

Innovation Runs Deep

Global Offshore



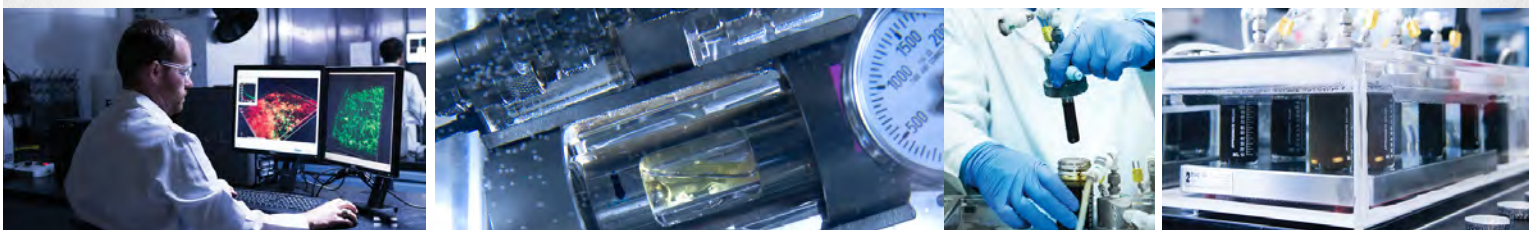
OFFSHORE TO ULTRA-DEEP ARCTIC TO PRE-SALT

EVEN NEW FRONTIERS SHARE COMMON GROUND

By predicting, diagnosing, circumventing and solving upstream challenges around the world, we have built the most comprehensive, technically advanced global specialty product portfolio in the industry. Applied to your operation, Nalco Champion's discoveries improve production, asset integrity, recovery rates and environmental compliance.

Our process is proven. We align our services and chemistries to the life cycles of your projects, ultimately helping you extract more energy with fewer resources in increasingly challenging environments.

We are Nalco Champion, an Ecolab company and a global market leader in solving the toughest challenges facing the oil and gas industry, offshore and on.



LIFE-CYCLE PARTNERSHIPS

Our experience is your advantage. Nalco Champion's integrated team model provides unmatched onsite support and access: to local technical support; to regional product line, application and field support specialists, and to a global network of the industry's top scientists and researchers and their combined best practices.

Working in close partnership, we gain extraordinary insight into the challenges you face. And because early collaboration influences both CAPEX spend and OPEX cost, we begin at your project's beginning:

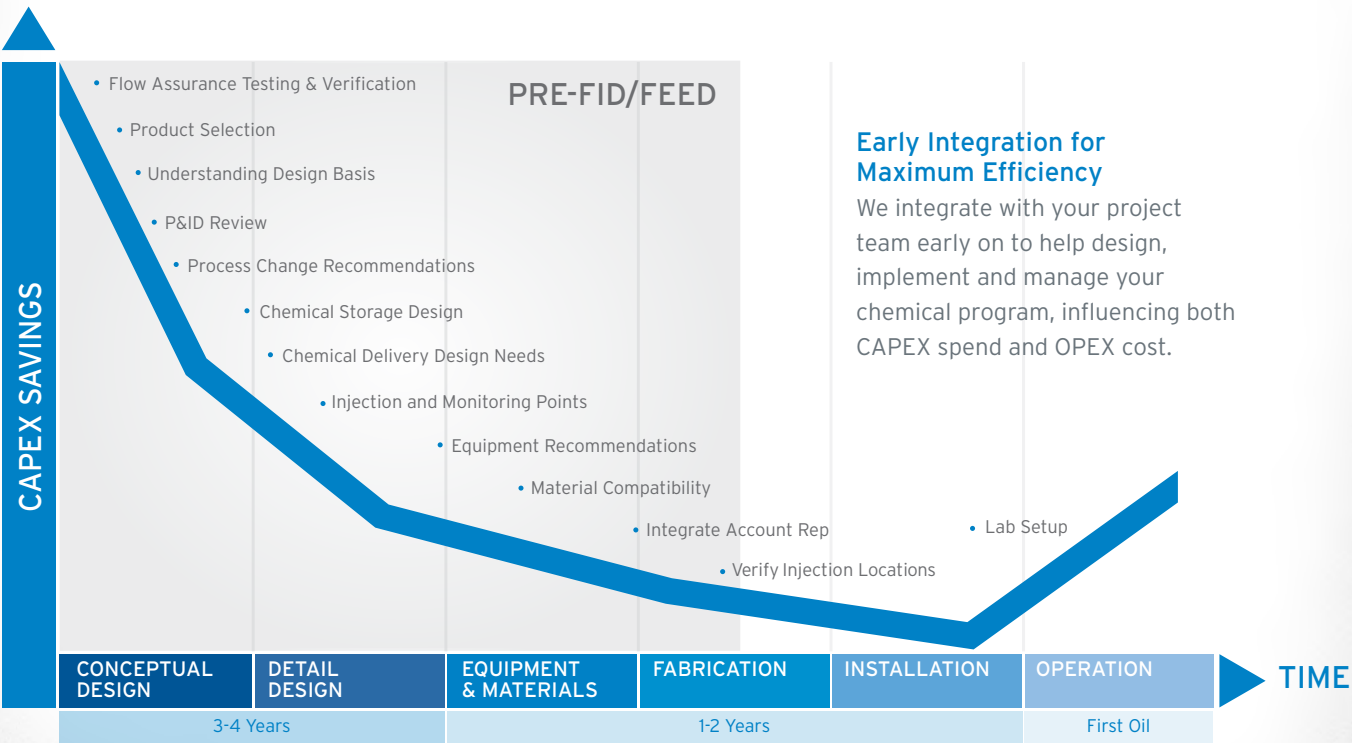
DESIGN PHASE | Nalco Champion project management and design teams contribute chemical and engineering design and development.

COMMISSION | Prior to commissioning, your account management team begins process safety, inventory, manpower, system monitoring and service planning.

STARTUP | All teams work in tandem to execute plans, assure compliance and complete all necessary field and lab testing to authenticate data.

PRODUCTION | Account managers continue routine rotational schedules, providing tech support, inventory management and reporting.

Together, we help you manage the complexity of your global operations and improve production.



ADVANCING DEEPWATER TECHNOLOGIES

Leading scientists and engineers develop smart solutions for our customers every day. In addition to their work in our 13 dedicated technology centers, 50 advanced manufacturing facilities and onsite, we fully leverage Ecolab's 1,600+ global research, development and engineering resources across an additional seven technology centers, and further advance technology through a multitude of industry partnerships.

But our real point of differentiation is our ability to collaborate with you to solve complex challenges. Because we work in close partnership with our customers, we have extraordinary insight into the challenges you face. Being onsite with you and using the latest technology, we can capture and analyze data from multiple systems, see how processes interact and affect each other, and use this in-depth understanding to solve problems and find opportunities. **At Nalco Champion innovation runs deep—through our chemistries, services and operations.**

PRODUCT INNOVATION

- RD&E strength and reach to produce solutions that cross geographies, industries and applications
- Industry-leading deepwater chemistries addressing asset integrity (advanced corrosion inhibitors) and flow assurance (LDHIs)
- Advanced testing protocols that simulate the most extreme field conditions and set new industry standards for efficiency and accuracy

SERVICE INNOVATION

- Early integration plus a seamless transition to account management influence CAPEX spend and OPEX cost
- Project management aligned to every level of your organization
- Collaborative problem-solving approach that leads to cost effective chemical and service solutions
- A singular, undistracted focus resulting in effective solutions across the entire life cycle of fluids

OPERATIONAL INNOVATION

- Unparalleled global reach, providing exceptional, personally delivered service, on-time delivery and consistent product quality
- Proprietary CORE platform connecting a global knowledge network for system-wide sharing of procedures, protocols and best practices
- Rigorous best-in-industry training through CAPEX College: a structured mentorship program plus intense classroom work and field training

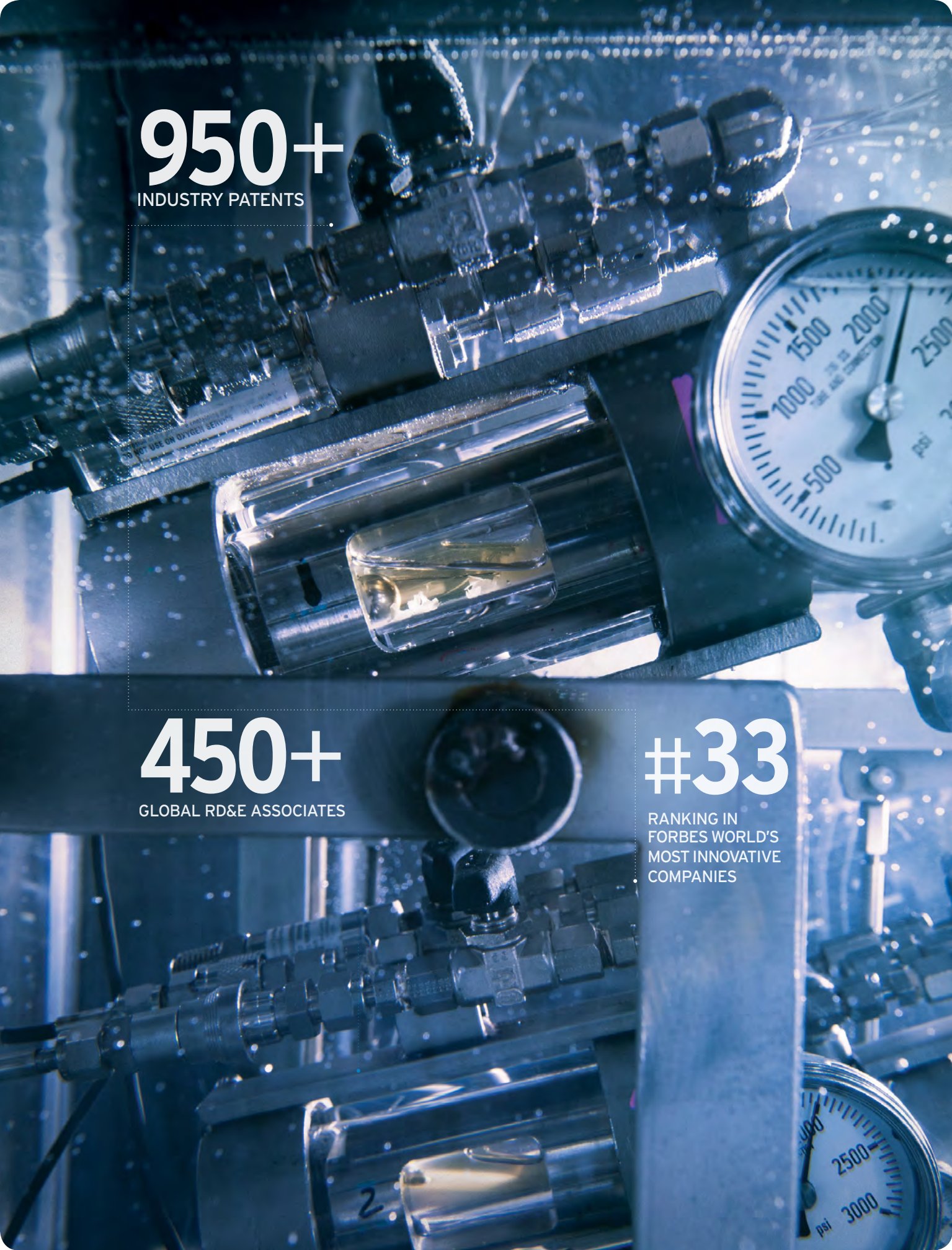
Nalco Champion's chemical and mechanical innovations are both practical and proactive—addressing today's challenges while anticipating solutions to tomorrow's.



950+
INDUSTRY PATENTS

450+
GLOBAL RD&E ASSOCIATES

#33
RANKING IN
FORBES WORLD'S
MOST INNOVATIVE
COMPANIES



GLOBAL KNOWLEDGE LOCAL APPLICATION

As the oil & gas industry pushes farther into harsher and more unconventional global frontiers, the need for focused, local value-added chemical expertise and support becomes even more critical. With our global infrastructure, we can deliver that expertise and support everywhere it's needed.

6,700+ 160

EMPLOYEES

COUNTRIES

50

MANUFACTURING
FACILITIES

13

TECHNOLOGY
CENTERS

Expanded Presence

- HEADQUARTERS
- MANUFACTURING
- TECHNOLOGY CENTERS
- HEADQUARTERS/TECHNOLOGY CENTERS



CHEMISTRIES DELIVERED ON TIME, EVERYWHERE

We built an extensive portfolio of industry-leading products and applications technologies. And then we built on it. Our significant R&D investment aligns with producers' challenges, resulting in practical chemistries and proactive solutions. Our advanced testing raises the standard for accurate assessment, effectively simulates the most extreme conditions and provides data for real-time innovation in the lab and product development in the field. Our global infrastructure, including 50 manufacturing facilities and local inventory management support, assures uninterrupted chemical supply.

CORROSION CONTROL | We apply the broadest array of field experience, treatment programs and monitoring methodology available to select or design technologies that solve your specific corrosion problems.

SCALE CONTROL | Scale deposition in production equipment is a major cause of operational problems such as flow restriction, decreased production and deferred or lost oil. In topside and downhole operations, our team of experts assess the situation and provide solutions to maximize production and up-time in a scaling environment.

PARAFFIN AND ASPHALTENE CONTROL | Nalco Champion's paraffin and asphaltene research laboratories use the most modern, sophisticated equipment for flowline modeling, deposition, rate prediction, restart modeling and asphaltene flocculation determination. The result: Leading technologies that address subsea condition challenges worldwide.

DEMULSIFIERS | Nalco Champion's global team of demulsifier experts helps resolve emulsion problems in all producing regions, formulating our crude oil demulsifiers to specific crudes and/or applications. Our chemicals provide rapid, sharp separation of crude oil and produced water and contain no heavy metals or organic halides to interfere with refinery operations.

HYDRATES | In both topside and downhole operations, Nalco Champion mitigates the risk associated with hydrate deposition, including plugged flowlines, reduced production and increased safety concerns.

H₂S SCAVENGERS AND BIOCIDES | The continued use of seawater injection systems for artificial lift of crude oils offshore increases the potential for reservoir souring from microbiological activity. H₂S and microbiological activity can also lead to the generation of solids that block wells and corrode production systems. Nalco Champion provides essential technologies for gas sweetening and microbiological control to help you maintain the integrity of subsea infrastructure.

MULTIFUNCTIONAL CHEMISTRIES | Best-in-class chemistries designed to mitigate a variety of oil production issues maximize limited umbilical space. Nalco Champion supports oil producers worldwide with multifunctional technologies for the treatment of corrosion, scale, hydrates, H₂S scavengers, paraffin and asphaltenes.

FIT-FOR-PURPOSE PRODUCT TESTING

Enhanced physical testing defines engineering parameters for customized chemical treatment. Examples include:

Automated Particle Size Analysis

We use laser technology to accurately determine particle size counts in our products, accommodating subsea fitting and valve tolerances as small as 0.03 inch (750 microns).

Umbilical Flow Loop Testing

In our laboratory, chemical flows through 1,000 feet (300 m) of umbilical tubing maintained at 40°F (4°C) to a filter and bank of valves, matching umbilical residence time and accurately simulating subsea conditions.

Exhaustive Product Analysis

The ultimate test of suitability, Nalco Champion's laboratory umbilical flow loop simulates actual subsea umbilical applications.



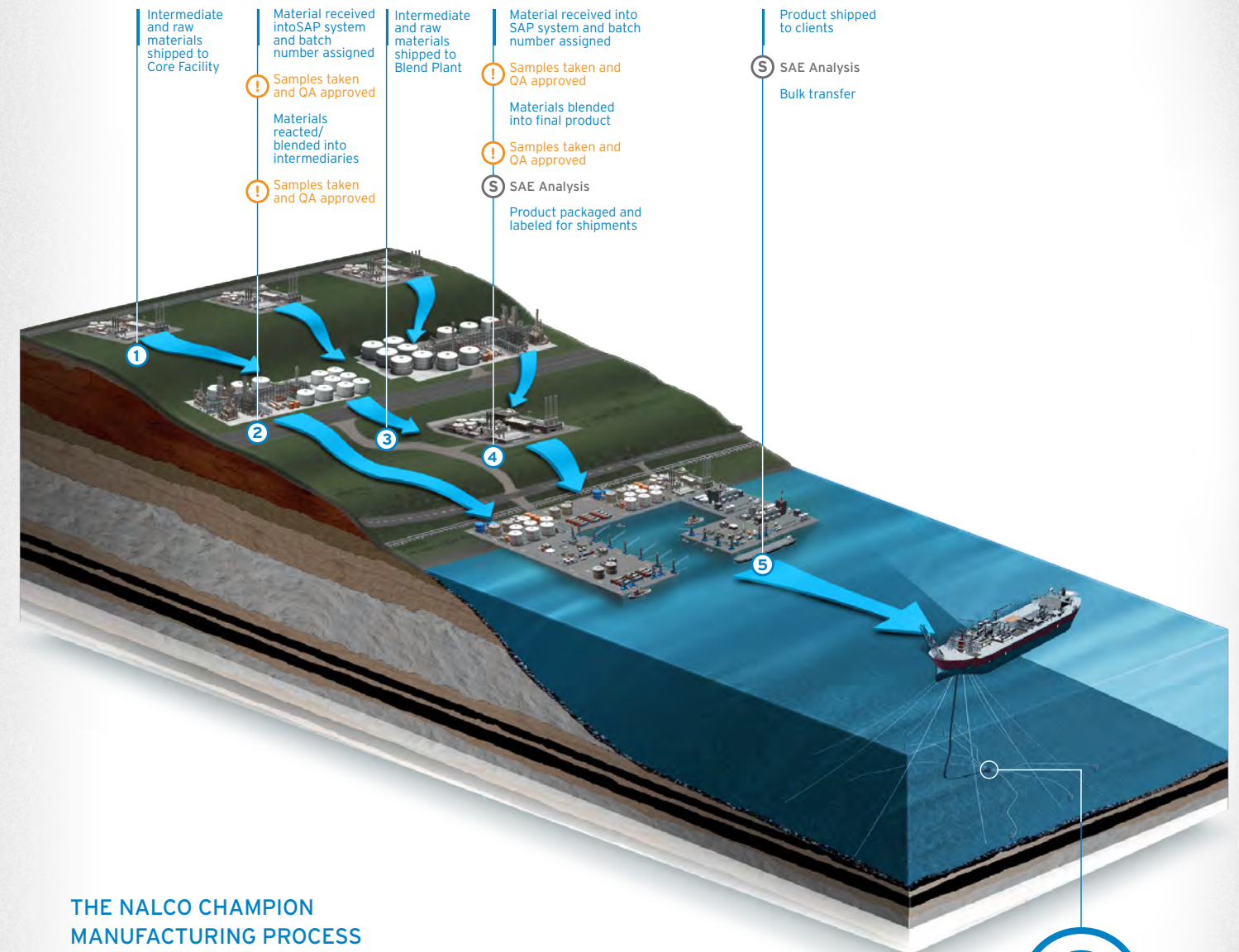
CERTIFIED CHEMICAL INTEGRITY

Nalco Champion is the industry leader in offshore's most challenging chemistries—umbilical chemicals for ultra-deepwater applications. These chemicals must inhibit corrosion; prevent scale, hydrate, asphaltene, and/or paraffin deposits, and mitigate emulsion-related viscosity problems at low concentrations while remaining stable at temperatures ranging from near freezing to 300°F (120°C) or higher.

To meet these rigorous demands, Nalco Champion develops SurFloSM Plus certified chemistries—field-proven Best-in-Class solutions for deepwater and ultra-deepwater challenges. We subject products to subsea pressures, temperatures and an umbilical flow loop, simulating actual application to create custom chemistries precisely suited to your operation.

NALCO CHAMPION'S PROCESS INCLUDES:

- | | |
|--|---|
| Cold Stress Testing | Flash Point and Vapor Pressure Analysis |
| Automated Particle Size Analysis | Materials Suitability Data |
| Umbilical Flow Loop Testing | Hydrate Resistance Testing |
| Specific Gravity Testing | Thermal Stability Testing |
| Pour Point Measurement | Umbilical Storage Fluid Compatibility |
| Viscosity Testing: Ambient and High Temperature/Pressure | |



THE NALCO CHAMPION MANUFACTURING PROCESS

The Nalco Champion Manufacturing Certification Program assures the consistent production and on-time global delivery of uncompromised chemicals from any one of our 50 manufacturing facilities. This manufacturing illustration clearly depicts our end-to-end process and highlights the measures taken at each phase to ensure the quality of the SurFlo Plus certified chemistries.



INCREASED PRODUCTION REDUCED RISK BETTER OUTCOMES

GLOBAL DEEPWATER SUCCESS

\$40 MILLION
INCREASED ANNUAL REVENUE IN ANGOLA

ON-SITE SUPPORT FOR A SUCCESSFUL DEEPWATER STARTUP

FPSO | Offshore Brazil

SITUATION: Regulatory and compliance concerns complicated an FPSO operation already made complex by advanced horizontal well technology, 120 m water depth and 13-14° API crude.

SOLUTION: Close collaboration between the operator and our people improved many areas of the project, including QHSSE gaps. We set up an on-FPSO laboratory manned by local technicians and provided best-in-class technology and molecules to meet a BS&W requirement of less than 0.5 percent.

REDUCED WAX DEPOSITION INCREASED PRODUCTION

Offshore Platform | South China Sea

SITUATION: Uniquely paraffinic condensate build-up completely blocked the balancing line from the glycol reboiler to the surge vessel. Malfunctioning process control and separation vessels allowed fluid carryover into the gas dehydration facility, contributing to frequent shut down in the gas dehydration system.

SOLUTION: We determined that application of a pour point depressant (PPD) + wax inhibitor could offer a quick solution to the problem. Applied at the wellheads, our product reduced the deposition problem and process shut down, increasing the production of condensate and gas.

CUSTOM LDHI FOR MORE PROFITABLE PRODUCTION

Subsea Tieback | Gulf of Mexico

SITUATION: To prevent shutting in production, an oil producer sought a smarter alternative to methanol for inhibiting hydrate formation and maintaining overboard water quality. A Low Dose Hydrate Inhibitor (LDHI) could eliminate methanol and potentially meet key performance indicators, including oil & grease IR readings of < 29 ppm with no visible sheen.

SOLUTION: Our teams field screened and bottle tested more than 150 novel chemistries. Laboratory hydrate performance testing simulated field conditions and resulted in a recommended LDHI. Since implementation in January 2011, no hydrate events or water quality problems have occurred. Compared to competitive products, this custom LDHI triples the hold time, maximizing production.

ENGINEERING BEST PRACTICES FOR CaN MITIGATION IN WEST AFRICA

Offshore Platform | Offshore Angola

SITUATION: One year into production, unexpected gross calcium naphthenate (CaN) solids deposition appeared in a production handling system that wasn't designed to address this problem, leading to extensive plugging and forced shutdowns.

SOLUTION: The operator needed both a prediction tool and a solution that accommodated the system's limitations. Nalco Champion's first-generation dispersant, combined with organic acid, eliminated CaN deposition. A second-generation product improved efficiency by approximately 250% and reduced transportation and manpower costs. Under the Nalco Champion CaN program, the facility has run for more than 10 years without a forced shutdown, significantly improving operator safety and increasing revenue by \$40 million per year.

HELPING CUSTOMERS OPERATE SUSTAINABLY

At Nalco Champion, our programs ensure that safety is no accident. Protecting the environment, and the health and safety of our employees, customers and the communities in which we live and work are among our highest priorities.

We operate with strong values—reaching our goals, doing what's right, challenging ourselves, working together, making a difference—and doing it all with safety in mind.

We develop an acute understanding of the challenges and opportunities unique to the regions in which we operate. We strive to develop dedicated infrastructures of in-country local assets whenever possible, and we invest in local research, manufacturing and engineering to advance local production and build a foundation for long-term operational sustainability.

We align our business practices to support the sustainable production of energy for the world, with products, services and technology designed to help you produce and refine oil and gas in a more efficient and responsible manner than ever before. Predictive, proactive and practical, Nalco Champion's programs ensure responsible operations and support the environmental, social and economic objectives of sustainable development.



EXPERIENCE RUNS DEEP

With a broad suite of technologies and a geographic reach that spans more than 160 countries, we bring unlimited resourcefulness to the challenge of limited resources. Our solutions improve oil and gas recovery and production, extend equipment life and decrease operating costs. We are singularly focused on delivering innovative technology and creating better outcomes.

We challenge ourselves. Our people are dependable problem-solvers. We are partners. Our leadership in the oil and gas industry is not based in shallow superlatives like size, but in the depth of our commitment to our customers.

**NALCO CHAMPION IS A GLOBAL MARKET LEADER.
WE APPRECIATE THE OPPORTUNITY TO SHOW
YOU WHY.**

Global Leadership



Together, We're Taking Energy Further™

Introducing Nalco Champion, an Ecolab company. Now, the strength and innovations of Nalco Energy Services, Champion Technologies and CorsiTech flow together to bring you more service, more technologies and more solutions. Because together, we have more ways to help you produce the world's energy. We are taking energy further. [Visit nalcochampion.com](http://nalcochampion.com) to learn more.

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