serve the foodservice, hospitality, and food and beverage markets. Circle the Customer – Circle the Globe provides the map for future growth, business investment and success.

### 1994 | NEW BUSINESS UNITS LAUNCHED

Ecolab acquires Kay Chemical Company, a leading cleaning product supplier to the quick-service (fast food) market. Based in Greensboro, N.C., Kay gives Ecolab a long-sought position in the quick-service cleaning and sanitizing market – and creates a sixth business for Ecolab. A seventh business unit, Water Care Services, is added through multiple acquisitions.

### 2001 | WORLDWIDE OPERATIONS

A new era begins when Ecolab purchases the remaining 50 percent share of Henkel-Ecolab. This move officially creates one Ecolab in Europe and throughout the world.

### 2002 | FOCUS ON FOOD SAFETY EXPANDS

Strategic acquisitions continue to expand, diversify and strengthen Ecolab's portfolio of customer offerings. Ecolab launches EcoSure® Food Safety Management, a business that evaluates food safety procedures in foodservice and hospitality facilities across the U.S.

### 2004 | HEALTHCARE ESTABLISHED

Ecolab establishes its Healthcare business unit, separating it from other operations to provide better focus and resources for this important core growth area.

### 2005 | ECOLAB INNOVATION GAINS A NEW HOME

Ecolab opens a new Global Research, Development & Engineering Center in Eagan, Minn. The 400,000-square-foot facility provides cutting-edge technology to develop innovative solutions for customers around the world.

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Ecolab is the global leader in water, hygiene and energy technologies and services.

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## Milestones in Ecolab History *(continued)*

### 2006 | HONORED AS FOOD SAFETY LEADER

Ecolab wins the 2006 Black Pearl Award for Corporate Excellence in Food Safety and Quality. Presented by the International Association of Food Protection (IAFP), the award recognizes efforts in advancing food safety and quality through consumer programs, employee relations, educational activities, standards adherence, and support of IAFP goals and objectives.

### 2007 | HEALTHCARE GROWTH ACCELERATES

Ecolab expands its infection prevention expertise with the purchase of Microtek Medical Holdings, Inc. The Alpharetta, Ga.-based manufacturer and marketer of infection prevention products for healthcare and acute care facilities specializes in infection barrier equipment drapes, patient drapes, fluid control products and operating room cleanup systems.

### 2011 | ECOLAB ACQUIRES NALCO

Ecolab acquires Nalco to become the global leader in water, hygiene, and energy technologies and services. With this addition of expertise, Ecolab is able to serve its customers more comprehensively.

### 2013 | ECOLAB ACQUIRES CHAMPION TECHNOLOGIES

Ecolab acquires privately held Champion Technologies, strengthening its position in the fast-growing energy services market.

### 2017 | LIFE SCIENCES ESTABLISHED

Ecolab establishes its Life Sciences business unit, separating it from other operations to provide better focus and resources for this important core growth area.

# GLOBAL INDUSTRIAL

## Food & Beverage

### MARKETS SERVED:

- Dairy processing
- Dairy farms
- Beverage processing
- Brewery and winery processing
- Food, meat and poultry processing
- Produce processing






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Ecolab's Food & Beverage business provides a total plant assurance approach, offering a unique combination of world-class service, total impact solutions and unsurpassed industry expertise to customers around the world.

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Ecolab's Food & Beverage business employs a total plant assurance approach, offering a unique combination of world-class service, total impact solutions and unsurpassed industry expertise to customers around the world. We offer a breadth of solutions, including products that clean, lubricate and sanitize equipment and environmental surfaces. In partnership with our customers, we create superior value by generating deeper, more actionable insights that drive quality assurance, operational efficiency and production optimization. This approach helps advance our customers' competitive advantage in the market by providing peace of mind while protecting their brands' quality and food safety worldwide.

#### WE PROVIDE:

- Cleaning and sanitizing programs
- Food safety audit readiness
- Antimicrobial food tissue treatment
- Bottle-washing solutions
- Commercial sterilants for aseptic packaging
- Conveyor lubrication
- Food surface and process water antimicrobial programs
- Engineering and equipment services
- Microbiology and analytical lab services
- Technical support and training
- Dispensing and monitoring

## Strengths

We are committed to assisting our customers in the elimination of foodborne illness risks and ensure a safe food supply. Ecolab employs leading industry scientists who study food safety challenges and develop solutions to help protect people, businesses and communities from contamination risks. Our combined team has extensive experience developing solutions, and features experts in food safety, public health, water safety, pest elimination, regulatory issues, equipment evaluation and more.

Integrated solutions – from the right chemistry and dispensing systems to engineering design and application – are key to our offering. Our highly trained technical support specialists provide additional peace of mind for our customers. Exceptional personal service and support at the plant level is combined with performance tracking and dashboards to help customers feel secure that their business and customers are receiving the highest levels of cleaning, sanitizing and water expertise.

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Our environmental sanitation products help ensure the delivery of safe, uncontaminated food products.

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## Dairy Processing

Dairy plants – where milk is processed into products such as fluid milk, cheese, yogurt and ice cream – are an important market segment for our Food & Beverage Business. During processing, milk products are transported through an extensive pipeline network, from the dairy trucks that deliver raw milk to pasteurizing, mixing, blending and final packaging. Our automated 3D TRASAR™ CIP (Clean-in-Place) technology enables customers to consistently, effectively and efficiently clean and sanitize these vast pipeline networks. This automated system is configured to help customers clean and sanitize their production facilities to help improve product quality and operational efficiencies.

Our solutions help speed up the cleaning process and improve plant performance. In addition to detergents and sanitizers, Food & Beverage also provides all-purpose cleaners, conveyor lubricants, a complete personnel hygiene program and other products.

## Dairy Farms

Food & Beverage is also a leader in dairy agribusiness, supplying products that enhance animal health and improve milking systems. Our environmental sanitation products help ensure the delivery of safe, uncontaminated food products.

On a dairy farm, sanitation begins with the cow. We offer animal care products that include:

- Teat dips to help prevent mastitis
- Detergents and sanitizers to clean milking machines, pipes, vats, coolers and holding tanks
- Products to clean milking parlor surfaces

Ecolab agri-specialists provide products directly and through farm cooperatives and distributors at the local, regional and national levels. They then follow up with customer visits to answer technical questions, provide training, troubleshoot problems and help improve results.



## Beverage and Brewery

Beverage and brewery operators are concerned with bacteria contamination line efficiency, productivity and total water usage. Facilities that produce soft drinks, fruit juices, beer and wine rely on our products, services, equipment and expertise to keep their mixing vats and pipelines running optimally. Proper management of CIP ensures the consistency of quality that beverage and beer membrane seek. Programs like 3DT CIP and 3DT for Pasteurizers can help customers significantly reduce their water usage ratios. Lubricants help keep conveyors clean and bottles and cans moving efficiently along production lines.

We offer EPA-registered products that inhibit bacteria growth in can and bottle warmers, where beverage containers are sprayed to prevent condensation and packaging problems. In all instances, we design products to meet the specific needs of each of our customers to achieve their desired results.

## Food, Meat and Poultry Processing

The food, meat and poultry processing industries are diverse and complex, encompassing manufacturers of nearly every kind of food product – from canned soups and sauces to cereals, hot dogs and chicken. Like dairy plant and agribusiness operators, food processors have tanks where food is mixed as well as pipelines for transport. Some operations also use specialized equipment such as fryers and ovens that must be cleaned.

Each food processor must meet stringent standards to prevent food contamination, which can result in reduced shelf life or foodborne illness. We provide an integrated approach to food safety, including:

- Automated dispensing systems
- Sanitizers and advanced detergents
- Patented protein food tissue treatments
- Antimicrobial water additives for produce
- Complete personnel hygiene programs

## Produce Processing

To meet the unique needs of fruit and vegetable processors, we offer products that help produce clean and ready-to-eat food. These products provide microbial and quality control to the flume water systems that transport fruits and vegetables to other processing operations within a plant. Additionally, our products help reduce spoilage and decay organism counts on the product surface, helping to assure quality.

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Our customers benefit from the industry's largest global team of experts to help sustain and improve their in-plant operations.

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## Superior Service

Our customers benefit from the industry's largest global team of experts to help sustain and improve their in-plant operations. Annually, Food & Beverage provides customers with thousands of hours of on-site, classroom and e-learning on a wide range of sanitation topics and best practices. This access to continuous education improves staff performance and safety, resulting in increased productivity and efficiency.

Account managers are a consultative partner to our customers. Our service team gathers actionable insights, analyzes data and helps provide consistent, standardized processes across facilities. Detailed service documentation helps customers meet compliance requirements, prepare for audits, prevent food safety risks and manage their business more profitably.

The account manager is supported by an elite group of specialists who provide technical support, including assistance with plant start-ups, operational savings assessments, troubleshooting sanitation quality problems and in-plant training.

On the water and wastewater treatment side, a global network of experienced Ecolab Water specialists provides consistent technology, service and support for customers. They analyze and optimize the total efficiency of an operation by looking at all cost factors, including energy, products, water and wastewater, maintenance, labor and equipment depreciation. They typically hold degrees in chemistry, engineering or biology, and are provided with ongoing certification and training. Additionally, all service teams are supported by a global network of microbiologists, engineers, chemists, technicians, and research and development experts who have the experience, expertise and analytical laboratory capabilities to provide detailed water and food safety analysis to solve complex problems quickly.

## A Food & Beverage Customer Call

Not only does Ecolab have unparalleled solutions and expertise, we also have the most powerful tool of all: the exceptional personal service provided by our account managers. Ecolab's Food & Beverage World-Class Service Standards help ensure consistent delivery at every location around the globe. We proactively take care of our customers to help improve food safety, protect their brand reputation and provide improved operational efficiency at the lowest total cost and environmental impact.

First, our account managers ensure they understand the processes, equipment and chemistries used by our customers. They know our customers' organizational structure and consult with key personnel on a regular basis.



Next, our account managers regularly visit their accounts, from weekly to monthly with the frequency varying based on the specific account's needs. To make the most of a sales and service call, account managers complete a comprehensive pre-planning checklist. They review digital 3D Trasar CIP reports, product use data, customer project initiatives and current action plans. They also gather the necessary supplies to perform any maintenance service that may be needed, such as test kits, parts and tools.

At the beginning of the visit, the account manager meets with key plant personnel to discuss current concerns. Before making recommendations, they check all dispensing equipment to make sure the correct product concentration is being dispensed and that cleaning procedures are being followed. The account manager also recommends solutions to help the customer operate safely while lowering operating costs through time, labor, water and energy savings.

A key role of an account manager is to help customers reduce their food safety risk. We use a holistic, total plant approach to help customers minimize microbial contamination across their operations. The account manager identifies and prescribes a comprehensive suite of food safety solutions – including cleaning and sanitizing products, food tissue treatments, aseptic sterilants, testing, personnel hygiene and environmental (e.g., drains and floors) programs – uniquely designed for the customer's specific environment and challenges. We also provide food safety training for our customers.

At the end of the visit, the account manager checks in with the same key plant staff to note findings and recommendations, and provides a prioritized list based on customer business drivers and possible new product or program solutions. All observations and solutions are captured in digital customer portals. Regular business reviews are conducted to ensure that customer goals are being met.

Throughout the visit, all Ecolab associates work with the facility's sanitation crew to answer questions or provide hands-on training. Periodically, the account manager will conduct more formal training on sanitation practices and product safety.

During F&B customer visits, water and process wastewater solution specialists visit with plant engineers and site managers to discuss concerns and perform equipment inspections and preventive maintenance. In addition, service representatives perform product inventory checks, water tests, corrosion studies and operator log reviews. They also alert staff to inefficiencies or potential safety hazards. In accounts where there is no engineer on site, the specialist provides full service, including setting up and maintaining systems. When needed, water specialists attend annual on-site boiler, chiller and cooling tower inspections for insurance purposes.

# GLOBAL INDUSTRIAL

## Water

### MARKETS SERVED:

#### LIGHT INDUSTRY

- Buildings and facilities
- Hospitality and lodging
- Healthcare
- Food and beverage processing
- Pharmaceutical
- Transportation
- Electronics
- Building materials
- Data centers

#### HEAVY INDUSTRY

- Chemical processing
- Power generation
- Primary metals

#### MINING

- Bauxite and alumina
- Coal
- Base metals
- Fertilizers
- Precious metals



By 2030, it is estimated that the world will need



**40%** more  
fresh water



## Water

Operating as Nalco Water, we combine global leadership, years of industry experience, innovative technologies and on-site expertise to help our customers implement reliable, cost-effective and safe solutions to meet their operational challenges. In doing so, we provide chemical services, managed operations, water technologies and secure digital platforms that deliver improved results for commercial customers around the world and across virtually all industrial and institutional markets. Our digital platforms leverage site data to deliver actionable insights to drive improved operations and added savings. Upcoming digital applications will have enterprise-wide, outcome-based and predictive-analytic capabilities to serve our customers even better. The connected engineers in our System Assurance Center head off water system issues, preserving customer assets and providing peace of mind. We lead the industry in creating value through differentiated services and unparalleled technologies that minimize fresh water, maximize operational performance and achieve results at an optimized cost.

Our customers benefit from our innovative water treatment solutions designed to improve all areas of their operations, including pretreatment, boiler, cooling water, process and wastewater. Our water business serves customers across the world in three major industries, categorized as Light, Heavy and Mining.

## Light Industry

Nalco Water's Light division works with institutional, food and beverage, transportation and manufacturing customers to effectively manage water use and improve operational processes. We use a holistic approach based on the understanding of our customers' dynamic, interrelated water systems and the complex connections between them. Our experts deliver customized solutions to meet local site needs and achieve corporate goals.

### WE PROVIDE:

- Boiler and cooling water management
- Influent pre-treatment
- Effluent post-treatment
- Water reuse and recycle solutions
- Process services and technologies
- Analytical services
- Air quality solutions
- Water safety solutions



## Heavy Industry

Nalco Water's Heavy division helps the chemical, power and primary metals industries more effectively manage water use, improve operational processes and reliability, and reduce costs. Through our innovative solutions, industry-leading expertise and process know-how, we have the ability to help customers meet operational and sustainability goals.

### WE PROVIDE:

- Boiler and cooling water treatment
- Influent pre-treatment
- Effluent post-treatment
- Water reuse and recycle solutions
- Process services and technologies
- Analytical services
- Water safety solutions

## Mining

Nalco Water's Mining division helps mining and mineral processing customers improve productivity, efficiency, profitability, product quality and environmental performance. In addition, water quality and availability are of vital importance to customers.

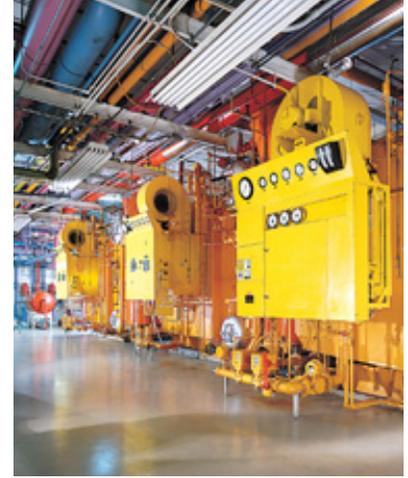
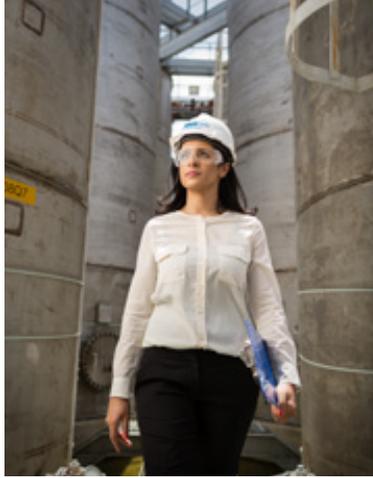
### WE PROVIDE:

- Solid-liquid separation
- Flotation reagents
- Process water scale control
- Filtration aids

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Our Water business is built on our 90-year history of delivering innovative boiler water treatment and solutions.

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## Strengths

Approximately 6,000 Nalco Water engineers and technicians – with an average of nine years of experience – provide on-site expertise to customers in more than 170 countries. Our holistic approach to water management focuses on partnering with customers to solve technical challenges encountered in dynamic industrial and institutional systems. We create value through innovative technology, engineering excellence and industry-leading experience.

### CORE APPLICATIONS:

- Influent pretreatment
- Boiler water treatment
- Cooling water treatment
- Wastewater treatment
- Wastewater treatment
- Water reuse and recycle
- Mining and mineral processing applications
- 3D Trasar Technology

## Influent Pretreatment

Water supply limits and feed water quality issues are customer realities. Providing state-of-the-art pretreatment ensures that the best quality and quantity of water is available when and where it's needed. Our pretreatment solutions offer an integrated and optimized approach to ensure the right balance between mechanical, operational and chemistry solutions. The result is reduced operating costs, water and chemical savings, and a smaller environmental footprint.

## Boiler Water Treatment

Our water business is built on our 90-year history of delivering boiler water treatment and solutions. Boiler systems are critical to production schedules and profitability. Most facilities use direct heat to manufacture finished products, while others (such as office buildings and hotels) use steam in heating, ventilation and air conditioning systems. Maintaining reliable treatment performance for boiler and steam systems is critical for minimizing the impact on plant operations, the environment and operating costs.

We perform detailed system audits and diagnostics to prescribe the appropriate chemical, equipment and service programs for maximizing boiler system performance and efficiency. Our innovative treatment programs help customers achieve water and energy savings, protect their assets and increase plant reliability and safety.



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Optimizing and integrating the performance of treatment chemistry and equipment can help customers meet stringent water quality and regulatory requirements, while dramatically minimizing overall costs.

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## Cooling Water Treatment

Managing a cooling tower to a health and performance standard is integral in many industries where safety, productivity and product quality can be adversely affected by scale, corrosion, fouling and microbiological contamination such as legionella. Cooling water treatment requires the right solution to achieve compliance, manage risk and increase performance. Our cooling water treatment programs utilize patented technologies that address challenges in dynamic water systems to save water, reduce energy and extend asset life, resulting in improved total cost of operation.

## Wastewater Treatment

Wastewater treatment requires the ability to manage input variability while delivering consistent, high-quality output. Our people and technologies analyze, evaluate and treat entire wastewater operations, from primary clarification to discharge.

Primary wastewater treatment is critical to plant operation, whether discharging directly to a body of water or municipal wastewater or biological treatment systems. Optimizing and integrating the performance of treatment chemistry and equipment can help customers meet stringent water quality and regulatory requirements, while dramatically minimizing overall costs.

## Water Reuse and Recycling

By 2030, the world's demand for fresh water is expected to exceed available water supplies by 40 percent. As the world's water resources become increasingly constrained, the pressure for industry to implement appropriate methods to conserve and reuse water increases. Operating successfully in a water-scarce world requires advanced knowledge of water quality requirements in various operations and targeted technologies to effectively implement the appropriate solutions.

Our 3D TRASAR Technology is a comprehensive, digitally enabled water performance system that enables effective water management by protecting and improving water system operations.



## Mining and Mineral Processing Applications

We provide essential expertise to the mining and mineral processing industry through comprehensive solutions from mine to mill. Markets served include alumina, coal, base metals, precious metals, iron ore, phosphate, potash, kaolin, sand/gravel and other minerals.

Our highly trained engineers work on-site at customer locations to implement innovative technologies that maximize process effectiveness, improve finished product quality, facilitate environmental compliance and sustainability, and provide the lowest overall total cost of operation.

### WE PARTNER WITH OUR CUSTOMERS TO:

- Increase flotation recovery and grade
- Maximize recovery and reuse of process water
- Dewater process concentrates and tailings
- Reduce or eliminate scale and foam in the processing plants
- Treat raw water, process water and mine effluent to remove undesirable metals and other solutes
- Improve crystal properties of finished products (morphology, strength, color)
- Improve handling properties of raw and finished materials
- Treat cooling towers and boilers to eliminate scale, corrosion and fouling
- Reduce dusting from haulage roads, crushers, stockpiles and transportation

## 3D TRASAR™ Technology

Water is the lifeblood of many operations. However, it also poses challenges such as corrosion, scaling, safety and scarcity. Effective management enables customers to harness the power of water, mitigate its risks and meet operational, financial and sustainability goals. Our 3D TRASAR Technology is a comprehensive, digitally enabled water performance system that enables effective water management by protecting and improving water system operations and supporting the achievement of these goals.

Water's industry-proven ecosystem includes the 3D TRASAR controller and chemistry, the System Assurance Center, prescriptive digital analytics and our on-site technical services. Combined, these allow for real-time identification and implementation of solutions to protect operations and increase water and operational savings. Reliable and connected 3D TRASAR controllers use proprietary sensors, algorithms and chemistry to measure water contaminants in the system every six seconds, detecting system upsets and determining the need for corrective action, all to deliver

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The System Assurance Center provides 24/7 monitoring of water systems by a team of more than 130 engineers, who head off issues to preserve customer assets and provide peace of mind.

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exceptional performance in the cooling water, boiler, reverse osmosis or dissolved air flotation system. The System Assurance Center provides 24/7 monitoring of water systems by a team of more than 130 engineers, who head off issues to preserve customer assets and provide peace of mind. Our digital platforms also leverage 3D TRASAR system data to deliver actionable insights and predictive analytics to drive improved operations and added savings.

## Superior Service

By understanding the needs and capabilities of our customers through on-site surveys and deep domain expertise, we develop and implement holistic solutions to minimize water use and maximize results at an optimized total cost of operation. We create value for our customers and our company through technologies and services that ensure system assurance, promote continuous improvement of plant operations and leverage the latest in water innovation and digital automation.

## Water University

Water University is the world's first high-tech learning environment dedicated exclusively to customer water education. Through interactive experiences and hands-on learning, total water solutions come to life as customers embrace ways to reduce, reuse and recycle water. Water University features a functional wet lab as well as customized equipment and control technologies designed to support pretreatment, boiler, cooling, process and post-treatment applications. The Water Safety section of Water University showcases methods for controlling waterborne pathogens and provides a backdrop for understanding water health standards. Finally, Water University includes a Customer Experience Center that showcases the role of water throughout all of Ecolab's businesses.

## A Water Customer Call

Our sales engineers focus on understanding their customers' business objectives, operational risks, constraints and opportunities to improve plant operations and efficiency. Initially, our sales engineer secures an agreement with the customer's management to conduct a comprehensive plant survey. The survey typically covers auditing all the water systems including pre-treatment, cooling water, steam generation, process water and waste water systems.



During the survey, which may take weeks or months to complete depending on the size and complexity of the customer's operation, the sales engineer meets regularly with operating personnel and use a variety of water-optimizing tools to identify gaps between current and optimum performance. They also identify ways to repurpose other non-associated water streams, creating potential recycling solutions that can have an even greater impact on reducing a facility's costs and sustainability footprint. The recommendations are reviewed with the customer to identify and propose best practices as well as a treatment program to save water, energy and reduce the customer's total cost of operation. Our sales engineer also works across other Ecolab Divisions such as Food & Beverage, Institutional or Pest Elimination to identify additional opportunities for improving efficiency and plant safety, increasing production output and reducing customer costs.

Once a proposed plan is agreed upon and established, our sales engineer visits the customer as needed, which may involve monthly or weekly visits, or even working on site, depending on account size, complexity and customer needs. Regular service call activities continually monitor operating performance against agreed-upon performance goals, and can include solving existing process issues, enhancing new process applications, conducting new technology trials, participating in customer-led efficiency projects and reviewing written service documentation reports.

During service calls, our sales engineers use their technical knowledge and expertise to continually re-evaluate overall operations, searching for opportunities to help reduce operating costs and improve production quality. A typical day could include reviewing 3D TRASAR automation reports with the facility manager, attending a plant manager's operations meeting, auditing unit operations for optimal efficiency and reliability, verifying sufficient inventory levels, troubleshooting a problem area in a plant or coordinating the start-up of a new piece of equipment.

For example, a power plant in Mexico uses grey water (wastewater from sinks and showers generated from households or office buildings) in its cooling tower in an effort to reduce the plant's freshwater use. But grey water can carry high concentrations of calcium, sulfate and chloride, which contribute to scaling and performance issues. Our sales engineers conducted studies to determine optimal cycles of chemical concentration in the cooling tower to minimize water use and avoid scaling.

Nalco Water tailored a polymer solution for the specific conditions and needs of the customer to carry impurities out of the cooling tower before they settle as scale and deposits. The polymer was implemented in conjunction with 3D TRASAR for Cooling Water, which continuously monitors the performance from its remote control room. This solution not only improved the customer's performance but also reduced their annual water usage by 647 million gallons and energy consumption by 125,000 kWh.

# GLOBAL INDUSTRIAL

## Paper

**MARKETS SERVED:**

- Board and packaging
- Tissue and towel
- Pulp
- Graphic paper





We offer comprehensive paper machine cleaning and conditioning programs that provide customers with improved paper machine efficiency, energy savings and paper quality, as well as reduced material costs.

## Paper

Pulp and paper producers are constantly striving to enhance competitiveness and sustainability by improving site profitability and reducing its environmental impact. Our innovative solutions are also carefully designed to provide papermakers with significant economic and environmental return.

Vigilant management of fiber and energy resources is critical to the quality and efficiency of pulp and papermaking operations. We offer comprehensive paper machine cleaning and conditioning programs that provide customers with improved paper machine efficiency, energy savings and paper quality, as well as reduced material costs. We also provide grade development and functional chemistries that assist in developing sheet properties and promote machine productivity. Our core water expertise addresses customers' key business drivers of uptime and reliability. For example, steam generation at a paper mill is necessary to heat the chips in the digesters, evaporate the cooking liquors, dry sheets on paper machines and drive turbines to provide the electrical needs of the entire mill. Without steam, papermaking operations would come to a halt.

We adopt a grade-based approach to understand and address the unique needs of each paper industry segment: board and packaging, tissue and towel, and graphics. Through our Create and Maintain Value (CMV) process, our local account teams work with customers on site to deliver maximum performance. We design, develop and implement solutions specifically tailored to customer operations and key business initiatives.

### WE PROVIDE:

- Process efficiency solutions
- Foam, scale, contaminant and microbiological control
- Retention and drainage programs
- Cleaning/conditioning programs
- Sheet property and fiber savings solutions
- Water, pulp, fabric, deposit and microbiological analysis

- Wastewater treatment solutions
- Water and energy management solutions

### APPLICATIONS:

- Grade development
- Fiber savings
- Machine efficiency improvement
- Water and energy savings



## Fiber Savings

Our complete fiber and energy management solutions are designed to help:

- Reduce total cost of operation
- Use a broader range of mechanical, chemical and recycled fibers
- Improve pulp quality
- Enhance process stability and efficiency

## Machine Efficiency

We offer comprehensive paper machine wet-end programs to optimize the efficiency of the paper machine operation. These programs include chemical product line technologies, analytical capabilities and automated equipment systems. When these parts are integrated by our on-site experts into our comprehensive approach, these programs can provide our customers with improved paper machine efficiency, energy savings and paper quality, while reducing material costs.

## Water and Energy Savings

We address water-related problems in all areas of pulp and paper mills. Having efficient total cost of operation management is a constant industry demand, and as the preferred water treatment services partner, we are in an excellent position to deliver savings far beyond the scope of chemistry alone. We have technologies that promote reduced water use such as 3D TRASAR™ for Dissolved Air Flotation units. Many of our technologies promote improved dewatering in the forming and press sections that lead to significant energy savings.

## Superior Service

Nalco Water is committed to helping pulp and paper manufacturers become more profitable by optimizing essential mill unit operations. These include incoming water, steam generation, pulping, forming, pressing, drying, creping (tissue) and effluent treatment.

Rather than focusing only on chemical processes, we work with customers to understand their entire operation. We then concentrate on the variables that will improve their operations and produce a more efficient and higher-quality end product. We develop and deploy new technologies that apply to one or more paper grades. Supported by a comprehensive network of supply chain facilities in each country and regional research center, our global presence enables us to offer a consistently high level of service to local, regional and multinational customers.



Leveraging digital technologies such as 3D TRASAR, OxiPRO™, and EWCD (Early Warning Chatter Detection), we provide system monitoring, data analysis and program management across our customers' operations. As a result, we track our progress against goals and key performance indicators (KPIs) from both a "total impact" (efficiency) and "positive impact" (effectiveness) perspective.

## A Paper Customer Call

Most of our Paper division sales engineers typically call on only one facility, and have offices at that facility, along with other Nalco Water Paper sales engineers. This is due to the complexity and size of these customer operations, requiring multiple personnel to properly service our total application portfolio of pulping, water treatment and process applications.

Our service model relies on safe operation to mitigate risk and value creation and delivery to our customers. We do this by understanding our customers' needs through in-depth analysis of their key business drivers and mill operation. We then leverage our expertise and work ethically to meet those needs.

The value of our efforts is communicated to customers through frequent face-to-face meetings with key personnel and direct participation in their operational meetings and improvement teams. Our internal industry consultants and research and development personnel leverage their expertise to help our customers solve the most challenging issues impacting their key business drivers. We prepare and deliver a Monthly Executive Summary (MES) to document the value Nalco Water programs provide, as measured against the mill's KPIs.

We also conduct business reviews that include systematic status reports of profit improvement and total cost of operation reduction projects to quantify financial gain to our customers. Delivering this value is important to maintaining customers, and how we effectively compete against price-based competitors.

# GLOBAL INDUSTRIAL

## Life Sciences

**MARKETS SERVED:**

- **Pharmaceutical Manufacturing**
- **Personal Care and Cosmetics Manufacturing**





## Life Sciences

Ecolab's Life Sciences business offers a comprehensive range of cleaning solutions designed specifically for demanding operational challenges within the pharmaceutical and personal care manufacturing industries. Beyond identifying the right chemistry, we develop site-specific hygiene programs to maximize consumer and operator safety.

Our programs developed as a result of our robust Food & Beverage and Healthcare product portfolios, whose proven chemistries were frequently being leveraged for use within Life Sciences applications. We offer comprehensive solutions and technical expertise focused on ensuring advanced consumer and operator safety, regulatory compliance and operational efficiency in the cleaning, sanitization and contamination control areas. Products include cleaners, sanitizers, disinfectants and other solutions to produce clean, safe and hygienic surfaces and processes for these highly sensitive industries.

## Pharmaceutical

We provide customers with complete cleaning and disinfection programs for external surfaces of both pharmaceutical manufacturing equipment and cleanrooms, as well as for direct product contact surfaces.

### WE PROVIDE:

- Cleaning, sanitization and disinfection programs
- Validation support
- Technical services and lab support
- Regulatory and scientific insights
- Assessment, recommendations and reporting
- Customer training

### PRODUCTS:

## Pharmaceutical Manufacturing

We provide complete and unique solutions for cleanroom customers, such as pharmaceutical companies, hospital pharmacies, biotechnology laboratories, medical device companies and diagnostics laboratories. Our associates are experts in their field, helping customers ensure regulatory compliance for product safety and quality, while our cleanroom programs ensure customers retain the required particulate and microbiological limits in accordance with the latest regulatory requirements.



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**Our associates are experts in their field, helping customers ensure consumer and operator safety, regulatory compliance and operational efficiencies.**

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Our comprehensive range of cleanroom solutions includes filtered, sterile and non-sterile alcohol, biocides, detergents and wipes. This provides everything needed to ensure an appropriate solution is provided, from the highest-grade environment where sterile products are mandated by Good Manufacturing Practices (GMP) to lower grade, where sterile products are controlled but not classified.

## Personal Care and Cosmetics

We provide sanitization programs for the unique composition of the pigments, emulsions, waxes and gels used in the cosmetics and personal care industries. Our cleaners, sanitizers and boosters are designed for the removal of these ingredients, especially the most difficult-to-clean soils such as mascara and sunscreens.

Our experienced and highly trained personnel are backed by the full resources of the global leader in sanitization to deliver the proven solutions that contribute to our customers' ability to:

- Safely produce high-quality products that exceed expectations and keep safety top of mind
- Continuously and measurably improve operational efficiency
- Achieve sustainability goals, including reducing water and energy consumption

## Complete Solutions for CIP and COP in Pharmaceutical and Personal Care Manufacturing

Our Clean-In-Place (CIP) and Clean-Out-of-Place (COP) programs ensure the prevention of any cleaning or disinfection chemical carry-over onto the next production batch, and provide a reliable detection method to assure consumer safety. This incorporates the appropriate manufacturing equipment and the development of the best production process.

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We are committed to providing customers with a full suite of programs and services to ensure safety, regulatory compliance and operational efficiency.

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## Superior Service

We are committed to providing customers with a full suite of programs and services to optimize production efficiencies and ensure safety and regulatory compliance. From cleaning and sanitization to contamination control in high-grade cleanroom areas, our global team partners with customers to create customized solutions.

Our sales associates, technical and regulatory experts are trained to:

- Understand our customers' business, goals and priorities to deliver a customized solution and design an action plan that delivers both system assurance and added value.
- Evaluate the operational characteristics of our customers' processes and systems to provide valuable insights on how to prioritize key drivers while ensuring safety for operators and consumers.
- Document service plan activities to provide customers with a service objective summary and progress, as well as recommendations for program improvements.
- Review customer facilities regularly to ensure solutions are continually aligned with their priorities and are delivering the most effective and desired results across the whole facility.
- Work closely with team members to provide customers with a clear, cohesive strategy that unifies our resources and expertise in cleaning, sanitization and disinfection processes, and water management to deliver what the customer needs to be successful.

## A Global Life Sciences Customer Call

Ecolab Life Sciences Account Managers are focused on delivering solutions to meet the key goals of pharmaceutical manufacturers and personal care products manufacturers, which include ensuring consumer and operator safety, complying to regulatory standards and improving operational efficiency.

Initially, an Ecolab Life Sciences Account Manager conducts an assessment of the customer's operations, understanding their safety, efficiency, compliance and product quality goals. Typical areas of focus include the cleaning and disinfection of product manufacturing equipment in both Pharmaceutical and Personal Care Manufacturing, including pharmaceutical cleanrooms. The assessment also includes an audit of the cleaning and disinfection products and procedures along with identifying areas of improvement. This may include the use of ineffective, non-compliant or inefficient cleaner or disinfectant, or an opportunity to improve the cleaning and disinfection process or equipment that is used to apply chemistry solutions. After reviewing the improvement



areas with the customers, our Account Managers partner with the Ecolab's global technical and regulatory experts to develop continuous improvement projects. These projects help the customers optimize the cleaning and disinfection programs that, in turn, help them to produce high-quality and safe products, all while improving their regulatory compliance, operational efficiency and employee health and safety.

Our Account Managers perform regular customer visits to help implement improvements and conduct customer training sessions on topics ranging from the basics of cleaning and disinfection to validation, to the latest forward-looking regulations impacting their operations. Ecolab Life Sciences' technical and regulatory experts also partner with the Account Managers and customers to assist with navigating the complexity of manufacturing process validation, laboratory testing, changes in protocols and hygiene system optimization. In addition, they keep a pulse on the latest or upcoming regulations that may impact our customer operations and prepare them for these changes from a cleaning and disinfection perspective.

For cleaning and disinfection of product manufacturing equipment in Pharmaceutical and Personal Care Manufacturing, Ecolab technical and regulatory experts help determine the optimum chemistry solutions to clean any new or hard-to-clean soils, or kill specific microorganisms. They also provide complete validation and technical documentation support that help in performing risk assessment and keeping customer operations ready for any regulatory audits. With these inputs from the technical and regulatory services, Ecolab Life Sciences Account Managers work regularly with our customers to optimize their cleaning process onsite using varying parameters such as chemistry concentration, cleaning time, temperature, mechanical action and equipment that not only saves cleaning resources such as chemistry and water, but also promotes safe working conditions and provide additional production time by reducing the cleaning time.

Similarly, for environmental and surface cleaning and disinfection of cleanrooms in Pharmaceutical manufacturing facilities, Ecolab Life Sciences Account Managers regularly work with our customers to determine the most effective chemistry solutions, equipment and procedures that keep the environment contamination-free, compliant and suitable for manufacturing lifesaving drugs. Our Account Managers, technical and regulatory experts also help customers in troubleshooting any deviations from standards in their environmental monitoring results, level of specific microorganisms or most critical of all, product quality standards that can cause risk to their brand reputation, profitability and patient safety.

# GLOBAL INDUSTRIAL

## Textile Care

### MARKETS SERVED:

- Industrial laundries
- Large hospitals and commercial healthcare laundries
- Large hotel and commercial hospitality laundries
- Food and beverage processing laundries



## Textile Care

Textile Care serves larger, more complex commercial laundry operations, which in turn serve the textile rental, industrial, healthcare and hospitality markets. Our customers process millions of pounds of linen annually. These large-scale operations require products and dispensing systems designed specifically for their industrial-size machines, unique cleaning needs and complex operations. (Ecolab Institutional serves the smaller on-premise laundries found in hotels, hospitals, restaurants and long-term care facilities.)

Textile Care provides products and services that manage the entire wash process through custom-designed programs, premium products, dispensing equipment, water and energy management, and real-time data management for large-scale commercial laundry operations that clean healthcare, workwear, hospitality, food and beverage, and food processing linens. With deep expertise and more than 80 years as a global provider, Textile Care's programs are designed to deliver on our customers' needs for exceptional cleaning, while extending the useful life of linen, saving water and energy, and reducing overall operating costs.

Textile Care's global reach, extensive R&D capabilities and industry-leading innovations to clean and disinfect textiles help customers minimize the risk of patients contracting healthcare-acquired infections (HAIs) via linen used in healthcare settings, of consumers contracting foodborne illness from uniforms at food processing plants and hospitality linen at restaurants, and of safety property degradation on industrial work wear.

## Strengths

We provide the largest commercial laundry sales and service team in the industry. Our associates have in-depth knowledge and experience in laundry solutions, and are backed by experts in the areas of R&D, support and applications, lab and technical service, customer support, waste, water, energy and dispensing. They offer a full line of innovative, high-quality wash products and programs to meet customers' needs, designed to impact what matters for customers; Textile Quality and Life, Productivity, Total Cost of Operation, Sustainability and Customer Satisfaction.



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Our support and applications team uses industry-leading diagnostic and analytical tools as well as advanced know-how to identify and resolve issues to increase productivity efficiencies, including water, energy and quality.

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## Markets and Needs Served

Textile Care's primary customer base includes large commercial laundry operations such as textile rental laundries (which handle linens from tablecloths and napkins to bedding and towels), healthcare laundries and industrial laundries (which process and deliver customer uniforms, shop towels, floor mats and other linens), and other large institutional customers, such as universities. We offer a variety of products and programs to address the varied types of soils and linens processed by our customers.

We also provide fluid repellents, fabric relaxants and odor-control technologies, along with advanced laundry systems such as our water- and energy-saving technology. In addition, we offer the industry's most advanced monitoring and dispensing systems to ensure consistent and accurate delivery of product to the washer for maximum results.

## Innovation and Support

Industry-leading innovation, research and technology expertise also help drive superior cleaning results. Textile Care provides advanced reporting systems that put data at the customer's fingertips to boost efficiency and control costs.

For example, we offer an advanced information management system that summarizes data for a single plant or an entire corporate account chain. Available online, customers can monitor data with easy point-and-click navigation to maximize washroom efficiency and manage their operation more efficiently. The availability of real-time monitoring of the washroom also exists to further build efficiencies at the customer plant.

Our support and applications team uses industry-leading diagnostic and analytical tools as well as advanced know-how to identify and resolve issues to increase productivity efficiencies, including water, energy and quality. Our Research, Development & Engineering technicians perform a wide variety of testing, including identifying stains and prevention methods, analyzing water samples, providing wash formulas and answering questions.




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Laundry specialists serve as a resource for our customers' employees, providing them with hands-on training on proper laundry procedures, wash aisle efficiency, hazardous materials handling, and chemical safety and best practices.

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## Superior Customer Service

Having the right people in the customer location enables us to make a significant difference. Our sales and service specialists provide expert consultation and custom-designed wash programs unique to each customer. Our specialists have an in-depth understanding and aptitude for problem solving. Ongoing training opportunities keep specialists abreast of new procedures, products, equipment, environmental issues and topics such as:

- Laundry chemistry
- Product characteristics
- Wash formulas
- Washroom equipment
- Chemical safety
- Water and energy optimization
- Productivity management
- Washroom efficiency

## A Global Textile Care Customer Visit

Commercial laundry specialists improve our customers' laundry operations, from large chain and corporate accounts to independent laundries. For example, specialists may call monthly on a central laundry operation that serves a number of area hospitals. Their goal is to continually improve cleaning results and reduce the overall cost of operation for the customer.

To make the most of the visit, laundry specialists go over past reports to review product use data, customer project initiatives and current action plans. Typically, these projects are focused on production improvements, water and energy reduction, or improving efficiencies to help manage labor costs – all while improving quality results.

At the beginning of the visit, the specialist meets with the facility manager to discuss any immediate concerns. They then examine all aspects of the laundry operation. Several loads are run through the wash cycle, and wash formulas are tested to make sure they're correct for the types of linen being processed. Adjustments are made to ensure proper balance of product, water, temperature and cycle times. In many cases, this check serves as an audit to help ensure proper linen sanitation.



In addition, laundry specialists serve as a resource for our customers' employees, providing them with hands-on training on proper laundry procedures, wash aisle efficiency, hazardous materials handling, and chemical safety and best practices. Our specialists identify where an operator has been washing a linen classification improperly, which can cause unnecessary water and energy use, and a longer wash time. They also seek to identify problems that may require additional solutions or customer training.

Observations and recommendations for improvement are documented throughout the visit on a report using a customized software program that stores technical data and account information – providing the customer instant access to a complete washroom history.

At the end of the visit, the specialist reviews the report with the plant manager and other key personnel to point out findings, improvements and potential new solutions. They then develop an action plan that focuses on continuous plant improvements.

# GLOBAL INSTITUTIONAL

## Institutional

**MARKETS SERVED:**

- Food service
- Hospitality
- Commercial buildings and facilities
- Long-term care facilities
- Government
- Education



Our team of sales and service experts deliver personalized service and offer a comprehensive range of solutions and data-driven insights to help customers run clean, safe, efficient and sustainable operations.



## Institutional

Ecolab's Institutional business offers comprehensive products and programs that meet the needs of our customers – from restaurants, hotels and long-term care facilities to schools, commercial buildings and government facilities. Our team of sales and service experts deliver personalized service and offer a comprehensive range of solutions and data-driven insights to help customers run clean, safe, efficient and sustainable operations. We help our customers guarantee guest and employee safety and satisfaction, as well as protect and enhance their brands. Our products and programs cover all areas of an operation and represent the industry's most broad and complete set of premium customer solutions.

### WE PROVIDE:

- Customized cleaning and sanitizing solutions
- Floor care
- Hand hygiene solutions
- Housekeeping solutions
- Kitchen sanitization solutions
- On-premise laundry
- Pool and spa solutions
- Warewashing solutions
- Water management solutions

## Strengths

We have an industry-leading global sales and service force backed by advanced and patented technologies and a global research and development network. Our innovative solutions and actionable insights address customers' needs in premium cleaning and sanitizing, food safety, public health, operational efficiency and guest satisfaction – while promoting customer, employee and environmental safety at the lowest total operating cost.

## Warewashing

As the market leader in warewashing – the practice of cleaning dishware, glassware, cookware and utensils – we're known for our outstanding products, programs and customer service. Our customer consultation, data-driven insights and emergency services keep operations running safely and efficiently, increase guest satisfaction and lower operating costs.



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Our warewashing program includes non-caustic, low/no-phosphate solid products that are safe and easy to store, carry and load.

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#### INSTITUTIONAL'S CORE WAREWASHING PRODUCT LINES INCLUDE:

- Machine and manual detergents and sanitizers
- Rinse additives
- Flatware presoaks
- Pot and pan presoaks and detergents
- Dishmachine optimization, water conditioning and repair
- Dishmachine lease program

Customers count on Ecolab programs for their high-quality performance. We meet this expectation through our ever-evolving line of solutions for all types of operations and world-class service. Our warewashing programs not only allow customers to spend less time and money washing dishes, they also collect critical information our associates use to help streamline the entire warewashing process. With this data, customers can ensure clean dishes in one pass through the dishmachine. In doing so, they improve efficiencies across their warewashing operations by reducing energy, labor, water and waste costs, while decreasing their environmental impact.

This complete warewashing system features a unique combination of products, equipment, consultative services and actionable insights. Our warewashing program includes non-caustic, low/no-phosphate solid products that are safe and easy to store, carry and load. The solid product line includes detergents, rinse additives, sanitizers, silverware presoak, and manual detergents, sanitizers and pot and pan presoak, all which use dramatically less packaging.

Our highly trained sales and service associates use digital technology with a real-time connection to Ecolab's global network to remotely monitor operations and provide customers with more efficient service and a more consistent program experience. Our unique digital tools elevate our customer support by identifying opportunities to enhance equipment operations and employee procedures, leading to improved labor efficiency and reduced food safety risks. The real-time controller monitoring provides insight to the dishmachine's overall performance and proactive alerts when machines need attention, more product, require an adjustment or on-site service. Additionally, the controller has on-demand training videos that provide step-by-step, language-free instructions for proper procedures.

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Real-time monitoring provides insight to the dishmachine's overall performance and proactive alerts when machines need attention, more product, require an adjustment or on-site service.

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Our team also provides regular, on-site preventative maintenance calls. During each visit, customers receive a personalized, electronic service report that:

- Summarizes critical dishmachine operating metrics in an easy-to-understand “red, yellow, green” dashboard
- Tracks the guest-to-rack ratio and graphs this operational efficiency trend
- Provides a daily detail of the critical machine metrics being captured to help identify specific problems and pinpoint the day and shift they occur
- Itemizes new or improved product recommendations and potential impact to further lower costs
- Provides training to ensure consistently positive results

## Kitchen Hygiene

Restaurants, hotels and healthcare facilities have diverse cleaning challenges. We offer a host of specialty kitchen products to meet customers' unique needs. For example, we offer an enzyme-based, no-rinse floor cleaner that removes grease from floor tiles and grout, creating increased friction and ultimately helping reduce the chance of slips and falls. Additionally, this product kills 99.9 percent of dangerous bacteria on floors and in drains, helping reduce the risk of cross-contamination. Our grease management program features products that quickly penetrate kitchen grease on surfaces like grills and counters, a popular product line among restaurant and foodservice operators.

For the foodservice kitchen, we also offer a variety of general cleaning products that polish dull stainless-steel surfaces, remove hard water deposits and rust stains from equipment surfaces and tiles and clean freezers, soft-serve frozen yogurt dispensers and ice cream machines.

In addition, Ecolab provides solutions that enhance food quality and help reduce public health risks. For example, our hand hygiene systems feature gentle yet effective hand soaps and sanitizers that help ensure hands are properly cleaned. Our sustainably designed system reduces packaging waste by up to 90 percent. The refillable design virtually eliminates product waste and makes refills predictable. The program also includes an innovative training tool featuring a fluorescent lotion and a glow box that shows employees areas on their hands that were not properly cleaned.



Ecolab provides solutions that enhance food quality and help reduce public health risks.

## On-Premise Laundry (OPL)

Institutional is the leading supplier of on-premise laundry (OPL) products and dispensing equipment. Typical OPL customers – those who process their own linen and uniforms on site – include hotels, large restaurants, nursing homes and hospitals. (Ecolab Textile Care serves large, off-site commercial and industrial laundries.) Our OPL solutions are reliable and simple for customers to operate and include:

- Detergents
- Boosters
- Bleaches
- Fabric softeners
- Neutralizers
- Stain removers

Products are dispensed through equipment designed to ensure accuracy and consistent results, while helping reduce the chance of misuse.

The solid chemistry system uses our patented technology, along with “smart” dispensing, which ensures the proper laundry chemistry is dispensed every time. This results in clean, white, soft and fresh results by effectively targeting everyday soils as well as tough stains. The enhanced chemistry leads to a higher level of clean and longer-lasting whiteness, while also extending the life of linens by reducing rewash.

Solid systems bring the added benefits of automated dispensing, compact solid products and the safety of a closed system to home-style laundry machines.

The premier laundry program for lodging pairs unique low-temperature chemistry, actionable insights and technical expertise to help drive our customers’ sustainability goals while delivering valuable water and energy savings. The program, combined with a stain management program, has been proven to reduce utility costs, extend linen life and improve operational efficiency while delivering consistently superior results.

Our long-term care laundry solution is specifically designed to address the unique circumstances of these facilities. Our revolutionary chemistry gets linens hygienically clean from the first wash and helps extend a facility’s infection prevention program to the laundry, reducing the risk of outbreaks. The registered sanitizer kills 99.9 percent of germs found on linens. Additionally, customers



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Ecolab's housekeeping program includes premier products, flexible training programs and expert service.

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experience fresh results with a single wash, detergent and sour/softener that zero in on long-term care malodors using powerful enzymes and patented odor-counteracting technology.

## Housekeeping

Ecolab's housekeeping program includes premier products, flexible training programs and expert service. The products target high-touch hard surfaces including restrooms, floors and walls. The program also includes room fresheners for odor control. They include all-purpose and glass cleaners, registered disinfectants, sanitizers, deodorizers and other products created specifically for public spaces or private rooms such as those in hotels, universities, commercial buildings or long-term care facilities. Solutions are customized to meet the unique needs of each operation. Products are designed for ease of use, color-coded for easy identification and efficiently dispensed using Ecolab dispensers that combine our concentrated products on-site with the customers' water to produce the right use application while reducing storage requirements. Ongoing customer staff training improves adherence to the right cleaning protocols for specific operations, and guest/resident satisfaction scores are tracked to ensure the program delivers results.

## Water Quality

From customer experience to maintenance costs, water impacts all aspects of our customers' business. Our Total Managed Water Quality Program combines the best technology in filtration and water softening with ongoing service and continued water analysis to help improve operational efficiency, guest satisfaction, sustainability and food safety.

Our exclusive line of water filtration systems is a core part of the Total Managed Water Quality Program. By removing impurities and off-tastes from water, we help deliver odor-free, great-tasting water for drinking and the preparation of food, branded beverages and ice. It also protects foodservice equipment against chlorine-induced corrosion and limescale buildup. This helps reduce energy costs and increases equipment performance, reliability and lifespan.



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Ecolab's Pool and Spa Management Program combines state-of-the-art automation and world-class service to help ensure our customers' guests enjoy clean, safe and sanitary pools, spas and water features.

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## Health Department Intelligence

Managing health department inspections is an additional challenge for restaurant, hotel and healthcare customers. Our Health Department Intelligence service ensures improved operations and promotes brand protection through digitally retrieved and managed health department inspections. The service is designed to capture and standardize inspection data from thousands of health departments across the United States. This allows identification of critical corrective actions via trend analysis and reporting.

## Floor Care

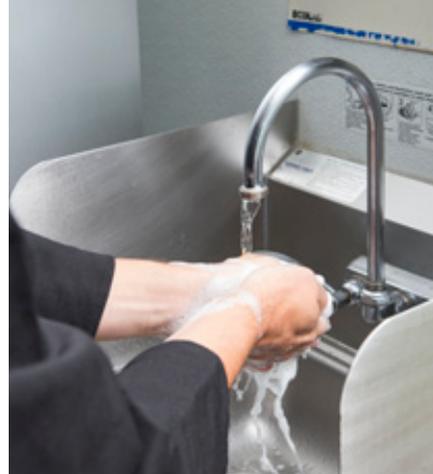
Maintaining the cleanliness and appearance of floors is extremely important to our customers. Ecolab recognizes that proper floor maintenance can be time-consuming, labor intensive and disruptive. Also, training employees on proper floor care procedures is difficult to coordinate and complete. That's why we deliver customized, comprehensive floor care solutions and training programs designed to solve specific problems for a variety of floor types.

Ecolab offers a wide range of floor care solutions designed to improve operational efficiency, safety and sustainability.

## Pool and Spa

An inviting pool or spa is one of the most compelling features of a hotel, resort or club. Unfortunately, it's also one of the toughest areas to maintain. Ecolab's Pool and Spa Management Program combines state-of-the-art automation and world-class service to help ensure our customers' guests enjoy clean, safe and sanitary pools, spas and water features.

Ecolab's program features precision dispensing with real-time controller monitoring and data logging to monitor pool operations 24 hours a day, seven days a week. Our wireless technology allows customers to proactively monitor their pool operations on their mobile devices. The data and insights provide steps for continuous improvement, notifications and alerts, and water analysis tools to diagnose and treat issues.



Customers receive ongoing preventative maintenance service and training from associates who are Certified Pool Operators by the National Swimming Pool Foundation. They are trained to fully understand pool and spa equipment, maintenance and injury prevention, and provide monthly inspections, service and reporting to ensure consistent, high-quality results.

## Food Safety Specialties (FSS)

Ecolab's Food Safety Specialties (FSS) business offers a complete line of products and systems to help safeguard foodservice customers' guests, employees and brand image. FSS is built on a foundation of innovation and food safety education, and provides product solutions in all of the major food safety categories, including:

- Automatic and real-time food labeling for effective traceability
- Food rotation
- Cross-contamination prevention
- Temperature control
- Personal hygiene
- Cleaning and sanitation
- Employee safety
- Food safety education

## EcoSure®

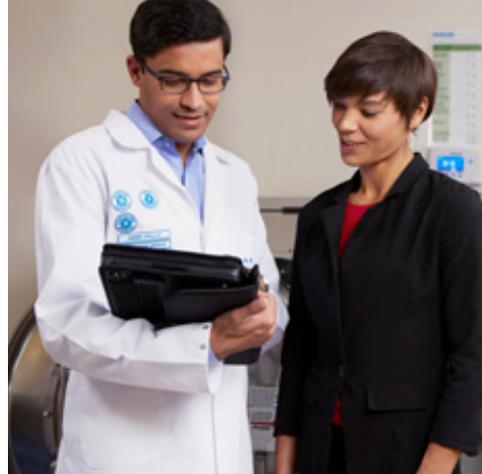
EcoSure® provides customized quality assurance programs for food safety and brand protection. We are a strategic partner to our customers, providing fact-based insight into their operations via unit-level assessments, online reporting, corrective action tracking and in-depth executive reviews.

Our on-site evaluations and training help customers deliver on their quality standards every day, at every location. In an increasingly competitive environment, chains must ensure that individual units consistently deliver safety and experience standards. Our comprehensive programs expose and minimize food safety risks, build food safety knowledge, drive behavior change, and provide visibility across an operation. These help our customers deliver the right experience to every guest and protect them against risks that can damage their brand.

### THE PROGRAM INCLUDES:

- On-site assessments
- Actionable insights and solutions
- Coaching and training
- Food safety expertise and resources

With sales representatives across the globe, Ecolab Institutional has the industry's largest locally deployed sales and service teams working to provide ongoing customer service and support.



In addition, we conduct evaluations on employee behavior and guest experiences.

These evaluations cover:

- Facility safety
- Employee and guest injury prevention
- Cleanliness
- Customer service and professionalism
- Atmosphere and presentation

We also perform on-site product retrievals at foodservice and retail locations, distribution centers and suppliers. Our product analyses focus on:

- Product performance and consistency
- Package performance
- Competitive tracking
- Effects of distribution

Finally, we measure and monitor unique brand elements such as brand presentation, quality and service at each location to ensure consistent brand delivery focusing on both the front and back of the house.

## Superior Customer Service

With sales representatives across the globe, Ecolab Institutional has the industry's largest locally deployed sales and service team working to provide ongoing customer service and support. Our sales and service force regularly visit customer locations to provide scheduled sales and preventative maintenance calls to identify issues that could hinder results, and offer consultative services to recommend new and improved product solutions. Associates focus on surrounding customer operations with a comprehensive array of cleaning and sanitizing product solutions. With the largest breadth of products, services and support available, we can customize programs to customers' specific needs.

Our associates are experts in their field. They are skilled and equipped to educate and train customers on the fundamentals of cleaning and sanitizing, operational efficiency and proper product use. In addition, they can help keep customers current on the latest procedures, local safety regulations and industry best practices.

### THEY ALSO PROVIDE:

- Service availability – 24/7/365
- Proactive monitoring and reporting
- Preventative maintenance calls
- Testing and troubleshooting
- Cleaning results analysis
- Customized audit program design
- Data-driven business insights and action planning



Ongoing training is essential to providing superior customer service. Each field associate receives in-depth training to learn the mechanics and intricacies of warewashing, laundry, housekeeping, water filtration and more. They have broad account responsibilities, but the overriding directive is to provide customers with appropriate solutions by taking a consultative approach with customers and partnering with them to solve problems.

Field associates may oversee anywhere from a handful of accounts to several dozen, depending on the intensity of specific customer service needs and the size and location of the territory. Building problem-solving relationships with customers is critical to increasing sales and ensuring that their needs are being met.

## An Institutional Customer Call

Our sales and service associates regularly visit customer accounts with the frequency depending on an account's size and unique needs, but are typically monthly visits. These calls allow field associates to review programs, results and maintenance services, install new systems and equipment, and conduct employee training, further enhancing their relationship while developing additional sales opportunities.

Prior to any service visit, field associates examine remote monitoring reports, past service detail reports, product use trends, customer project initiatives, food safety audits, public health department results and previous action plans. They gather information about potential solutions, new innovations or other insights that will help the customers' operations. They also gather the necessary supplies to perform any maintenance service, such as test kits, parts and tools.

At the start of a visit, the field associate checks in with their on-site contact such as a restaurant, hotel or housekeeping manager or maintenance supervisor to discuss any findings from their site review.

The associate then conducts a site survey to examine the results from the programs within the account, such as ensuring programs are delivering expected results (dishware, glassware and flatware are clean and spotless, or linens are clean, white, soft and fresh). The associate walks through the entire operation such as the front of the house, restrooms, guest rooms or public spaces. He or she also inspects equipment such as dishmachines or laundry equipment, checking rinse and wash water temperatures, water consumption levels and all mechanical parts to ensure the machines are running properly, products are being dispensed in the correct concentration and there is no excess waste.



Throughout the call, the field associate records all cleaning, sanitation or food or employee safety observations and recommendations in a Service Detail Report (SDR), electronically capturing and storing technical data and account information. This provides instant access to a complete program performance history that is unique to each customer while also monitoring improvement trends to share.

The field associate interacts with employees at each account, answering questions and conducting training. This on-site training helps ensure that employees are fully trained on the basics of procedures and the proper product use, as well as kept up to date with regulations and best practices.

Associates also identify opportunities to help customers operate more safely and effectively by alerting employees to hazards and inefficiencies that may require training for new operating procedures, additional programs from Institutional, Pest, Water or other Ecolab businesses, or other insights or expertise the Ecolab associate can provide.

Before the end of the call, the field associate completes the SDR and places product and/or equipment orders. Observations and issues are noted on the report, as well as actions taken and recommendations for procedures, additional solutions or training and product inventory. The Ecolab associate reviews the report with the customer and answers any questions. The report is then consolidated at the chain level, nationally or globally.

# GLOBAL INSTITUTIONAL

## Specialty

### QUICK-SERVICE RESTAURANTS & FOOD RETAIL

#### MARKETS SERVED:

- Quick-service, limited-service and fast-casual restaurants
- Food retail establishments
- Convenience stores
- Theaters
- Child care centers





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We help customers provide a cleaner, safer and healthier environment, reduce operating costs and protect their brand.

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## Specialty

Our Specialty business is a leading global supplier of cleaning and sanitizing products and services to the quick-service restaurant (QSR) and food retail markets.

In these fast-paced and competitive industries, consistent cleaning and sanitation standards can be difficult to maintain due to increasing labor challenges, heavy foot traffic and workplace language barriers. In addition, the increased consumer demand for fresh menu items, enhanced facility décor and 24-hour locations require a broad employee base and effective training protocols. We partner with customers to help them meet these demanding and evolving challenges – offering in-depth industry knowledge, customized products and dispensing systems, advanced digital tools and comprehensive training.

We provide brand protection and enhancement through premium, customized and industry-specific cleaning and sanitation programs that reduce labor costs while increasing sanitation levels, cleaning performance, employee and guest safety, and equipment life. Customer-centered programs are supported by employee training programs, ongoing research and development, dedicated field service, in-store digital data collection and hierarchical reporting, and food safety, regulatory and technical support.

## Strengths

Our highly trained, industry-focused sales and service teams have decades of cleaning, sanitation and food safety experience. We provide a real-world understanding of the unique needs of the industry – customizable products and services our customers can rely on wherever they operate across the globe.

## Quick-Service Restaurants

Our goal is to provide cleaner, safer and healthier environments for our customers and their guests. We strive to deliver food safety principles, drive operational efficiency, and conduct guest and employee safety programs while ensuring guest satisfaction. To accomplish this, we employ a dedicated and highly trained field service team – the industry’s largest – that’s equipped with the latest advancements in digital technology and a wide range of industry knowledge.



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We provide sustainable food safety solutions that meet high standards, protect customers and support an enjoyable customer experience.

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Our territory representatives work with customers to identify problems and develop action plans to deliver optimal solutions, customer-specific store audits and multilingual training programs to help them operate safely, efficiently and sustainably. They are backed by advanced cleaning and sanitizing products and programs that are easy to use and color-coded for quick identification.

We carefully assess and test our customers' environment to determine the right product mix. We then match them with the appropriate dispenser technology – from our innovated solids and highly concentrated liquids to single-dose packets.

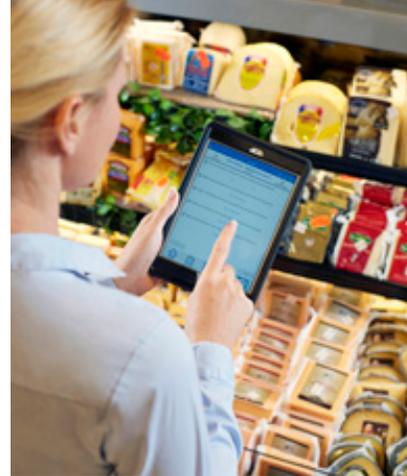
#### OUR PREMIUM CORE AND SPECIALTY OFFERINGS INCLUDE:

- Pot and pan detergents
- Degreasers
- Floor cleaners
- Restroom cleaners
- Multi-surface and glass cleaners
- Hand soaps and sanitizers
- Oven, grill and toaster cleaners
- Beverage equipment cleaners
- Food contact surface sanitizers
- EPA-registered disinfectants
- Freezer and cooler cleaners
- Multi-use stain removers
- Warewashing
- Water filtration
- Food rotation tools
- Digital food safety tools

## Food Retail and Supermarkets

Our Specialty business entered the food retail and supermarket industry in the mid-1990s, and has experienced strong growth with its market-specific products, customized solutions, service, training and audits – all focused on elevating customers' food safety practices and operational efficiency. Digital food safety and sanitation audits are tailored to fit customers' operational needs. Data is gathered on a store-by-store basis, and is accessible via secure online reports to help managers identify best practices and areas that need improvement.

To reinforce proper cleaning and sanitizing procedures, our Food Retail representatives conduct ongoing food safety training, as well as provide hygiene plans, product and equipment cleaning application guides, and language-free or multilingual instructional materials.



### WE HELP CUSTOMERS MINIMIZE FOOD SAFETY RISKS THROUGH TRAINING THAT COVERS:

- Time and temperature control
- Chemical handling procedures
- Proper cleaning methods
- Personal hygiene
- Food safety certification

To help protect customers' brands and their bottom lines, we developed a comprehensive Food Retail Services (FRS) program – designed to meet all of their food safety, cleaning and pest elimination needs. The program offers innovative systems for:

- Improved safety and performance
- Personalized service tailored to customers' needs
- In-depth employee training
- Customized online reporting to identify risks and opportunities
- Specialized food safety and compliance audits
- Operational sustainability to minimize customers' water and energy use and reduce waste

In addition to helping protect customers from foodborne illness, we offer innovative products and systems that simplify cleaning and sanitizing processes in these key areas:

- Hard surfaces
- Food contact/preparation areas
- Restrooms
- Hand care
- Warewashing
- Specialty needs
- Floor care
- Pest elimination
- Food safety
- Food rotation tools

## Superior Service

Specialty field associates are acutely aware of the role cleaning and sanitation play in helping to protect a customer's brand. With the largest network of QSR and food retail specialists, we bring in-depth knowledge of cleaning and sanitation expertise and a dedication to improving our customers' operational efficiency.

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We pair our digital technology with industry knowledge and field expertise to make food safety more precise and efficient.

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We help managers see their restaurant or store through the eyes of the customer and offer a comprehensive approach to cleaning, sanitation and food safety for their business, their employees and their brand.

Specialty supports its QSR customers through a two-part sales organization. First, its Corporate Accounts team develops tailored programs in partnership with customers' parent companies or chain headquarters. Once programs are approved, territory representatives conduct testing in specifically monitored stores, and then expand Ecolab's program to all restaurants across the customer's business. They offer continued support and training at the store level by managing sales and service, equipment maintenance and food safety standards.

In food retail, field associates work with supermarket food safety management to develop specific food safety programs that address the unique issues presented by freshly prepared foods – where maintaining proper cooking time and temperature is imperative.

Specialty's field associates are often hired as specialists from within the industries they serve. Building on the knowledge and experience they bring to Ecolab, they spend part of their first year in focused market training. This level of specialization sets them apart because they are cleaning and efficiency experts, problem solvers and trainers. They are also Food Safety certified and take part in advanced food safety training to achieve Certified Professional Food Safety status.

## A Specialty Customer Call

### QUICK-SERVICE RESTAURANT

Our Food Safety certified field associates conduct visits at QSR stores to complete in-depth training on food safety, cleaning and sanitation, customer-specific standard operating procedures and OSHA compliance. Using their judgment, discretion and expertise, they consult with store managers and employees to review and improve operational efficiencies, as well as identify opportunities to improve a restaurant's overall cleanliness.

Associates are available 24 hours a day, seven days a week to respond to customer needs whenever they may arise. The frequency of customer visits and level of service are based on customers' needs, which can include group instruction for management and employees on a regional level, as well as one-on-one, in-store training focused on cleaning and sanitation tasks.



During a customer visit, field associates may also lead hands-on demonstrations on proper procedures to clean floors, ovens, fryers, food prep surfaces, new décor surfaces, restrooms or exteriors. They may also demonstrate optimized dishmachine procedures – all key areas to ensure that restaurants are clean and safe for guests and employees. Field associates perform dispenser equipment calibration and check cleaning and product inventory. At the end of the visit, store data is summarized on their tablet and emailed to the restaurant manager and corporate owner. If required, a detailed corrective action plan is also made available. In addition, new Ecolab product or service solutions are recommended that may benefit the restaurant.

## Food Retail Service

Typically, field associates visit grocery stores and supermarkets monthly, delivering a comprehensive cleaning and food safety program designed to cover every part of a customer's operation. They conduct comprehensive food safety audits, where they evaluate a store's cleaning and sanitation practices including food temperatures, staff hygiene practices and overall cleaning standards, and perform inventory checks.

During this process, they grade food handling and storage procedures, maintain dispensing equipment and lead hands-on product demonstrations. They also partner with customers to develop in-depth processes for breaking down, cleaning and sanitizing equipment typically found in delis, bakeries and meat departments, such as meat slicers, rotisserie ovens and display cases.

For all customer calls, our Ecolab associates immediately show employees how to correct the problem if improvements are necessary. We also help implement procedural changes and use mobile tablet technology to capture and store customized information, such as Safety Data Sheets (SDS) and training materials for each customer. This web-based tool has the ability to track issues and corrective actions, as well as overall trends within a region, on a corporate level and across the industry.

Our field associates document all services performed, as well as findings and recommendations for new solutions on a summary report, which they review with store management at the end of the call.

# GLOBAL INSTITUTIONAL

## Healthcare

### MARKETS SERVED:

- Hospitals
- Surgery centers
- Clinics
- Medical device manufacturers





## Healthcare

Ecolab's Healthcare business offers a comprehensive array of infection prevention solutions targeted for healthcare facilities, with the goal of creating cleaner, safer and healthier environments for patients and healthcare providers. We focus on broad-based infection prevention solutions and standardizing optimal processes to sustain results over time.

### OUR PARTNERSHIP WITH OUR CUSTOMERS INVOLVES:

- Products and programs designed to improve cleaning, disinfection, hand hygiene and instrument reprocessing to reduce the risk of healthcare-associated infections (HAIs)
- Customized training and education programs to improve compliance with best practices and ensure safety for patients, healthcare workers and visitors
- Consultative programs customized for individual facilities to help improve processes, to deliver improved patient and process outcomes, as well as improved staff safety and satisfaction
- Actionable data in customized reports to drive continuous improvement

### WE PROVIDE:

- Hand and skin hygiene
- Surface disinfection
- Surgical instrument
- Sterile equipment and patient drapes
- Temperature management

## Strengths

Ecolab delivers superior, personal service and support through a team of highly trained sales and service experts who work with customers to solve business challenges. They are bolstered by a broad portfolio of integrated infection prevention solutions and programs to help increase efficiency, improve compliance and reduce the risk of HAIs.

## Healthcare Facilities and Infections

Acute care hospitals have long been dealing with the issues related to HAIs. In recent years, there has been a greater emphasis on reducing these types of infections due to advances in medicine and improved tracking technologies. HAIs are caused by a wide variety of pathogens (bacteria, viruses and other microorganisms) contracted during the course of receiving medical care. HAIs cause significant illness and can be deadly.

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Our program helps transform the way hospitals perform hand hygiene, helping drive and sustain better patient outcomes.

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### HEALTHCARE-ASSOCIATED INFECTIONS STATISTICS

In the U.S., approximately **722,000 patients** are infected annually, with approximately **75,000 deaths**.

**More people die from HAIs** than from auto accidents and homicides combined.

The annual cost to U.S. hospitals is between **\$35 billion and \$45 billion annually**.

## Hand Hygiene

HAIs are serious and life-threatening challenges and hand hygiene is the best way to prevent the spread of infections. Studies show that hand hygiene compliance in hospitals is as low as 40 percent. Hospitals are now being cited if a healthcare worker fails to perform appropriate hand hygiene. We know that improving hand hygiene compliance requires a multi-modal approach as well as engagement from a variety of stakeholders. That's why we take an integrated approach that includes working with hospital staff and management on planning, installation, training, awareness and monitoring to promote hand hygiene compliance.

Ecolab's Hand Hygiene program offers best-in-class products, dispensers, compliance monitoring and in-person training. Our program helps transform the way hospitals perform hand hygiene, helping drive and sustain better patient outcomes. Products include hand sanitizers, antimicrobial and general-use hand soaps, surgical scrubs and lotions. These products are specifically formulated to meet the needs of our healthcare customers and are critical to the success of their hand hygiene compliance. Our dispensers are designed to be versatile and flexible, and come in a variety of sizes and colors to promote hand hygiene compliance whenever and wherever hospitals need it most.

The program also includes our Hand Hygiene Compliance Monitoring system which transforms the way healthcare facilities monitor and report hand hygiene compliance. Through RFID technology, the system monitors hand hygiene occurrences by individual, department or hospital, providing the most holistic view of compliance across the entire organization. It uniquely delivers proprietary electronic hand hygiene monitoring throughout the "patient zone" and "moments" of patient care, rather than by patient rooms. This models the way that healthcare staff work and exponentially improves safe patient interactions. A recent study analyzing results from two hospitals using Ecolab's system documented that they were able to sustain hand hygiene compliance at >85 percent compliance, and acknowledged that the improved compliance likely led to a reduction in HAIs.

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Studies have shown that only 30 percent of objects are cleaned in patient areas.

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Our sales and service teams elevate the hospital staff's knowledge and expertise with a variety of interventions including visual reminders, point-of-use dispensers and in-person training sessions. They are trained according to procedures developed by the World Health Organization to help customers achieve compliance in line with the latest guidelines.

## Surface Cleaning and Disinfection

A comprehensive infection prevention program also focuses on reducing the impact of environmental hygiene factors that contribute to the transmission of pathogens causing infections. Studies have shown that only 30 percent of objects are cleaned in patient areas. Using a programmatic approach of monitoring, training and technology, cleaning can be improved, decreasing environmental contamination that can lead to HAIs. We take a holistic approach to environmental hygiene and work with facilities to implement a comprehensive program to optimize cleaning outcomes.

Our patient room program is designed to help customers improve environmental hygiene and efficiency, as well as reduce the risk of pathogen transmission. The program includes standardized processes, training, monitoring, reporting and state-of-the-art chemistry. Objective monitoring is provided by a patented fluorescent marking gel for monitoring surface cleanliness and a mobile app for easy tracking and real-time reporting of cleaning results. It was developed in response to the well-documented need to improve cleaning in healthcare settings. The patient room program standardizes practices and improves efficiency – one study demonstrated a nine-minute reduction in room turnover time.

While improved cleaning and reduced HAIs are critical, they shouldn't be accomplished at the expense of damaging critical equipment and valuable assets. Some disinfectant chemistries or systems damage furniture, drapes and other surfaces. *Clostridium difficile*, the most common HAI, can live up to five months on environmental surfaces, and is transmitted from patient to patient via the hands of healthcare workers. *C. difficile* spores cannot be killed by conventional hospital-grade disinfectants – a sporicidal disinfectant must be used. Ecolab's EPA-registered sporicidal daily disinfectant cleaner is highly effective at killing a broad range of important pathogens, including *C. difficile* spores, while providing good material compatibility.



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The program reduces cleaning time by as much as eight minutes, and has shown a 3X improvement in cleanings between cases.

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## Surgical Instrument Reprocessing

The Central Sterile Department (CSD) program plays an integral part in the successful outcomes of hospital surgical procedures. Increasing the efficiency of the CSD assures a smooth-running surgery department by ensuring that all necessary instruments are properly cleaned and disinfected.

Our Central Sterile program is designed to help ensure compliance, better cleaning results and improved operational efficiency. The program includes products that feature our patented solids technology, as well as proprietary active ingredients to improve safety and deliver better results. We provide audits to ensure compliance with both AAMI standards and quality assurance practices. We also provide personally delivered training based on industry guidelines.

## OR Environmental Hygiene Program

Our Operating Room (OR) Environmental Hygiene program provides healthcare facilities with a proven approach to improve the cleanliness of an OR and improve cleaning time. The program builds upon Ecolab's comprehensive Environmental Hygiene program for patient rooms, bringing its standardized processes, training, monitoring and automated reporting to the OR. It includes fluorescent marking gel for monitoring surface cleanliness and a mobile app for easy tracking and real-time reporting of environmental hygiene results.

In addition to optimizing operating room efficiency by reducing cleaning time by as much as eight minutes, the program has shown a 3X improvement in cleaning between cases.

The program includes a customized system of single-use products that support infection prevention and efficient room turnover, such as OR table linens, single-use microfiber mops and wipes. The system provides easy access to the supplies needed to clean an OR suite and quickly set it up for the next procedure.

As part of this system, single-use, second-generation OR table linens feature a three-layer material comprising an impervious bottom layer, a super-absorbent middle layer and a top patient comfort layer that helps keep patients' skin dry while reducing the risk of cross-contamination between surgical procedures.



## Temperature Management Solutions

Research shows that even mild, inadvertent hypothermia can negatively affect patient outcomes. Adverse effects include increased blood loss, delayed wound healing, increased risk of surgical site infection, potential for adverse cardiac outcomes and lengthened hospital stays and recovery time. Ecolab's Fluid Warming systems allow the OR staff to properly control and document fluid temperatures and help reduce the risk of patient injury due to accidental exposure to hot or cold fluids. The Association for Operating Room Nurses (AORN) has stated that surgical staff should know the temperature of irrigation fluids at the time of instillation.

The Ecolab Fluid Warming systems provide immediate access to warm irrigation fluid at a visible and controlled temperature to increase patient safety and reduce the risk of hypothermia. These systems include a portable heating basin and specially designed fluid-warming drapes. They are easy to operate and improve efficiency, minimizing the need for nurses to leave the operating room to retrieve warm fluid bottles. The systems comply with AORN standards for temperature control and verification.

Some cardiac, transplant and kidney procedures benefit from therapeutic cooling of tissues and organs. Ecolab's patented surgical slush systems deliver velvet-soft surgical slush, which improves patient safety and saves valuable nursing time. Our system automatically stirs the solution while cooling, and eliminates concerns associated with conventional slush, which may have sharp edges that can cause trauma to delicate tissue. The systems are backed by the same personal service and support customers have come to expect from Ecolab.

## Surgical Drapes

The operating room is the nerve center of a hospital. Our customized procedure and device-specific drapes help protect the sterile field while simultaneously protecting valuable equipment. Our wide range of unique draping solutions is designed in collaboration with equipment manufacturers and OR staff to ensure we have the operating room covered. This portfolio ranges from Microscope drapes to C-Arm drapes developed in line with the new trends around hybrid operating rooms. Unique ultrasound covers improve image quality while reducing the risk of cross contamination. And drapes for robotic surgery reduce draping complexity and support the positive benefits of this minimally invasive surgical technique.



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We offer a depth and breadth of solutions that is unmatched in the industry – leveraging unique and differentiated solutions.

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## Superior Service

A unique differentiation for Healthcare is its commitment to providing superior, personal service and support delivered by specialists who know the customer's business. We offer a depth and breadth of solutions that is unmatched in the industry – leveraging unique and differentiated solutions. We become an extension of our customers' workforce, and help ensure that protocols and best practices are followed.

All of our sales and service associates are focused on delivering personalized service to customers – their broad knowledge and expertise exceeds the competition. They understand the key issues their customers face and partner with them to identify customized solutions – because they take the time to develop strong relationships with the customers across all levels of the healthcare systems they serve.

Each specialist is trained on our products and programs, and is an expert in healthcare environmental infection prevention programs. Specialists also provide ongoing education, training and audits to ensure consistent delivery and outcomes.

Healthcare's Corporate Accounts team is focused on building relationships with health systems to ensure service excellence. This group is uniquely trained to work with the top management of hospitals and health systems, and is focused on addressing issues related to patient safety and operational efficiency.

## A Healthcare Customer Call

Our Account Executives (AEs) build a partnership with their customers. They meet with customers regularly to share new industry and product information, review data from performance monitoring and provide best practice training. All efforts are aimed at decreasing HAIs and improving operational efficiency.

The Infection Prevention AE contacts many areas within a hospital including infection prevention, sterile processing, environmental services, compounding pharmacy and materials management departments. A Surgical AE, meanwhile, works with the OR team, as well as cardiology, the cardiac cath lab and interventional radiology teams to provide a wide array of surgical products and services.



A typical call for an Infection Prevention AE starts by meeting with the Director of Infection Prevention – often a registered nurse or microbiologist – who manages facility-wide infection prevention efforts. They discuss the specific infection prevention needs of the hospital and devise appropriate solutions. In addition, the AE acts as an important resource, sharing the latest infection prevention practices, information and new solutions.

The AE works with staff throughout the hospital to conduct training on products, processes and best practices. He/she also works on new product evaluations for the hospital. When large dispenser installations are required for product conversions, the AE will manage the installation and bring in a team of installers to work with the hospital.

The Infection Prevention AE will call on the Director of Environmental Services, who manages facility-wide environmental hygiene. They discuss needs and challenges related to environmental cleaning and disinfection, and devise solutions to address those needs.

The Infection Prevention AE also calls upon the Director of the CSD to verify the cleanliness of surgical instruments associated with manual and/or automated decontamination processes. The AE may perform compliance audits according to AAMI standards and best practices, and conduct a water analysis to determine cleaning chemistry product and dilution needs. He or she may also conduct training and service dispensing equipment.

The Surgical AE works with the OR director and his or her team to understand pain points related to effective and efficient room turnover, patient and equipment draping, and patient warming. They serve as a resource for operating room staff, answer questions and conduct hands-on employee training.

At the end of the visit, the Ecolab AE discusses recommendations and possible program or product solutions, identifies next steps and schedules any needed follow up. Follow-up may include performing practice observation, audits, training or additional program/product discussions.

# GLOBAL ENERGY

**MARKETS SERVED:**

- Upstream
- Midstream
- Downstream





## Global Energy

Ecolab's Energy segment provides advanced on-site, technology-driven chemistry solutions for the global petroleum, petrochemical and natural gas industries. In addition to recovery, production and process enhancements, we also deliver a full range of water treatment offerings to refineries and petrochemical plants.

Our upstream process applications improve oil and gas recovery and production, extend production equipment life and decrease operating costs through products and services including scale, paraffin and corrosion control, oil and water separation, and gas hydrate management.

Our Downstream process applications increase refinery and petrochemical plant efficiency and the useful life of customer assets, while improving refined and petrochemical product quality and yields, by assisting the refiner's ability to use the more difficult to process lower cost crudes.

### WE PROVIDE:

- Corrosion and scale control
- Asphaltene, hydrate and paraffin control
- Hydrogen sulfide scavenging
- Microbial control
- Drilling, stimulation and cementing solutions
- Flow assurance solutions
- Fuel quality solutions
- Phase separation
- Water management

### OUR EXPERTISE:

- Well completion and stimulation
- Shale oil and gas drilling and production
- Asset integrity
- Microbial control
- Scale control
- Flow assurance
- Phase separation
- Offshore, deepwater and ultra-deepwater
- Oil sands
- Production maximization
- Enhanced oil recovery
- Water management
- Fuel additives



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Our team of researchers, industry technical consultants and field engineers often work with our customers' R&D teams to develop and deliver tailored solutions, leveraging this integrated approach to solve complex issues.

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## Strengths

Our global sales and service and research and technical service team provide expert on-site service, innovative technology and engineering excellence to our customers, helping safely solve technically challenging and dynamic problems.

Our team of researchers, industry technical consultants and field engineers often work with our customers' R&D teams to develop and deliver tailored solutions, leveraging this integrated approach to solve complex issues. Our globally integrated team is directly aligned with the operations of our key petroleum customers, allowing us to cascade best practices quickly to projects to ensure that our customers benefit from consistently reproducible results worldwide. Our agility in deploying manufacturing and blending resources in remote geographies has positioned us to support accelerated growth in emerging markets.

We place the highest priority on the health and safety of people and the protection of the environment, and work to exceed the standards of federal, state and local environmental laws. Safety is embedded into our company culture. We're always working to refine safety processes and programs, identify opportunities for improvement, and give employees the information and resources they need to make positive changes in our safety culture and performance.

## Well Completion and Stimulation

We offer essential expertise in the development, evaluation and simulation of chemical programs for the drilling and completion industry. With a thorough understanding of our customers' needs, we have years of proven industry experience and results. Our diverse range of additives are specially designed to deliver predictability and perform under the most severe exploration and development environments and challenging conditions.

Our strength in water treatment has allowed us to focus on the development of new methods to reuse and treat flowback water systems. Ecolab's new additives allow customers to reduce fresh water usage in fracturing operations. Reusing this water also helps reduce water consumption and conserve energy in drilling operations.



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Our industry-leading technologies ensure the flow of oil and gas in production lines. We provide custom chemistry solutions for all types of challenges encountered in the production of crude oils and condensates.

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## Asset Integrity

As a global leader in asset integrity management and services, we have decades of world-class experience. Our comprehensive innovations – blended with our knowledge of traditional technologies – allow us to offer site-specific corrosion mitigation strategies, scavenging of acid gasses, biocide applications and monitoring tactics that maximize oil and gas production, increase refinery and petrochemical uptime, and significantly decrease the total cost of operation due to failures for operators' assets. New digital solutions provide customers with dashboards featuring operational and field data that help them monitor chemical usage and predictive analytics to help them make informed decisions that can prevent asset failures.

## Flow Assurance

Our industry-leading technologies ensure the flow of oil and gas in production lines. We provide custom chemistry solutions for all types of challenges encountered in the production of crude oils and condensates. Whether the need involves deposit control, hydrate inhibition or a plan for a pipeline cold restart, our research team uses their experience, expertise and proven processes to develop scientific solutions. Flow Assurance includes products for hydrate, scale, paraffin and asphaltene inhibition.

## Production Maximization

Supported by our on-site presence and expertise, we offer a full range of solutions to maximize throughput in oil and gas production systems.

### OUR EXPERTISE INCLUDES:

- **EMULSION MANAGEMENT**

Any petroleum production facility's goal is the isolation of dry saleable oil and gas. Produced emulsions not only decrease process efficiency, but also reduce the value of upstream fluids if not dealt with effectively. We offer products and expertise to assist in the resolution of the full range of oilfield emulsions, including conventional, unconventional, enhanced oil recovery (EOR), steam-assisted gravity drainage (SAGD) emulsions and oil sands froth.



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This combined approach to best-in-class products and on-site expertise works to not only resolve emulsions, but to optimize the separations program to achieve on-spec oil and gas, while also improving fluid dynamics. Technologies used in this environment include emulsion breakers, reverse emulsion breakers and water clarifiers.

- **FOAM CONTROL**

Excessive foam negatively impacts equipment operations, particularly for pumps and demisters, and affects the efficiency of the separation process and quality of the produced oil and gas. Antifoamer and defoamer solutions mitigate these risks. However, in some liquid-heavy systems, a controlled-foaming environment helps improve the loading of the fluids inside the production systems and facilitates increased production. Our integrated approach alleviates these liquid-loading issues by providing expertise, equipment and products as part of a comprehensive foamer product line.

- **VISCOSITY AND DRAG REDUCTION**

Upstream and midstream pipeline operators seek to maximize oil flow through existing pipeline infrastructure to transport crude oil to processing facilities. Turbulent flow in these pipelines creates internal fluid drag and friction against pipeline walls, restricting flow capacity. Drag reducers eliminate flow turbulence and create a more efficient laminar flow, allowing for higher fluid throughput through the pipeline infrastructure. We provide the oil and gas industry with a completely integrated offering from modeling to chemistries and performance measurement of drag-reduction solutions. Technologies to support these solutions include drag-reducing agents (DRA), biphasic viscosity reducers (BVR) and emulsion viscosity reducers (EVR).

- **ENHANCED OIL RECOVERY (EOR)**

We design, develop and provide chemically enhanced oil recovery technologies that increase the effectiveness of oil and gas field waterflooding and improve recovery. Choosing the right solutions for individual reservoirs and applying them at the right time is extremely important in maximizing oil recovery. Our project engineers and field technicians have extensive experience in improved oil recovery technologies gained from working with diverse reservoirs worldwide. This experience is supported by reservoir engineering capabilities, reservoir modeling and EOR design, in-house laboratory services and knowledgeable on-site field crews. With more than 30 years of field experience,



our differentiator is our ability to offer exploration and production companies a complete EOR solutions package on a global basis. We do this through integration of critical enhanced oil recovery processes by leveraging our EOR polymer product offerings and reservoir expertise, Nalco Water's water treatment and process expertise, and our extensive reach in global upstream markets.

## Umbilical Certified Products

Deepwater and ultra-deepwater operations require a high level of expertise and commitment. Subsea applications encounter severe temperature and pressure environments, creating challenges that include increased hydrocarbon viscosity, formulation stability, chemical cleanliness to ensure free-flowing product, and chemical compatibility with construction materials. These umbilical-applied chemicals must be effective at low concentrations to inhibit corrosion, prevent scale, hydrate, asphaltene and/or paraffin deposits, and mitigate against emulsion-related viscosity problems. They must also be stable at near-freezing ocean temperatures and downhole temperatures of 250°F or greater. Our chemistries have been specifically developed to meet these demanding requirements for umbilical applications all over the world.

## Fuel Additives

Refiners around the world face the challenge of delivering fuels to the global marketplace, on-spec and on-time, while protecting their profit margins. Energy has built a reputation as a world-class provider of fuel additive products and services that continuously and consistently produce on-spec fuels for a variety of feedstocks. We provide a full line of fuel additives for H<sub>2</sub>S scavenging, corrosion inhibition, oxidation stability improvement, cold flow improvement and fuel performance improvers.

## Petrochemical Plant Applications

Our industry-leading experience gives us the ability to successfully identify, diagnose and treat petrochemical process and water-related problems across a broad spectrum of hydrocarbons, geographies and environmental conditions. Our innovative programs are tailored to suit each plant's individual climate, logistics and requirements. When manufacturing key petrochemical blocks – whether ethylene, butadiene, styrene, isoprene or vinyl acetate – process limitations such as fouling, foaming or corrosion can impact unit reliability. The competency and recognized industry experience of our technical team and best-in-class chemical programs give us unique qualifications to successfully identify, diagnose and remove these limitations.



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We provide best-in-class chemical programs such as our high-temperature corrosion inhibitor products and overhead condensing systems, coupled with advanced automation systems to assess and mitigate the processing issues of dynamic desalting, corrosion, fouling and water treatment operations.

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## Refinery Applications

As refiners target improved operating margins, one of the more likely methods to accomplish this is through the processing of opportunity crudes, sometimes called challenging crudes. These are lower-quality crudes than easier-to-process Middle East or West Texas crudes, and may have higher sulfur content, naphthenic acids, lower viscosity, or higher solids and metals content. Opportunity crudes may command a discounted price due to known processing issues, or may be new crudes with unknown or poorly understood properties and processing challenges.

We provide best-in-class chemical programs such as our high-temperature corrosion inhibitor products and overhead condensing systems, coupled with advanced automation systems to assess and mitigate the processing issues of dynamic desalting, corrosion, fouling and water treatment operations. These systems enable our customers to buy cheaper-crude sources, and still yield high-quality products with much higher net margins, while ensuring asset integrity and safety.

## Sustainable Solutions

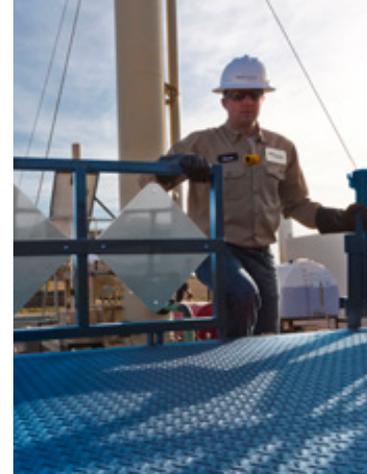
As the energy industry strives to respond to growing global demand, it's also seeking more sustainable ways to do so. Built upon a system of people, processes and technology, our eROI™ program provides a uniform approach to ensure the value we deliver is aligned with the needs and available natural resources of each customer we serve. Our customers demand environmentally safe process solutions that provide an appropriate return on investment. We deliver this value through reduced operating costs, maximized production and throughput, asset protection and avoidance of regulatory non-compliance.

Hydrate formation in oil and gas operations can reduce or block flow, causing multi-million dollar impacts. Our hydrate chemical management programs offer dramatic advantages over traditional treatments with lower operating costs, increased safety and extended well life. They also substantially reduce chemical use and storage costs.

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Built upon a system of people, processes and technology, our eROI™ program provides a uniform approach to ensure the value we deliver is aligned with the needs and available natural resources of each customer we serve.

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In oil production, water is an inevitable by-product. The emulsions that tie together the oil and water produced from many wells must be broken to maximize production and clean the water produced with the oil. Our technology effectively breaks these emulsions using chemistries that meet or exceed the environmental regulations our customers must follow.

Our eVerified process is an environmental and health risk profile system that “scores” products in development to determine how they align with customer and regulatory products. The resulting scorecard enables research and marketing teams to evaluate products early in development and better identify and minimize potential human and environmental risk.

## Water Management in Oil and Gas Exploration and Production Systems

Water is intrinsically incorporated into all customer exploration and production systems. From drilling and completion fluids to produced water treatment, recycle and disposal systems, as well as onshore unconventional development to deepwater offshore production, operators spend a considerable amount of time, effort and resources ensuring that water quality meets specifications to optimize processes and meet or exceed environmental requirements. With every barrel of oil produced, an average of seven barrels of water is also produced, which must be cleaned and processed before being recycled or discharged.

Energy, drawing from over 80 years of water expertise and partnership with Ecolab's Water business, has a broad range of chemistries and equipment solutions to support customers' efforts to economically address water challenges. As the industry advances to extract new sources of oil and gas, we continue to develop innovative programs and services to ensure operators meet and exceed their current and future water management needs.

## Superior Service

We create value for our customers and our company through differentiated services and technologies. Energy provides integrated solutions to solve complex issues customers routinely face and actively works in partnership with our customers to solve problems, often collaborating with customers on the engineering and design stage of their assets to integrate chemical solutions into their operations to increase efficiency. We participate in the implementation of these systems and programs to ensure that the solutions we develop deliver maximum value. Our global service capabilities enable customers to meet their challenges and achieve their business objectives.

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By taking an engineering approach, we constantly evaluate the mechanical, operational and chemical aspects of a customer's system.

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We provide essential expertise to collect and analyze an extraordinary range of data from one or more customer facilities and multiple sources within those facilities. Our Refined Knowledge platform provides pre-built mechanisms to easily leverage data from our systems and others to collect qualitative information so that project teams always have high-quality, real-time data to drive margin improvement. Refined Knowledge provides integrated data visibility into water and process systems in one global view. This predictive capability helps customers avoid upsets before they occur, identifies improvement opportunities through performance benchmarking, and optimizes process systems to save water and energy, extend asset life, and improve end product quality.

In production, our data solutions provide customers with increased visibility into their chemical operations, allowing them to respond quicker to operational failures, reduce inefficiency in injection rates and gain real-time insight into their inventory levels in the field.

We have the essential expertise and commitment to innovation to help customers overcome knowledge gaps as they expand projects globally to drive more efficient operations. We have a global network of people, processes and systems unlike any of our competitors to help customers achieve a reduction in their total cost of operation as well as higher operating margins.

## Energy Customer Call

Unlike many of Ecolab's sales representatives who manage multiple accounts, our Energy sales engineers often have an office at customer sites, whether a refinery, petrochemical plant or deepwater platform. At many of our larger customer sites, we have a team of several engineers and technicians on site every day as an extension of the customer's staff. We take an integrated approach to selling and service, where everyone on the team fills a specific role. Safety is the first priority in these hazardous environments; a thorough knowledge of the risks involved and steps to mitigate them are critical.

A typical day in a refinery could include an Energy service technician collecting samples and running chemical tests to determine if systems are within the proper operating limits, while another Energy engineer attends a morning plant operations meeting to assess the potential impact of pending incoming crude changes. Other members of the team may be working on profit improvement projects or networking to understand how the use of a new crude may have impacted systems at another refinery.



By taking an engineering approach, we constantly evaluate the mechanical, operational and chemical aspects of a customer's system. An overhead line may need a mechanical solution such as a booster pump due to low velocity where a chemical solution will not make a difference. A refinery may not have efficient control of its operating cycles, leading to variability and scaling or fouling of units. We work to deploy the proper automation and operating strategy to attain optimal results.

We conduct business reviews that include systematic status reports of profit improvement and total cost of operation reduction projects that quantify the gain to the client. Delivering this value and merchandising our work to the customer is important to maintaining customers, and this is how we effectively compete against price-based competitors.

An upstream Energy engineer may spend his or her day networking with a variety of customer engineers and third-party companies on a major offshore development project to ensure we're positioning our innovative technologies to help deliver project targets on time. The engineer may attend the field/platform morning operation meeting to coordinate activities with customer operations. During these meetings, the team reviews prior activities and prioritizes continuing projects. This includes working to ensure that chemical additives provide proper flow viscosity, hydrate formation prevention, scale and corrosion prevention, and other treatments to maximize production, given the cleaning chemistry of the reservoir production. Their day may include a helicopter commute to an offshore platform or even a plane flight where they rotate into a remote geography for weeks at a time to drive system assurance and optimize asset productivity.

During the year, these engineers may meet with customer R&D and engineering teams to further focus their continuous improvement efforts. Some upstream Energy engineers work on site with the customer's project team. In addition, they work side by side with the customer to design chemical programs for future projects. This can involve coordinating research efforts, optimization studies, and development of new products and application technologies based on specific project requirements. This engineer will work with the design team on the sizing and placement of chemical application skids and monitoring points.

# OTHER

## Pest Elimination

### MARKETS SERVED:

- Commercial buildings
- Food processing
- Food retail
- Food service
- Food storage
- Healthcare
- Hospitality
- Manufacturing



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By combining expertly trained service specialists with the latest technologies, we are the leading provider of premium commercial pest elimination service.

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## Pest Elimination

Protecting our customers' reputation is critical to success. Pests seen in or traced back to a facility can cause severe damage to a customer's reputation, food safety and ability to pass an audit. Ecolab Pest Elimination partners with customers to eliminate pests, not just control them. We provide the insights needed to identify pest issues before they happen. With Ecolab, our customers can be confident they're protected from pest-related risk from the outside-in.

### WE PROVIDE:

- On-site consultation and staff educational tools
- Proactive, integrated programs to prevent pest issues
- Superior, discreet service using proven, proprietary protocols developed by our Research, Development & Engineering (RD&E) team with reduced total environmental impact
- 24/7/365 customer service and technical support

Our proprietary protocols, science-based solutions and dedicated service specialists ensure complete pest elimination within our customers' operations, which helps provide brand protection and reduced food safety risk.

Our Pest Elimination associates and industry-leading training drives consistent service delivery, reporting and staff training throughout customers' operations.

We provide visibility at a corporate and unit level to structural and sanitation findings that promote pest activity while providing training materials to help prevent pests.

By combining expertly trained service specialists with the latest technologies, we are the leading provider of premium commercial pest elimination services. Our service offerings include comprehensive programs that target the most common pests our customers face, and include regular visits and on-site education to help customers implement preventative measures, tackle persistent problems and meet audit standards.

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We partner with customers to proactively eliminate pests before they've had a chance to damage their brands, businesses or bottom lines.

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## The Pest Elimination Difference

Ecolab Pest Elimination is significantly different from just pest control. It's provided through science-based proprietary service protocols, advanced technologies, the industry's best-trained sales and service team, and a dedication to service excellence with a focus on quality and total customer satisfaction. Our integral service complements our customers' diverse needs. Many pest management companies treat facilities for pests only after they've been seen by customers or inspectors, or have caused inventory or facility damage. We partner with customers to proactively eliminate pests before they've had a chance to damage their brands, businesses or bottom lines.

Our experienced and highly skilled service specialists are not only equipped with industry-specific training, but also understand the hospitality/lodging, foodservice, food processing and industrial businesses, as well as corresponding regulatory requirements. Our comprehensive outside-in approach is specifically designed to protect against the most common pests our customers face.

## Sustainable Solutions

As an industry leader, we're committed to advancing pest elimination standards and continually improving our products, programs and services to ensure high-quality pest elimination with minimal environmental impact. Our in-house research and development team develops and tests product and service improvements to further reduce total environmental impact and help customers achieve sustainability goals.

## Innovation and Support

Innovative and effective technologies add even greater value and dimension to our service. Our RD&E associates have advanced degrees in entomology, chemistry and microbiology. They develop, identify and evaluate new solutions, focusing on continuous scientific research, voice of the customer and performance testing. These solutions reduce risk and lower environmental impact while improving efficacy and efficiency.

The RD&E team also works closely with suppliers that provide insecticides and pesticides. Their extensive testing and research, as well as vast knowledge of pest biology and behavioral habits, produce reliable protocols that are supported by science and are unique to specific pest situations.



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Ecolab equips its service specialists with the knowledge, products and tools to provide guaranteed results.

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## Superior Service

Our highly trained service specialists identify and communicate with our customers about potential pest risks so that structural, operational and sanitation problems can be corrected before significant pest issues occur. They also educate and train customers' staff, teaching them how to implement and maintain pest prevention practices, and provide on-site consultation to show them how to identify the early signs of pest activity to prevent future infestations.

Trusted experts regularly inspect, monitor and document pest-related issues, ensuring critical information is relayed to the right people and is detailed in service reports. Through this communication, our customers are informed of any sanitation or structural issue that could contribute to pest activity.

Ecolab equips its service specialists with the knowledge, products and tools to provide guaranteed results. Our service specialists receive comprehensive training, including hands-on practical instruction in the field. Licensed in the geography in which they operate, they also receive continuing education from our technical experts who provide additional classroom training and field sales support exercises.

## Proprietary Communication and Reporting Tools

We turn data and observations collected at the time of service into knowledge for our customers to allow visibility and insight into how to ensure a pest-free environment by providing:

- Actionable and on-site data-driven service reporting
- Dependable trend analysis data
- Audit-ready documentation
- On-site consultation by highly trained service specialists



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The key to Ecolab's service is guaranteed pest elimination, not merely control. Our service specialists receive extensive training in pest biology and behavior, as well as Ecolab's proprietary protocols.

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## A Pest Elimination Service Call

The key to Ecolab's service is guaranteed pest elimination, not merely control. Our service specialists receive extensive training in pest biology and behavior, as well as Ecolab's proprietary protocols. They are equipped with industry-leading equipment and products to identify, diagnose and take action on the proper approach required to achieve pest elimination. As a result, our service specialists know where the likely and unlikely pest harborages are located, and work proactively to deliver a pest-free environment, as opposed to simply offering reactive solutions after problems and damage have started.

When we first contract with a customer, the service specialist performs an intense initial service designed to eliminate any existing infestations. This service is performed both inside and outside the facility, depending on the signs and risks of pest activity. First, a thorough inspection is completed. The facility is then serviced based on the inspection findings, utilizing Ecolab's proprietary protocols, products and equipment. This is a very detailed process, focusing on all possible harborage and breeding sites within the facility. During this initial service, the service specialist will install Ecolab equipment to help maintain a pest-free environment. For example, a proactive rodent program is installed both inside and out, even if there is no evidence of activity.

After the initial service, a service specialist visits an account on a regular basis (typically monthly, depending on business needs) and is fully equipped to take on any issue. These are supplemented with additional service calls as needed.

A service specialist will begin a service call by meeting with key on-site management to discuss any concerns or issues since the last visit. Depending on the customer's needs, the service specialist will inspect and monitor for pests, document pest-related issues, make sanitation and structural recommendations, and conduct other pest elimination services such as mechanical trapping or biological and targeted product applications, all of which are standard in our proprietary protocols.

Ecolab service specialists may provide hands-on staff education and training on implementation and maintenance of pest prevention practices. Additionally, we educate our customers on how to identify early signs of pest activity to help prevent future infestations.



During service visits, service specialists may also offer additional services such as:

- Repairing gaps and voids to prevent pest entry
- Fixing small holes in walls to eliminate nesting areas and points of entry
- Installing commercial-grade sweeps at entry points to keep pests out

Throughout the visit, service specialists clearly outline all observations, recommendations and actions taken on a service report.

At the end of a service visit, the service specialist provides a service report to the customer, indicating all services provided – including any products used, findings, sanitation and structural recommendations, as well as other factors that could contribute to a pest infestation. All service reports are also available electronically. Before leaving, the service specialist makes sure all staff concerns have been addressed. By eliminating the pests that can damage a customer's reputation, we help ensure our customers have brand protection, safe food and are audit-ready.

# RESEARCH, DEVELOPMENT & ENGINEERING





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We leverage research facilities around the world to develop break-through innovation to solve customer problems.

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## Research, Development & Engineering

Innovation is the cornerstone of Ecolab's success, made possible by significant and ongoing investments in our Research, Development & Engineering (RD&E) function. We are strongly committed to developing proprietary products, process knowledge, equipment and systems. This work is the basis for our reputation as a trusted total solutions provider for customers around the world.

Our commitment to innovation fuels our long-term growth, yielding a broader array of products, systems and enhanced services that deliver a strong return on investment for Ecolab and our shareholders.

To fulfill this commitment, we have a global RD&E and technical support team comprising experts and technical specialists in the fields of chemistry, metallurgy, microbiology, entomology and food science, as well as chemical, packaging, mechanical, digital/software, and electrical and reservoir engineering. We leverage research facilities around the world to support new product development, testing, deployment, and technical support of our products.

## Innovation and Support

We operate in global markets with customers that cross regional boundaries, so we focus on the development of technology platforms that can be used around the world to support our customers' growth and differentiate us from our competition in every market we serve.

Ecolab has a long history of breakthrough innovation, providing superior results for our customers. For example, Ecolab pioneered solids and dispensing technologies in warewashing, and expanded this platform to a variety of other markets and applications. Our solids technology substantially reduces packaging, storage, handling, and water and energy use – while providing superior product performance. We also invented “new to the world” molecules that have been leveraged into various antimicrobial products across our divisions and regions. Our commercial digital solutions and remote monitoring capabilities, including our 3D TRASAR™ platform, have also been leveraged across multiple divisions and regions.



These technology platforms and other innovations have led to thousands of active patents and a strong pipeline of pending patent applications.

Our industry-leading innovation is anchored by our expertise in antimicrobials, hygiene, clean-in-place, solids chemistry, polymers, and scale deposit and corrosion control. Additionally, our dispensing and monitoring solutions provide customers with digital, data-enabled systems to optimize overall cleaning quality, operational efficiency, water use and/or energy use. These technology platforms and other innovations have led to thousands of active patents and a strong pipeline of pending patent applications.

## Disciplined Product Development Process

We have a structured, phase-gate approach to managing our innovation portfolio. We utilize our broad capabilities to combine chemistry, microbiology, packaging, dispensing, engineering, informatics, sensors, and digital process monitoring and control in a holistic approach to deliver the optimal, total solution and maximized return on investment for customers.

Our key objective is to first understand our customers' needs. We take an innovative systems approach to solving problems, leveraging technology and competencies on a global basis and following through with superior technical support and training. Effective new product and service development begins with a broad customer understanding, and our sales and service associates have expert knowledge of what's important to customers, including:

- Food safety
- Brand protection
- Operational and employee safety and efficiencies
- Employee training
- Public health
- Energy and water optimization
- Customer satisfaction
- Consistent global practices
- Asset integrity
- Increase process yield and reduction in total cost of operation

We work closely with our customers to understand their challenges and priorities firsthand. Our applications scientists work with customers at their locations observing operations and problems. We then enter an ideation phase, where we brainstorm potential solutions before a project is started. This process can involve on-site performance assessments, market research, customer service feedback, focus groups, and review of warranty and service repair records, as well as discussions with customers. The outcome may be a technical support project pursued in collaboration with our customers or a new research initiative. Our technical solutions are then developed by our global team of experts, and can include open innovation partnerships with external sources.

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Our record of producing breakthrough innovations spans more than eight decades. We are committed to carrying on this tradition and developing future generations of innovative customer solutions.

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Ultimately, a variety of tools are used to determine the feasibility of various options. This involves consultation with our strategic suppliers to identify the best materials available in the market to be incorporated into our solutions. Throughout this early phase of the process, and as we move into the latter stages, we work to ensure the highest performance and efficacy while minimizing the environmental footprint throughout the product life cycle.

Not only do all these experiences effectively serve our customers' needs, they also enhance our knowledge base on a wide range of application technologies and begin the cycle of identifying new opportunities to enhance our customer operations.

## Effective Solutions to Today's Challenges

Ecolab products and systems are known throughout the industry for providing effective, clean, safe and healthy solutions. We continuously monitor and manage the expanding demand for solutions that address water scarcity, natural resource recovery, contamination control, and infection prevention as well as monitor the latest pandemics or threats to public health.

Our technical support teams include microbiologists who follow Good Laboratory Practice regulations to develop and test products for efficacy against microorganisms including viruses, bacteria, spores and fungi that are threats to food safety and public health. The microbiology team conducts extensive antimicrobial efficacy and product stability testing.

Meanwhile, our analytical scientists provide testing services for our customers, including forensic analysis of petroleum samples, chemical product quantification, paper surface characterization, soil and deposit analysis, trace element identification and water analysis to identify the root causes of issues and recommend product solutions. In addition, we have a technical service call center and laboratory, which diagnoses problems and provides world-class support to our field sales and service associates and customers. In fact, RD&E experts respond to thousands of requests for assistance annually – and spend significant time in the field both testing new products and training customers on proper use.

Our record of producing breakthrough innovations spans more than eight decades. We are committed to carrying on this tradition and developing future generations of innovative customer solutions.



## Sustainable Solutions

Sustainability is inherent to our innovation process. We consider the total environmental landscape, including chemistry, equipment, dispensing technology, digital/“smart” systems, packaging, transporting and servicing to provide high-quality, sustainable solutions for our customers. At the same time, we focus on reducing the use of water and energy in our customers' processes and minimizing waste released into the environment.

Ecolab innovations such as no-rinse formulas and formulations requiring fewer wash cycles reduce the amount of water our customers use on a regular basis, and our products are designed to dispense effectively at low temperatures to help customers conserve energy. We also help reduce waste by using minimal packaging and recyclable or renewable packaging materials, and our concentrated products can be shipped using less fuel.

# GLOBAL SUPPLY CHAIN



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We have a strong global reach, with more than 120 manufacturing plants and an extensive network of distribution centers located in major countries.

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## Global Supply Chain

Ecolab's manufacturing and distribution facilities are designed and located to support marketing, direct sales and distribution activities. We have a strong global reach, with more than 120 manufacturing plants and an extensive network of distribution centers located in major countries. These facilities are located near major metropolitan areas or customer locations, and can provide overnight service to surrounding locations, giving us a significant service advantage and reducing distribution costs.

## Our Manufacturing Philosophy

Our philosophy is to manufacture products wherever an economic, process or quality assurance advantage exists. Most products are liquids and manufactured in-house, although some may be outsourced in remote geographies. Unique offerings, such as our solid products, have proprietary manufacturing techniques that dictate internal production processes.

Manufacturing typically consists of blending powders and liquids and extruding or casting solids. There is also reaction chemistry to support certain businesses. Blending operations require less capital investment than reactive chemistry. Higher-volume production lines are automated and computer-controlled to guarantee consistent quality. However, inventory investment is minimized through the use of flexible, short-run equipment and computerized planning systems.

We work continuously to optimize our manufacturing and logistics footprint. As productivity improvements continue to be driven by Lean and Six Sigma, we have been able to rationalize facilities and production lines in mature markets. We continue to make significant investments in high-growth areas and innovative technologies to support growth throughout the world.

We monitor the environmental, health and safety compliance standards of our manufacturing facilities and participate in third-party audits to continuously improve our performance and ensure compliance with regulatory requirements.

We use global sourcing for production and purchasing of raw materials. Although we work to locally source as much as possible to reduce travel distance, our network is designed so that raw materials purchasing and product manufacturing can shift among locations to control product costs at globally competitive levels – with no reduction in quality. In addition, we offer remote monitoring of customers' inventory and processes to optimize product deliveries while minimizing fuel, water and chemical consumption. Our optimization efforts result in significant savings for Ecolab and our customers.

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Around the world, we continually invest in programs and processes that reduce our impact on the environment.

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Every day, the Global Supply Chain team moves further along our transformation journey across the globe ensuring operations are safe, clean, lean and sustainable. We align and integrate with business partners to deliver innovative solutions, commercial advantage, industry-leading service and quality. We attract and develop world-class talent, providing career growth opportunities within the Global Supply Chain team and across the company.

## Sustainability

Around the world, we continually invest in programs and processes that reduce our impact on the environment. Energy and water use, along with wastewater and solid waste disposal, are tracked monthly at each facility. Remote monitoring of customers' inventory and processes optimizes product deliveries, reducing fuel, water and chemical usage. Our efforts are continuing to show reduction in impacts year after year.

For example, we've lowered energy use by improving the efficiency of our steam and compressed air systems and changing light fixtures throughout our warehouses. Wastewater discharge has been reduced by optimizing tank clean-out procedures and reusing collected rainwater where appropriate. Solid waste has been reduced through process improvements that eliminate the generation of waste, along with aggressively expanding recycling to include items such as used shrink wrap. We also review the environmental attributes of raw materials and make environmental sustainability a key requirement in the selection of ingredients for new products and services.

Reduction of vehicle greenhouse gas emissions is also a top priority. We follow best practices learned from our operations in Europe and other areas where we drive smaller, more fuel-efficient vehicles, and optimize vehicle service routes to minimize fuel consumption.

In addition, we've initiated a simplification process to reduce the number of stock keeping units for our products. This helps unlock capacity and increase our manufacturing runs to better leverage the plants we have and avoid prematurely adding new ones, and significantly decreases our production and raw material costs.

Please see our corporate Sustainability Report at [www.ecolab.com](http://www.ecolab.com) for a more complete discussion of our sustainability work and results.

# INVESTOR INFORMATION

## COMMON STOCK

Stock trading symbol ECL. Ecolab common stock is listed and traded on the New York Stock Exchange (NYSE). Ecolab stock is also traded on an unlisted basis on certain other exchanges. Options are traded on the NYSE.

Ecolab common stock is included in the S&P 500 Materials sector of the Global Industry Classification Standard.

## INVESTOR INQUIRIES

Securities analysts, portfolio managers and representatives of financial institutions seeking information regarding Ecolab may contact:

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*External Relations*  
**651.293.2809**

Andrew Hedberg,  
Director  
*Investor Relations*  
**651.293.2185**

## INVESTOR RESOURCES

SEC Filings: Copies of Ecolab's Form 10-K, 10-Q and 8-K reports as filed with the Securities and Exchange Commission are available free of charge. These documents may be obtained on our website at [www.ecolab.com/investor](http://www.ecolab.com/investor) promptly after such reports are filed with, or furnished to, the SEC, or by contacting:

**Ecolab, Inc.**  
**Attn: Corporate Secretary**  
**1 Ecolab Place**  
**St. Paul, MN 55102**

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