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# **Brief** Special edition



Sociedad Latinoamericana de Operadores de Terminales Marítimo Petroleros y Monoboyas

### 

AÑOS

Exploring the Latest in Terminal Operations and Technologies.

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### Unifying industry leaders in the energy sector.





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### **INSPENET BRIEF**

**Celebrating 20 Years of SLOM - Unity and Leadership in the Energy Sector** 

We commemorate a significant milestone: the 20th anniversary of the Latin American Society of Maritime Operators and Single Buoys (SLOM). It is an honor for me, Francesco Guido Solari, to present this special edition of Inspenet Brief, where we celebrate such an important event as the history, present, and future of SLOM. For two decades, SLOM has been a pillar of unity and collaboration in the energy sector. It has proven to be an influential force, capable of adapting to constant changes and leveraging the experience and expertise of its members. Engineers, consultants, and companies have found in SLOM a platform to grow and lead, reaffirming its relevance in a world increasingly hungry for networking and interconnections, to address common requirements or problems, or even simply to complement each other's experience.

Inspenet is proud to be part of this history: we were born during the XVII SLOM Conference in Cartagena. What better way to share the celebration than with this special edition of Inspenet Brief? Not only celebrating SLOM's legacy, but also spreading the message to over 350,000 professionals in the energy sector who connectthrough INSPENET.COM. Every day, these professionals consult our technical publications, which undoubtedly also seek to strengthen brands, increase visibility, and generate business opportunities in a dynamic and competitive market. The integration of modern technologies such as robotics, the Internet of Things, and artificial intelligence is a testament to **SLOM's** commitment to innovation. In this edition, we explore how these technologies are transforming operations, maintenance, and development in the energy sector, ensuring best practices and positioning our community at the forefront of change.

Cooperation and unity are essential. In an ever-evolving world, professional and business connections are more crucial than ever. **Inspenet Brief** provides a space where these connections are strengthened, offering specialized content strategically distributed to reach decision-makers and leaders in the sector.

I invite all **SLOM** members and our Inspenet community to be active participants in this transformation. We celebrate the past, adapt to the present, and prepare for a future where innovation and cooperation will be the keys to success.

**SLOM** has been a worthy example of leadership and adaptation for 20 years. Together, with the support of Inspenet, we will continue building a stronger and more resilient energy sector.

Ing. Francesco G. Solari.



03

### **Content INSPENET BRIEF**

INSPENET BRIEF Francesco Solari - CEO Inspenet	03
About SLOM	06
Cyberattack in the Port Sector The Question is Not "If", But "When" It Will Happen	16
Celebrating 20 Years of Successful Integration in the Petroleum Industry The Legacy of SLOM	17
ROVs and Mini-ROVs: The Cutting Edge of Maritime Terminal Inspection and Maintenance	18
Advancing Corrosion Control in Maritime Operations: : The AMPP Commitment	20
Integrity management of loading lines: ensuring safety and efficiency	24
ANCAP in Uruguay's Energy Transition	26
Automation: the Future of Port Logistics	28
AFRECOR Positions Itself as a Leader in Petroleum Waste Valorization	30
BLUEWATER	32
UNDERWATER HOT TAPPING	34
Routine Maintenance: Maximize your investmentyour investment	35
Coveñas Offshore Terminal: Committed to Development and Sustainability	36
Guided Ultrasonics LTD.	38
"Key Benefits of ILIA Membership for Leadership and Connections in the Liquid Terminals Industry"	40
Transpetro: an expanding company with sustainability	41
Deferral of Inspection in Hydrocarbon Storage Tanks	42
Guajira Association Celebrates 50 Years of Energy Contribution and Development for Colombia	44
LAMOR	46
Time for a Change of Course- Why Digitalization Is Essential for Terminal Operations	47
The Role of Marine Terminals in the Energy Transition	48
Puerto Bahía: multimodal maritime and fluvial operations in Cartagena, Colombia	49 50
ENGIE Mexico: Transforming Communities Through Sustainable Development	51
Envisioning the Future of Bulk Terminals	52
SLOM XX YEARS	53
Hoses & Ancillaries equipment supply for Oil & Gas Industry	54
SOFEC, looking to the future in Renewable Energy, based on our existing technology and long experience.	55
Navigating to a Sustainable Future: The Impact of Terminals on the Energy Transition	56
DIRECTORY	58
Inspecting Tanks in 2024 and beyond	60
Navigating the AST Data Deluge with TankFax	61
Considerations for Locating Tank Challenges of Tank Siting	62
Making Port Call Efficiency the Standard	63
Successful Anticorrosive Protection of Monobuoys through Protective Coating Systems: A Standard of Success for Panama Petroterminals	64
"On-stream tank availability"	66
Executive Commercial Strategist	67
The Role of Terminals in Terminals in the Energy Transition	68



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**2. Strategic Connections:** Access a community of industry professionals, with 25.1% being decision-makers, as well as a group of influential companies.

**3. Growth and Development:** Propel your success with unique collaboration opportunities.

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## ABOUT





The Latin American Society of Oil Marine Terminals Operators and Monobuoys – SLOM is an international, non-profit association whose primary goal is to promote the integration of the various actors that make up the hydrocarbon <u>maritime-fluvial industry.</u>

From maritime and fluvial hydrocarbon monobuoy terminals, terminals, and multibuoy terminals; to companies providing specialized goods and services, maritime-port authorities, organizations with related interests in the industry, professionals, academics, training institutions, and other sector members. All are united in a mission of integration that promotes operational efficiency, safety, and sustainability of operations. <u>This is achieved</u> through technical activities, exchange dissemination of best practices, spaces for updates on new knowledge and technologies, and above all, the firm conviction that #TogetherWeCanAchieveMore

#### Our Members

SLOM has three categories of members, which are composed as follows:

Associate Members: These are companies that operate maritime-fluvial oil terminals and monobuoys, including maritime terminals for the handling of liquefied petroleum gas (LPG), liquefied natural gas (LNG), chemicals, and offshore operations.

Currently, there are 26\* operating companies associated with the Society, from 12 different countries.

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Currently, there are 26<sup>\*</sup> operating companies associated with the Society, from 12 different countries.



\*As of June 30, 2024. \*\*The companies Oiltanking Andina, Oiltanking Colombia, and Oiltanking Ebytem are represented under a single logo.



Category B Members: These are companies that provide specialized services and goods to maritime-fluvial hydrocarbon terminals.

These organizations cover the entire service chain, ranging from maritime agencies, manufacturers of monobuoys, multibuoys, ropes, hoses, chains, valves, fenders, pipelines, dock accessories, tugboats, consultants, telemetry companies, specialized technology, maritime engineering, personnel supply, training centers, emergency prevention and response companies, integrity and corrosion, diving and underwater engineering, among many others.

Today, there are more than 50 companies associated with SLOM in this category, being industry references and demonstrating their commitment to operational excellence.

Category C Members: These are all individuals whose profession or occupation is related to the operation of maritime-fluvial hydrocarbon terminals.

Individuals hold a prominent value in this Society; they are the agents of change who lead, build, and contribute to the collective good from their experiences, knowledge, and possibilities; visionaries who decide to believe in and support the mission of integration pursued by SLOM.

As of today, more than 180 individuals are part of SLOM under this category.

#### How does SLOM add value?

- Facilitating integration among operators, suppliers, authorities, and sector institutions.
- Promoting technical knowledge through the exchange of experiences.
- Creating opportunities for learning and networking.
- Managing strategic alliances with organizations of interest for the benefit of the industry...

We have built a community that speaks the same language in terms of shared experiences and knowledge, identifying common needs for the benefit of the sector.

#### We invite you to be a part of it! For more information: www.slom.co

Versión	País	País
I Jornada	Venezuela	2005
Il Jornada	💳 Colombia	2006
III Jornada	📀 Brasil	2007
IV Jornada	Ecuador	2008
V Jornada	💳 Colombia	2009
VI Jornada	🚝 Uruguay	2010
VII Jornada	Panamá	2011
VIII Jornada	📀 Brasil	2012
IX Jornada	Chile	2013
S Jornada	Colombia	2014
XI Jornada	Perú	2015
XII Jornada	México	2016
sbennoL IIIX	Colombia	2017
XIV Jornada	Ecuador	2018
XV Jornada	Colombia	2019
XVI Jornada	Virtual	2020
sbennoL IIVX	Colombia	2021
XVIII Jornada	Colombia	2022
XIX Jornada	📀 Brasil	2023
XX Jornada	🗮 Uruguay	2024









I JORNADA VENEZUELA 2005



II JORNADA COLOMBIA 2006



III JORNADA BRASIL 2007



### eros y Monoboyas ociedad Latinoamericana de peradores de Terminales Petrole Marítimo





IV JORNADA ECUADOR 2008



V JORNADA COLOMBIA 2009



VI JORNADA URUGUAY 2010







VIII JORNADA BRASIL 2012



IX JORNADA CHILE 2013





X JORNADA COLOMBIA 2014



XI JORNADA PERÚ 2015



XII JORNADA MÉXICO 2016





XIII JORNADA COLOMBIA 2017



XIV JORNADA ECUADOR 2018



XV JORNADA COLOMBIA 2019



# **Sected ad Latinoamericana de** Operadores de Terminales Marítimo Petroleros y Monoboyas





XVI VIRTUAL 2020



XVI VIRTUAL 2020



XVII JORNADA COLOMBIA 2021







XVIII JORNADA COLOMBIA 2022



XIX JORNADA BRASIL 2023











XX Jornada of Maritime Oil Terminal Operators and Monobuoys

The role of termnials in the energy transition

Punta del Este, Uruguay

September 11th, 12th and 13th of 2024.



Supports:





**Ultratug** 

#TogetherWeCanDolt



### Francisco Barreto President SLOM 2022-2025

### Cyberattack in the Port Sector

The Question is Not "If", But "When" It Will Happen



The historic virtual disruption that affected operations worldwide in the second half of July 2024, due to a security system failure at an American company called CrowdStrike, brings us back to a real concern. It highlights the importance of finding technological solutions to enhance the protection of the operating systems of maritime oil terminals.

This disruption caused significant confusion in the lives of millions of people. The interruption of internet services, which had never happened before in history, spread chaos worldwide.

The disruption affected the operations of the ports of Pecém, in Ceará/Brazil, and one of the eleven container terminals in Paranaguá, in Paraná/Brazil, the largest exporter of agricultural products in Brazil. The queue of truck drivers reached 8 km with a wait of nine hours.

Maritime terminals are responsible for receiving and exporting fuel worldwide, as well as supplying fuel to ships operating in the port chain. A prolonged operational failure could have severe consequences for the supply of major centers.

Operating companies usually have a backup remote control room to be used in case of failures, fires, and other incidents. However, if the attack reaches the operating system, this solution will not be effective.

The discussion about the new challenges facing the shipping industry amid the continuous growth of global navigation, according to a report by Allianz Global Corporate & Specialty (AGCS), a specialist in marine insurance, shows that although factors such as new technologies and regulations have significantly improved maritime safety, new risks have emerged in recent years.

Ships are increasingly connected to land-based systems, meaning the cyber threat is constantly evolving, from ports and terminals to phishing attacks on ships.

Ships are increasingly connected to land-based systems, meaning the cyber threat is constantly evolving, from ports and terminals to phishing attacks on ships.

"Historically, cyberattacks have evolved and put the integrity of operations at risk. In July 2017, the Danish company Maersk, the largest global operator of container ships and supply vessels, with offices in 130 countries and a workforce of around 90,000 employees, was the victim of a cyberattack using a modified version of the Petya ransomware, NotPetya, which brought down computer systems and operational controls at all levels. After entering the networks of a Maersk ship, the malicious software irreversibly encrypted the master boot records of computers, the deepest part of a machine that tells you where to find your own operating system." Source: www.seginfo.com.br

In 2022, at least six oil terminals were targeted by cyberattacks in Germany, the Netherlands, and Belgium. "Cyberattack experts believe that the port facilities in the cities of Ghent, Antwerp, Rotterdam, and Hamburg were affected with the aim of disrupting the distribution of energy materials in several major European ports by preventing the unloading of various oil tankers. According to sources cited by the Belgian newspaper De Morgen, the cyberattack affected the facilities of oil operators Evos (based in Terneuzen, Netherlands), Oiltanking, and Sea-Tank, a subsidiary of the Sea-invest group based in Ghent (Belgium). In Belgium, the ports of Ghent and Antwerp experienced disruptions in their activities. The Riverlake ship broker, based in Rotterdam (the largest cargo port in Europe ahead of Antwerp and Hamburg), reported that the cyberattack prevented the unloading of several oil tankers." Source: www.euronews.com

In this scenario, it is necessary for each company to identify the business impact to define where to invest and with what priority. Based on this Matrix, they can develop the prioritization of risk treatment and its factors. To do this, the following relevant points must be considered:

Identification of Critical Processes: What are the levels of impact?

Mapping Relevant Information: Define levels that can be Strategic, Tactical, or Operational.

Classifying Information and Critical Systems: Define a matrix with systems and tolerance levels;

Human Factor: Password control; Level of document security and access treatment; Digital Security and Network Security;

Desired Security Maturity and Level: Automated checklist;

Cyber Risk Cause and Effect Diagram: Focus on prevention and detection;

Cyber Risk Cause and Effect Diagram: Focus on mitigation and impact reduction;

Relevance Matrix of Risk Factors and Non-Conformities.

In this context, the foundations for an efficient Cyberattack Scenario Criticality Matrix stand out:

Identification: Map the roles and responsibilities of people and teams that represent weaknesses;

Protection: Implement processes and control measures and contingency plans to ensure the continuity of operations;

Detection: Develop and implement the necessary activities for the timely detection of cyber events for their treatment;

Response: Develop and execute activities and plans to ensure resilience and system restoration;

Recovery: Identify measures for secure backups and how to restore systems efficiently.

Source: Brazilian Institute of Security, Protection, and Data Privacy

https://www.ibraspd.org/incidentes

It is forgivable to be defeated, but never surprised. Frederick the Great Francisco Barreto

President of SLOM





### José Perdomo Director SLOM – Founding Member

### Celebrating 20 Years of Successful Integration in the Petroleum Industry

The Legacy of SLOM.

Since 2005. Puerto La Cruz – Lechería, Venezuela. The integration of maritime oil terminal operators and monobuoys has been a model of success in the petroleum industry, marked by a forward-thinking vision and the implementation of best operational practices. As we celebrate 20 years of continuous and collaborative exchanges, it is essential to highlight the significant milestones that have transformed this integration into a benchmark of efficiency, safety, and sustainability.

#### A Visionary Origin and Shared Commitment

The strength of an idea from a group called Los Mosqueteros during a meeting was to create a Society of Oil Marine Terminal Operators of Latin America; a notable example of visionary collaboration and commitment, establishing a regional platform dedicated to improving operational practices at oil marine terminals. This initiative not only promoted human integration and regional cooperation but also catalyzed significant innovations in the management and operation of port facilities across the continent.

#### Leading with Excellence and Commitment

Throughout its two decades of existence, SLOM has consolidated its position within the industry, fostering standards of excellence, safety, and sustainability. Its success is due not only to the initial vision of its founders but also to the continuous commitment of its members to constant improvement and the joint development of solutions to sector challenges. The organization has become a key driver for the international exchange of best practices, significantly contributing to sustainable development and the continuous advancement of the industry throughout Latin America.

#### **Key Events: The SLOM Conferences**

A highlight in SLOM's history is the Oil Marine Terminal Operators and Monobuoy Days, crucial events that provide terminal operators with a vital space for exchanging ideas, discussing common challenges, and adopting exceptional practices. These gatherings not only promote technological innovation and continuous improvement in port operations but also strengthen networks of contact and collaboration within the sector. Oil marine terminal operators actively support this exchange, recognizing SLOM as the leading platform for adopting safety and reliability standards.

Moreover, we highlight the integration of international organizations in the petroleum sector into SLOM, becoming part of our large family. Their consistency and presence have inspired operators to exchange knowledge and create synergies for safe and reliable operations. Their integration into SLOM represents a significant milestone, uniting forces within our extensive global network.

Together, we strive to create the best integration days for oil marine terminal operators and monobuoys in Latin America. This approach highlights our shared dedication to fostering solid knowledge through the promulgation of safe practices.

Within the event of the Days, we highlight Specialized Workshops on current and technological innovations, designed to explore the latest solutions and advanced practices in the management of marine terminals and monobuoys. These workshops offer a dynamic space to learn, discuss, and apply cutting-edge knowledge that drives efficiency and safety in our operations, providing privileged spaces where participants can firsthand explore the latest trends and advances in management.

#### **Lessons Learned and Continuous Commitment**

Another crucial aspect of SLOM's work is the Lessons Learned exercises, which facilitate invaluable exchanges of experiences and strategies among operators. These exercises not only strengthen adaptability and innovation within the sector but also promote world-class standards in safety, efficiency, and sustainability.

These exercises at SLOM have notably emphasized the Human Factor and Energy Transformation; these topics capture significant attention from oil marine terminal operators, who recognize the crucial importance of optimizing human resources and adapting to changes in the energy matrix. During the COVID-19 pandemic, SLOM maintained a constant commitment to the maritime community, demonstrating a notable effort to promote safety and integrity at work. Amid challenging global circumstances, the organization actively encouraged its members and the entire maritime community to persevere, ensuring operations were conducted with the highest safety standards. This ongoing dedication reflects SLOM's unwavering commitment to the well-being and resilience of the maritime industry during difficult times.

### Looking to the Future: Commitment to Innovation and Sustainability

With a committed strategic direction and a continuous focus on operational improvement, SLOM is preparing to face new challenges and opportunities in the oil marine terminal industry. The commitment to implementing best operational practices, technological optimization, and adopting international standards will remain fundamental to maintaining its position as a leader in the sector.

### Conclusions: A Future of Growth and Sustainable Development

In conclusion, SLOM's 20 years have been marked by significant achievements and sustained growth, thanks to the unwavering commitment of its human capital, the visionary leadership of its management, and above all, the invaluable trust and support of all the members who make up this community. Looking ahead, the organization continues to be a beacon of excellence in the petroleum industry, prepared to keep driving safety, efficiency, and sustainability in maritime operations across Latin America and beyond.

#### Special Thanks

Finally, we express our deep gratitude to all the directors and members of SLOM who have contributed with their dedication and leadership to making this organization a symbol of integration and progress in the oil marine terminal industry. Their commitment has been fundamental to achieving the successes celebrated today and to paving the way for an even more promising future.

In the words of Albert Einstein, "Life is like riding a bicycle. To keep your balance, you must keep moving." Similarly, SLOM will continue advancing with determination and constancy, overcoming obstacles, and pedaling towards new horizons of success and excellence in the oil marine terminal industry.

To everyone, thank you very much for being part of the great SLOM family. #IntegratedWeCanAchieveMore.



### ROVs and Mini-ROVs: The Cutting Edge of Maritime Terminal Inspection and Maintenance

Ing. Antonio Zavarce

In engineering and industrial maintenance, the integrity of structures at maritime terminals is crucial for safety. ROVs and Mini-ROVs have revolutionized these tasks, providing access to hazardous and inaccessible areas, such as underwater infrastructures and confined spaces. These advanced devices offer detailed visualizations and collect real-time information, allowing for precise and safe evaluations. Their innovative use has transformed inspection and maintenance, enhancing operational efficiency and safety without putting operators at risk.

### **Inspection and**

### Maintenance at Maritime Terminals

Inspections and maintenance at maritime terminals face challenges of accessibility and precision. Traditionally, these tasks require mobilizing human teams to dangerous environments, increasing the risk of accidents and exposing workers to adverse conditions. Manual operations involve more time and resources, resulting in reactive maintenance that affects infrastructure longevity. Technological innovation is key to overcoming these obstacles, enabling precise and efficient diagnostics without compromising human safety, thereby shifting towards more preventive and effective maintenance.

### Fundamentals of ROVs and Mini-ROVs

To overcome conventional challenges in the

inspection and maintenance of structures at maritime terminals, ROVs (Remotely Operated Vehicles) and Mini-ROVs have emerged as fundamental tools. ROVs are unmanned, remotely controlled devices designed to operate in difficult and dangerous environments for humans, such as underwater and confined spaces. Mini-ROVs, a subcategory of ROVs, are more compact and agile versions optimized for inspection and maintenance tasks in hard-toreach places, offering a unique combination of mobility, functionality, and safety.

#### **Capabilities of Mini-ROVs**

Mini-ROVs, with their compact design and advanced technology, are equipped with capabilities that make them exceptional for the inspection and maintenance of maritime terminals. Their maneuverability allows these vehicles to navigate through narrow spaces and reach areas inaccessible or dangerous for human inspectors. Thanks to sophisticated propulsion systems and precise controls, Mini-ROVs can perform complex movements with great accuracy, crucial for inspecting infrastructures in adverse conditions.

### Applications of Mini-ROVs in Maritime Terminals

Mini-ROVs are used in various maritime environments, demonstrating their versatility and effectiveness in terminal inspections. In



#### Conclusions

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The adoption of Mini-ROVs in the inspection and maintenance of structures at maritime terminals represents a significant advancement towards improving safety and efficiency in critical operations. These devices have not only overcome the accessibility and risk challenges inherent in traditional methods but have also incorporated cutting-edge technology to provide detailed visualizations and real-time analysis. This progress heralds a future where inspection and maintenance can be conducted with unprecedented precision and safety, marking an era of technological innovation that redefines industry standards and promotes the sustainability of essential infrastructures

the oil and gas industry, they inspect underwater platforms and pipelines, evaluating structural integrity and detecting corrosion or damage. They are also used in loading and unloading areas, such as single buoy moorings, to monitor infrastructures and prevent spills. In civil engineering, they inspect docks and port structures, detecting issues early on.

### Advantages of Mini-ROVs over Traditional Methods

Mini-ROVs significantly surpass traditional inspection and maintenance methods at maritime terminals. They improve safety by preventing workers from being exposed to hazardous environments, such as underwater depths or confined spaces, reducing the risk of accidents and complying with occupational safety regulations. Additionally, they lower operational costs by requiring fewer human and logistical resources. In terms of efficiency, they enable faster and more precise inspections and maintenance, collecting real-time data that facilitates early problem identification and informed decision-making.

### Operational Challenges and Considerations

The deployment of Mini-ROVs in inspection maintenance operations presents and technical and operational challenges. One of the main challenges is the design and maintenance of effective communication underwater. where systems signal propagation can be affected by factors such as salinity, depth, and physical obstacles. This requires innovative solutions in telemetry and remote control systems to ensure operability and real-time data transmission.







### Advancing Corrosion Control in Maritime Operations: : The AMPP Commitment

The integrity and safety of maritime terminal infrastructure are critical to global commerce and environmental protection.

The Association for Materials Protection and Performance (AMPP) is dedicated to enhancing the longevity and efficiency of these essential assets through superior corrosion management practices. Maritime terminals, oil tankers, and monobuoys face significant corrosion challenges heightened by exposure to severe marine conditions. Recognizing this, AMPP delivers specialized resources and guidance designed explicitly for the maritime sector:

Internationally Recognized Standards: Setting benchmarks for corrosion prevention and control.

**In-depth Education and Training Programs:** Empowering professionals to implement advanced corrosion control techniques.

**Rigorous Certifications:** Ensuring qualifications in corrosion management.

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#### **Building Careers and Ensuring Compliance:**

Educational and Certification Programs: Tailored for corrosion mitigation and protective coating application. Continuing Education: Supports our mission to safeguard society, infrastructure, and the environment.

#### Standards at the Core of Our Mission:

AMPP Standards: Facilitate commerce and regulatory agreements through standardized testing.

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As AMPP continues to grow, especially internationally, our focus remains on empowering our members through education, advocacy, research, industry-leading certifications and accreditation. Our extensive range of publications, standards, industry events and networking opportunities are designed to advance the careers of our members and the industry at large.

AMPP is actively working to address regional challenges and promote operational excellence. We extend an open invitation to all industry stakeholders to join us in our initiatives. By leveraging our comprehensive resources, we can collectively enhance operational safety and efficiency, fostering a stronger and more resilient maritime industry.

Learn more at www.ampp.org or contact us at +1-281-228-6200.



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### Integrity management of loading lines: ensuring safety and efficiency

Authors Luciano Baptista, Director ROSEN Brazil & Franz Bruening, Principal Technical Solution Specialist ROSEN Germany.

Inspecting offshore loading lines presents unique challenges for pipeline operators. Issues such as single access points for pigging tools, pipeline cleanliness, and the lack of a trap at the subsea line end complicate the inspection process. ROSEN addresses these challenges with advanced solutions designed to maximize uptime, ensure safety, and maintain economic efficiency.

#### Main Challenges in Loading Lines

**Safe Operation:** Precise control of the tool's position is essential to avoid overshooting and / or damaging the pipeline end manifold (PLEM) or hoses.

**Full Inspection Coverage**: Coverage must extend to the low points near the PLEM, necessitating full control over the tool's location towards the defined end of inspection point (EOI) in proximity to the PLEM.

**Subsea Verifications:** Repairs and verifications are complicated by subsea conditions and pipeline constructions due to access.

**First-Time Accuracy:** Inspections must be executed correctly the first time due to the high costs and critical nature of these operations to reduce operators downtime.

**Line Preparation:** Effective cleaning to remove debris out of the loading line and avoid pushing debris into the PLEM is crucial.

#### **Key Solutions**

**Bi-directional Free-swimming and Robotic high resolution ILI Tools:** These tools allow inspections from a single access point, simplifying operations and reducing the risk of equipment getting stuck nor damaging the operators asset.

**Customized Cleaning Tools:** ROSEN's bi-directional reversed cleaning pigs (RCP) not only prepare pipelines for inspection but also maximize pipelines output by transporting the loading line debris to the entry point and not pushing deeper towards the PLEM.

**Custom-Built Tool Approach Monitoring System (TAMS) :** Precisely monitoring tool position to ensure that tools do not overshoot and protecting the PLEM and hoses from potential damage.

#### Threat detection: Versatile Technologies for Various Threats

ROSEN employs a variety of technologies including Ultrasonic Testing (UT) and Time-of-Flight Diffraction (TOFD) for wall measurement and crack detection, Magnetic Flux Leakage (MFL) to identify and characterize internal and external metal loss and allowing signal comparison, Geometric and Mapping inspection solutions to identify geometric deformations and pipeline movement, along with various propulsion methods such as free-swimming and robotic systems. This comprehensive technological suite enables thorough inspections and accurate integrity assessments, addressing threats like splash zone corrosion, microbiologically influenced corrosion (MIC), girth weld cracks, and geometric deformations, for example caused by third-party damage or pipeline movement.

#### **Comprehensive Integrity Assessment**

ROSEN's integrity assessment capabilities extend beyond mere inspection. The assessments include:

- · Fitness-for-service evaluations
- · Pipeline movement and free span analysis
- Remaining life assessments
- Repair recommendations
- Inspection interval planning
- Integrity framework approach

These assessments ensure that all threats along the entire length of the loading line are identified and mitigated effectively.

#### **ROSEN's Competitive Edge**

#### Advanced Threat Detection and Identification:

Combining multiple technologies to detect, identify and size a wide range of threats more reliably to operators.

**Precise Data Collection:** ILI data is collected and stored in both directions (forward and backward), allowing for a comprehensive picture in line with API 1163.

**Engineering Consultancy:** A specialized, multidisciplinary team provides tailored integrity management solutions.

By leveraging these advanced technologies and comprehensive assessment capabilities, ROSEN ensures that offshore loading lines remain safe, efficient, and compliant, offering unparalleled reliability and protection for the oil and gas industry.



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### ANCAP in Uruguay's Energy Transition

Uruguay is considered an international benchmark for having practically decarbonized its entire electricity generation, possessing abundant renewable resources, being an excellent destination for foreign investment, and meeting all the conditions to be a pillar in the global green hydrogen economy. In this regard, Uruguay is on track to fulfill its commitments to "carbon neutrality" by 2050 and to export renewable energy in the form of green hydrogen and/or its derivatives. The defense of technological neutrality with decisions at the La Teja Refinery, the definition of Uruguay's Hydrogen Roadmap presenting a promising outlook to transform the country into a net energy exporter, and the various projects led by ANCAP within this framework, as well as the country's institutional commitment to energy transition, are fundamental topics for the present and future.

ANCAP's energy transition strategy has four pillars: the introduction of renewables in the refinery's energy consumption and better emissions management, the capture of biogenic CO2 and from cement plants, the production of sustainable fuels from vegetable oils, and the production of green hydrogen on a global scale offshore. In this regard, the ANCAP Group is committed to reducing emissions from its traditional operations at all its industrial plants and is also advancing in the development of alternative and sustainable energies with various projects such as:

#### H2U Offshore

H2U is a program promoted by the Uruguayan government for the development of hydrogen

in Uruguay. In this context, ANCAP is leading the H2U Offshore chapter of the roadmap through an international bidding system (rounds) for the production of hydrogen and derivatives from offshore wind energy by private parties at their own cost and risk. Uruguay has excellent wind resources and a wide continental shelf with shallow waters, making it very attractive for the production of hydrogen and derivatives from wind energy. The initiative aims for large investing companies to assess the feasibility and potential production of green hydrogen and/or derivatives from renewable energies generated offshore.





#### Synthetic Fuels (e-fuels)

The ANCAP Group aims to initiate the first e-fuels project in Uruguay and develop a new generation of fuels. In 2023, HIF Global was selected to develop a project for the production of methanol and synthetic gasoline in Paysandú, using biogenic CO2 from ALUR's (a company ANCAP of the Group) bioethanol industrial plant operations and dedicated electricity generation for green hydrogen production. The project successfully completed its feasibility phase and moved to the engineering phase, with a final investment decision expected in the second half of 2025.

#### **Second Generation Biofuels**

The ANCAP Group is working to develop the production of sustainable fuels based on HEFA (Hydrotreated Esters and Fatty Acid) technology, from vegetable oils, used cooking oil, beef tallow, and other greasy residues. These raw materials, to be treated at ALUR facilities, will be processed with low-carbon hydrogen at the La Teja Refinery to obtain renewable fuels: biodiesel, sustainable aviation fuel (SAF), bio-naphtha, and biopropane. The ANCAP Group is preparing a call for expressions of interest to incorporate partners interested in scaling the project, which is expected to be operational by 2028.

The goal is to meet the demand of developed markets to incorporate sustainable aviation fuel and comply with aviation industry regulations in this regard. This project aims for a capacity of 150,000 tons per year of raw material. The installation has two scopes: one by ANCAP at the La Teja Refinery, and another by ALUR, which will be responsible for obtaining and pre-treating the raw materials. ALUR, an agro-industrial company of the ANCAP Group, processes different raw materials, from crops such as cereals, oilseeds, and sugar cane, to recycled oil and animal fat, obtaining various products such as biodiesel, bioethanol, protein flours (animal feed), electricity, glycerin, and sugar.

### **Research and Development**

In addition to the aforementioned projects, ANCAP continuously works to reduce emissions in its traditional operations. Furthermore, the company has a Geosciences team that permanently investigates the viability of our soils to contribute to the Energy Transition. The potential of natural hydrogen and the storage of CO2 in saline aquifers are part of this research, as well as the development of an industrial-scale pilot to produce SAF from ethanol.



### Automation: the Future of Port Logistics

Author: Eng. Jesús Vogler

Technological development has managed to affect every single sector and business. In this context, different industries are constantly innovating their processes in order to compete in a market where efficiency is paramount. One of the sectors that has been affected is the maritime sector, giving rise to the concept of marine terminal automation.

### What is marine terminal?

It can be defined as the automation of a significant portion of port activities, such as cargo handling and product transportation. Its purpose is to achieve high standards of efficiency and consistency in product handling, transportation and logistics processes. It also allows for the reduction of human error and time lost due to personnel changes.

### Benefits of marine terminal automation

**Operational performance:** An automated terminal achieves greater operational efficiency over longer periods of time and under all types of conditions. Cost reduction: In high-labor-cost environments, there is greater potential for savings from this new way of working, as long as it effectively replaces workers.

**Operational safety:** Terminal automation ensures the safety of both people and

marine equipment by reducing errors due to human inconsistencies, and workers are protected by being moved away from areas where these computerized machines operate.

**Reduced environmental impact**: The implementation of an automated system in a terminal improves its operational efficiency and minimizes delays, resulting in a reduction in fuel consumption.

### Implications of adoption

One of the main implications is the impact on the workforce, since this change would imply a decrease in the demand labor positions.

Another aspect to consider is the technological aspect, which includes different sectors that will need to be applied and used so that automated systems can operate efficiently.





Likewise, the use of these new technologies will require a cybersecurity system as a guarantee against accidental failures and breakdowns, as well as a way to ensure the integrity of the data in the terminals.

### **Automated terminals**

Rotterdam Terminal: Europe's largest port uses sensors to detect water characteristics to ensure smooth and efficient operations. Hamburg Terminal: Implementing the smartPORT philosophy, focusing on sustainable economic growth and operational efficiency to improve port management.

**Shanghai Terminal:** The world's largest automated terminal uses data collection and processing systems to optimize tasks with high accuracy and efficiency, and is the world's busiest port.

### Conclusions

The automation of marine terminals is a concept that is projected as the progress of the maritime sector, which is largely due to its remarkable benefits such as: increased operational performance, cost reduction and improved efficiency.



29



### AFRECOR Positions Itself as a Leader in Petroleum Waste Valorization

### The company, a subsidiary of the multinational Resiter, has successfully leveraged high technology to penetrate major oil companies in Uruguay, Peru, and Chile.

The Latin American oil industry has a strategic partner when it comes to recovering the sludge that for years has been lost in the massive oil storage tanks. Afrecor, a subsidiary of Resiter, has developed technology for cleaning large storage tanks at refineries and terminals. "Our service is comprehensive. It is not limited to tank cleaning; we also address the management of residual material," says Juan Pablo Luizzi, Afrecor's development manager.

Afrecor evaluates each tank to develop a tailormade plan. This means that before beginning to extract the material, it is already known what will be done with it. *"Therefore, we not only assess the specifics of the tank but also the local possibilities for valorization, which can be done in third-party facilities or at the petroleum facilities themselves,"* Luizzi adds. Committed to productivity and people's safety, Afrecor has incorporated world-class technologies for cleaning, treatment, and transportation. This equipment is adapted to the specific needs of oil companies. **"We have evolved from** *artisanal methods to mechanized and now robotic methods, reducing service times and minimizing personnel exposure,"* says the proud development manager.

TAFRECOR

Afrecor was founded in 2010 in Uruguay and quickly positioned itself as the main manager for ANCAP, the local oil company. In 2019, it partnered with Resiter, achieving the recovery of more than 300,000 barrels of hydrocarbons to date. These hydrocarbons were used partly as alternative fuel in cement kilns and mostly for refining.

www.afrecor.com.uy

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info.eddyfi.com/shop-paut





### BLUEWATER

Since its foundation in 1978, Bluewater has built a technological lead specialising in design, development, lease and operation of Floating Production and Energy Systems, and has become a leading provider of innovative Single Point Mooring Systems.

The company has designed, manufactured, supplied and installed many innovative Floating Production and Energy Systems for the energy industry worldwide through turnkey supply and time charter contracts. The company also provides operational and logistic management and support for Production and Energy Systems.

### Renewables

For offshore renewable energy production, Bluewater has developed a Floating Wind TLP, a Tidal Energy Converter Platform, Solar Matrasses and the Electricity Buoy.

### **FPSO fleet**

Bluewater Energy Services has designed, owned and operated ten FPSOs, of which three have been retired and two have been sold back to the energy companies. Presently Bluewater owns and operates its FPSOs for its clients through a leasing construction. The vessels are designed to high specification and to operate in the harshest environmental conditions, under the most stringent regulatory regimes.

### SPM systems

Bluewater has developed some of the most innovative Single Point

Mooring (SPM) systems in service from Catenary Anchor Leg Mooring (CALM) Buoys, to Turret Mooring and Tower Systems featuring multiple risers. Each system has its own characteristics and fields of application.

Contact: info@bluewater.com



# **bluewater** OCEANS OF KNOWLEDGE

1011



### UNDERWATER HOT TAPPING



### In order to guarantee the operational continuity of an important maritime terminal in Colombia, the first underwater hot tapping was carried out, a transcendental milestone in the history of Colombian engineering.

To achieve this, a 12" pipeline was built 1,500 meters from the shore and at a depth of 18 meters from an existing 24" line, through which the different products imported by the country are transported. Products such as diesel, naphtha and gasoline, which are of vital importance to the national economy.

The project consisted of the assembly of a set made of a sectioning valve, an underwater clamp and a hot tapping machine, installed on a support structure. After assembling the set on the deck of the support vessel, it was coupled with the pipe, previously prepared for the installation of the underwater clamp, which was installed and bolted with tightening torque according to the design by our divers, who were highly trained for this task.

The next step in the process was the tapping. The advance was coordinated from the diving control room, positioning the tapping bit on the surface of the pipe; then tapping was started with the pilot bit. When the system equaled the pressure with that of the line, verified with the pressure gauge located on the hot tapping machine adapter, the tapping continued until the cutter was positioned on the surface of the pipe and tapping was started with the cutter on the wall of the pipe, with an advance of 0.05" every minute, until reaching 2" and the cutting coupon was removed to end the operation.







### Routine Maintenance: Maximize your investment

Grupo HB is a Mexican company founded in 1987, comprising a conglomerate of companies with the mission of providing innovative and efficient solutions in the field of construction and maritime services. Over the years, we have established ourselves as a leaders in the operation and maintenance of loading and unloading systems of crude oil and refined products through CALM Buoys (Catenary Anchor Leg Mooring)

For our company, routine and preventive maintenance of systems is a fundamental part of the company's objectives, as it allows us to enhance three essential pillars in all offshore operations: 1) Safeguarding human life, 2) Preventing environmental damage, and 3) preservation of company assets.

Routine maintenance has also enabled us to avoid catastrophic failures that could interrupt operations, which would result in considerable losses for operators. Major maintenance, or overhaul, is conducted in a scheduled manner, minimizing operational downtime. A scheduled major maintenance can be completed in 45 days, whereas an emergency maintenance might take up to 6 months due to the logistics involved in the delivery of spare parts, materials, dry-docking, and the availability of specialized technicians to execute and certify the work.

For all our maintenance procedures, we consider both the manufacturer's manuals and international standards and recommendations such as those from OCIMF (Oil Companies International Marine Forum), ensuring that all our work meets the highest levels of demand and quality.

Grupo HB also offers project engineering services, construction of breakwaters, docks, mooring stations, maritime terminals, and both single-point and multi-point mooring systems.

Contact information: www.grupohb.com Coprporative offices in Mexico City Email: fabiola.picazo@grupohb.com





### **Coveñas Offshore Terminal: Committed to Development and Sustainability**

In the heart of the Gulf of Morrosquillo, on the Colombian Caribbean coast, lies Ocensa's Offshore Terminal, the final station of Colombia's main oil pipeline, through which more than 70% of the country's oil production is transported.

Thanks to a storage capacity of up to 2.7 million barrels and a state-of-the-art offshore infrastructure, Ocensa transports Blend and Castilla crude oil for export to international markets.

With a long-term perspective, aware of the strategic position it has held in the Colombian Midstream for three decades, and its responsibility to local communities and the region's environment, Ocensa turns 30 in 2024 with many reasons to celebrate.

**It celebrates the milestone** of becoming the most efficient and safe system to transport crude oil between the Llanos production node and the Caribbean Sea, crossing 848 kilometers,

2 mountain ranges, and 26 river basins, adapting to changing market needs and generating comprehensive logistical solutions for its clients.

**It celebrates the commitment** to the environment. Recently, the company restored 39 hectares of mangroves, created an artificial reef that is becoming part of the Caribbean's underwater ecosystem, and launched a biodiversity strategy aimed in this region at conserving reefs, turtles, dolphins, and seabirds.

It celebrates the future of the energy sector, and its transition towards renewable sources. Ocensa has been certified as carbon-neutral since 2021, is now the main provider of renewable energy in the export port of Coveñas, and promotes sustainable development in the region, with initiatives to strengthen the local economy, community organizations, and public institutions.

Learn more at www.ocensa.com.co QR/WEB+SOCIAL MEDIA


# CELEBRATING A MILESTONE CELEBRATING A COMMITMENT CELEBRATING THE FUTURE



### We are the backbone of hydrocarbon transportation in Colombia.

Along 848 km, we are neighbors to 278 communities and cross some of the world's most unique ecosystems, to safely and efficiently connect the Eastern Plains and the export port of Coveñas, in the Caribbean Sea.

Conoce más:



Ocensa

Ocensa en Línea

www.ocensa.com.co

**Oleoducto Ocensa** 



### Caissons

Pump caissons are used to bring sea water on to offshore platforms, either for water injection or as fire water.

There have been many instances where rapid corrosion in the caisson has resulted in complete failure and the lower portion of the caisson has collapsed to the sea floor. The fall of such a large object represents a significant risk to sea floor infrastructure, which in turn generates risk to the life of the people on the platform and can have a large environmental impact in the event of oil or gas release.

### Equipment





Wavemaker® G4 Mini

**Inflatable EFC Ring** 

### **GWT Inspection**

GUL were asked to demonstrate the feasibility of using Guided Wave Testing (GWT) to inspect caissons on a North Sea offshore platform. Nine caissons were inspected over two days.

Ring installation was relatively easy through rope access, without requiring any prior cleaning.

From one test location, GWT data covered the entire above water section plus 15-20m of the caisson below water.

All caissons showed signs of metal loss. The two worst cases were selected for follow up inspection using internal UT equipment, which involved removal of the pump stacks and extensive water jetting to allow several passes of a tethered ultrasonic head that would measure wall loss.

Comparison of the guided wave results to the ultrasonic measurements showed that GWT is an efficient and effective tool to monitor offshore platform caissons, enabling the classification of problem areas before they become failures.



### **Caisson Inspection**

Using Guided Wave Testing to monitor Caisson integrity

### WavePro<sup>™</sup> - GWT Results



### **Proven Results**

The Wavemaker® result from one of the inspected caissons is shown above. Several indications of metal loss were detected. The most severe - located just below the water line and labelled A4 - was estimated to be a 27% loss of pipe cross-section with around 50% wall loss.

The UT result at the location of A4 is shown in the image to the right. A measured total crosssection loss of 25% and wall loss of 45% at this location confirmed the Wavemaker® findings. Other indications showed similar accuracy with defects being detected down to 3% CSA. 210-300-

**UT Result at the location of GWT Indication A4.** Defect found at 21.88m from reference point, with 45% wall loss.

### **Comparison of GWT and UT Main Findings**

Indication	GWT Location [m]	GWT CSA [%]	UT Location [m]	UT CSA [%]	Comments
A1	10.49	8	9.95 - 10.5	13.8	Defect at support.
A2	12.82	10	12.82	7.1	Internal wall loss.
A3	19.54	5	19.58	4.03	Internal wall loss.
A4	21.97	27	21.88	21.88	Primary reason for UT prove-up.
A5	27.50	2.1	27.49	2.15	Sum of multiple defects in close proximity.

Email: info@guided-ultrasonics.com Website: www.guided-ultrasonics.com Tel: +44 845 605 0227 ©2016 Guided Ultrasonics Ltd. All rights reserved. 2016CaseStudy18\_rev0 Jan/2017 GUIDED ULTRASONICS LTD. Wavemaker House, The Ham, Brentford, TW8 8HQ United Kingdom





### "Key Benefits of ILTA Membership for Leadership and Connections in the Liquid Terminals Industry"

In an increasingly interconnected world, and as both people and commodities move at increasingly faster rates, it is more important than ever for companies to have a say in policies impacting their products and operations. For fifty years, the International Liquid Terminals Association (ILTA) has served as the leading voice for the bulk liquid terminals industry in Washington D.C. and across the United States.

In an increasingly interconnected world, and as both people and commodities move at increasingly faster rates, it is more important than ever for companies to have a say in policies impacting their products and operations. For fifty years, the International Liquid Terminals Association (ILTA) has served as the leading voice for the bulk liquid terminals industry in Washington D.C. and across the United States.

With eighty terminal company members and over three hundred supplier company members, ILTA's membership is globally diverse and rich in operational expertise. ILTA's terminal members operate the liquid terminals and above-ground storage tank facilities that interconnect with, and provide services to, the various modes of liquid transportation, including ships, barges, tank trucks, rail cars and pipelines. Our members handle a large variety of chemicals, along with crude oil, petroleum products, renewable fuels, asphalt, animal fats and oils, vegetable oils, molasses, and fertilizers. Likewise, our supplier members provide a wide variety of equipment and services to the bulk liquid terminal and tank storage industry, including construction, inspection, new technologies, engineering consulting, and more!

Joining ILTA means gaining access to a vast network of terminal operators, consultants, suppliers, and experts in the ever-important bulk liquid commodities industry. Moreover, members enjoy access to our multiple in-person events throughout the year, including our capstone annual conference and trade show, two Environment, Government, Health, Safety, and Security (EGHSS) subject matter expert meetings, and our Terminal Operating Practices Symposium (TOPS). And, of course, our combined efforts on Capitol Hill and across numerous federal agencies help to steer legislative and regulatory policies in a direction that is beneficial for the entire industry. If you are interested in learning more about ILTA, we encourage you to reach out to us on www.ilta.org!

#### Why is ILTA Membership Important?

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If you are interested in learning more about ILTA, we encourage you to contact us at www.ilta.org.





Transpetro is the largest oil, by-products, and biofuels logistics company in Latin America. As a major subsidiary of Petrobras, the company currently attends a portfolio of over 160 clients, offering logistics services, operating and maintaining terminals, pipelines, and vessels of various sizes.

Operating 48 terminals (27 waterway terminals and 21 land-based terminals), approximately 8,500 kilometers of pipelines, and 33 vessels, Transpetro leverages its national reach to provide wide-ranging services with a focus on intermodality and multimodality for distributors, refineries, traders, and other companies in the oil and gas sector.

This extensive network, combined with technical and operational expertise, safety, predictability, and competitive pricing, has been recognized by the private sector. An example of this strategic positioning in seeking business partners is Transpetro's new contracts with various clients for Ship-to-Ship operations (transfer of oil and by-products between vessels). This logistical option enables economies of scale and can reduce maritime transport costs by up to 30%.

RANSPETRO

# Achieving effective results and vision of the future

In the last year, Transpetro achieved a net profit of R\$ 498 million, driven by improved performance, increased operational efficiency, and a strategic focus on pursuing new business opportunities.

Beyond financial results and mindful of its social responsibility, Transpetro has also undertaken various initiatives benefiting communities neighboring its facilities, reaching tens of thousands of people. Additionally, the company has implemented a wide range of initiatives that have made Transpetro more diverse and inclusive.

In the coming years, Transpetro is getting ready for the new market context and energy transition, reinforcing its unwavering commitment to people, society, and the environment.

41





# Deferral of Inspection in Hydrocarbon Storage Tanks

Hydrocarbon storage tanks are a fundamental part of the global energy infrastructure, serving as reservoirs for crude oil, refined products, and other petroleum derivatives. The integrity management and maintenance of these assets are critical activities to prevent incidents and catastrophic accidents that could have negative consequences, causing injuries, loss of life, environmental damage, and harm to facilities. Periodic inspections are essential to ensure the integrity of these tanks, but under certain circumstances, it is necessary to defer these inspections.

### Is it safe to defer the inspection of storage tanks?

International regulations allow for such deferrals, establishing the minimum guidelines required to safely defer periodic inspections. Currently, this methodology has been successfully implemented by owners and users of storage terminals, demonstrating that, with a correct analysis of the existing information and a physical evaluation of the asset, complemented by simulations and calculations, there are sufficient elements to guarantee the deferral.

However, carrying out a deferral without properly evaluating the factors involved to ensure the structural integrity of these assets can seriously jeopardize the safe operation of the facilities.

Vector Engineering International has successfully carried out inspection deferrals at the request of facility owners. Vector Engineering International has experience and highly qualified personnel in various disciplines such as design, mechanical integrity, risk analysis, non-destructive testing, metallurgy and welding, modeling and simulation, corrosion and failure mechanisms, functional safety, maintenance, and repair.



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# **Guajira Association Celebrates 50 Years of Energy Contribution and Development for Colombia**

It is currently the only offshore project operating in the country. It generates 90 million cubic feet of natural gas per day, enough to power 450,000 stoves simultaneously.

Over the last four years, more than 500 jobs have been created and goods and services worth nearly \$3 billion Colombian pesos have been acquired.

The Guajira Association commemorates 50 years of contributing to Colombia's energy, economic, and social development. This partnership has been essential since its inception in 1974, when Ecopetrol and Texas Petroleum Company (later acquired by Chevron) signed one of the first association contracts in the nation's history. This collaboration led to the establishment of what remains the only offshore hydrocarbon production project in the country. Throughout its history, the Guajira Association currently comprising Ecopetrol (57%) and Hocol (43%)—has produced over 5.7 Tera Cubic Feet (TCF) of natural gas and currently delivers approximately 90 million cubic feet per day, enough to power more than 450,000 gas stoves simultaneously.

Gas production from La Guajira has driven the widespread use of natural gas in Colombia and enabled significant economic and social opportunities. Hocol took over the operation of the Chuchupa (offshore) and Ballena fields in May 2020. Since then, the Guajira Association has created over 500 jobs and acquired goods and services worth over 3 billion Colombian pesos. Additionally, it has invested over 7 billion Colombian pesos in the welfare of local communities.



The Guajira Association contributes daily royalties that drive the department's development. Over five decades, gas operations in La Guajira have delivered more than \$1.1 billion US dollars in taxes, aimed at improving the country's administration, infrastructure, health, and education.

Projects such as Tourism Entrepreneurs, Farmer's Markets, and Young Entrepreneurs reflect the Guajira Association's commitment to the economic development of the region and the indigenous Wayuú communities.

Since 2020, more than 6,000 people have benefited from health and nutrition programs like Operation Smile and Healthy La Guajira.

The La Guajira Food Bank is a testament to the commitment to food security for vulnerable communities.

In education, initiatives such as Building Knowledge

Guajira and support for actions that contribute to improving the quality of education in the department stand out.

The supply of more than 500 million liters of potable water has improved the quality of life for a significant number of communities in the department.

The development of this partnership also shows a strong commitment to the environment by promoting artisanal fishing and developing environmental conservation projects for protected species such as sea turtles, the Guajira cardinal, the care of seagrass beds, and the research of marine ecosystems, as well as reforestation actions and the protection of the Integrated Management District -Montes de Oca Natural Reserve.

As it commemorates 50 years of existence, the Guajira Association reaffirms its commitment to sustainable development and the well-being of La Guajira and Colombia.



INSPENET



# LAMOR

Lamor, headquartered in Finland with strategically located offices worldwide, is a global leader in environmental solutions and oil spill response across a wide range of scenarios. In its mission to clean the world, Lamor provides services and solutions in three focus areas: Environmental Protection, Material Recycling, and Remediation and Restoration.

Lamor's ability to offer timely and reactive oil spill response solutions is supported by our global inventory of strategically located equipment and our vast network of response points. Lamor brings operations of oil spill response, recovery, and cleanup at all levels.

**Tier 1:** Short to medium-term equipment rental. Lamor offers a range of equipment to meet the operational needs of all our clients from our current global reserves at highly competitive prices.

**Tier 2:** Level 2 standby services are provided as specialized services or as a cooperative model within the country with the required personnel. By utilizing equipment supplied through our global reserves, Lamor offers cost-effective offshore, near shore, and inland response and recovery operations, ensuring that clients can address emergency situations quickly and efficiently. **Tier 3:** Lamor can offer Level 3 personnel and equipment worldwide by leveraging its extensive network of regional and international resources.

In addition to emergency response and hazardous waste management services, the company provides a combination of theoretical and practical courses in oil spill response accredited by the Nautical Institute (UK) and meets the requirements established by the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC Convention).

Contact us Info@lamor.com. Web: www.lamor.com.





# Time for a Change of Course- Why Digitalization Is Essential for Terminal Operations

In the rapidly evolving maritime industry, digitalization is no longer a luxury—it's a necessity. From streamlining operations to ensuring safety, technology is transforming marine terminals worldwide. Digitalization integrates essential supply chain processes for success in the complex terminal landscape.

#### Why Digitalization Matters for Marine Terminals

#### **Enhancing Operational Efficiency**

Digitalization improves terminal operational efficiency. By consistently collecting data on vessel call events, terminal operators gain a comprehensive analytical view. This perspective helps identify best practices and optimize vessel call processes for greater efficiency. The digital approach saves time and reduces human error, making operations more accurate and reliable.

### **Ensuring Safety and Compliance**

Safety is paramount in the maritime industry, and digitalization ensures safety standards are met. By integrating safety protocols and compliance requirements into digital systems, terminals ensure all necessary checks and procedures are consistently followed.

### Integrating Multiple Processes for Terminals Ship-Shore Compatibility Assessments

Ship-shore compatibility assessments ensure vessels can dock safely and efficiently. Digital tools facilitate these assessments by providing the latest data on vessel dimensions, cargo, and berth availability.

#### **Marine Terminal Scheduling**

Marine Terminal Scheduling involves coordinating multiple stakeholders and resources. Digital tools simplify this process by providing real-time updates and alerts, keeping parties informed and aligned.

#### **Managing Delays**

Accurate recording and categorizing helps identify the most impactful delays and root causes. Once identified, proactive measures can be implemented to prevent future issues. Managing delays is essential as they directly influence productivity and profitability. Digital tools offer real-time updates and alerts, enabling operators to quickly address any issues.

## Embracing digital solutions positions terminal operators for new opportunities

Digitalization is transforming terminal operations, enhancing efficiency and safety through integration. By leveraging digital tools, terminals can streamline operations, ensure compliance, and optimize performance to bolster efficient and safe terminal operations.

MIS Marine is a leading marine assurance software provider. Our Marine Terminal Operations system supports terminals globally in applying the latest digital technologies to their operations.

#### For more details, visit: https://mismarine.com/mto





# The Role of Marine Terminals in the Energy Transition

Marine terminals are a crucial link in the global energy value chain, facilitating the efficient import and export of fuels by sea or river. As we move towards a more sustainable future, the role of marine terminals is set to evolve.

The International Maritime Organization (IMO)'s 2023 strategy sets levels of ambition for decarbonizing shipping by 2050, emphasizing the need to reduce greenhouse gas emissions across the maritime sector. Particularly for ships on short routes, emissions at the port can account for a significant part of their total. Therefore, marine terminals are uniquely positioned to help reduce these emissions and contribute to a greener shipping industry.

One effective strategy is to improve scheduling to minimize the time ships spend waiting at anchorages for berth availability. Initiatives such as just-in-time arrivals can greatly impact emissions by allowing ships to reduce sailing speeds while maintaining logistical efficiency. Additionally, the provision of onshore power supply enables ships to switch off their engines while at berth, further reducing fuel consumption and emissions. Furthermore, the supply of low- and zero-carbon bunkers to ships will often occur in terminals. As the demand for these fuels increases, terminals must adapt to handle a variety of new, more challenging products. These products may need to be stored at very low cryogenic temperatures and pose greater risks due to their toxicity, volatility, and flammability.

This transition is not a distant future scenario, with targets to be reached as early as 2030; it requires immediate action from terminal operators. Terminals should begin managing these changes to stay ahead of regulatory requirements and market demands. While challenging, this shift also brings opportunities for innovation and leadership in a future with a more diverse energy matrix.

In summary, marine terminals will remain vital in the energy chain. By adopting new technologies and practices, operators can help drive the maritime industry toward a sustainable future, ensuring safety and efficiency in energy transportation.

### **Filipe Santana**

Engineering Adviser, Head of Environment and Energy Transition - OCIMF





Puerto Bahía: multimodal maritime and fluvial operations in Cartagena, Colombia.

In the dynamic landscape of international trade, Puerto Bahía is positioned as an essential strategic partner for liquid bulk and oil industries, thanks to its prime geographical location in the bay of Cartagena, Colombia, and its extensive connectivity by sea, river, and land. With a natural depth of 20 meters, enabling the handling of deep-draft vessels, Puerto Bahía ensures smooth and efficient operations. Moreover, it features freehold areas and expansion areas totaling 155 hectares, ensuring space for growth and continuous development. Additionally, it offers a special bonded area with customs clearance free for up to 2 years.

Puerto Bahía is the largest private storage terminal in Colombia for crude oil and refined products, with 2 docking positions for vessels up to 1.2 million barrels and capability for crossdocking operations. It features 32 hectares for 8 storage tanks, each with a nominal capacity of 330kbbl, heating system in 4 of them, an immediate capacity to expand up to 660kbbl with 2 additional tanks and the possibility to further keep expanding the storage area; as well as the capability to handle convoys of barges up to 2,500 DWT simultaneously, with 12 positions for truck unloading and 3 for simultaneous loading.

In addition to its focus on operational efficiency and excellence in port services, Puerto Bahía has invested over US\$ 5 million over the past 15 years in social initiatives focused on education, quality of life, and economic development, benefiting more than 64,000 people.

Puerto Bahía not only offers world-class facilities but also a commitment to operational excellence and customer satisfaction. Join us to discover how we can transform your supply chain and take your business to the next level.



"DRIVING TANKS"





BECHT

# **A Proactive Approach to Manage Storage Tanks**

Storage tanks play a key role in the energy and liquids commodities supply change. Diversity of products, business logistic needs and regulatory framework all make storage tank management programs very complex. Visibility and severity of storage tanks incidents generate public opinion reactions that regulatory bodies, tank owner operators and industry organizations try to address by imposing new mandates and standards.

commonly overlooked while the focus has been helped narrow the focus to four topics: reactive to keep compliance with standards and regulatory bodies mandates.

The Becht "Driving Tanks" initiative is focused on proactively managing storage tank problems by consolidating a network of tank senior owner-operators working together 4 Risk Based Tank Integrity Program to pool experience to influence and impact standards improvements, to move towards proactive changes to risk reduction, operational optimization and improved profits.

We will share lessons learned and analyze data guestions and topics for discussion. trends to better define and prioritize general interest tank initiatives, research and feedback For more information on "Driving Tanks" contact to industry organizations, committees and Rafael Rengifo/rrengifo@becht.com regulators.

We started the conversation with the "Driving Tanks" initiative kickoff meeting that occurred May 8th 2024 in Houston. The meeting was facilitated by Becht with the participation of

The root cause of storage tanks problems is several tanks owner operators. The meeting

### **1 Floating Roof Reliability Centered** Management **2 Bottom Repair Proactive Strategies 3 Repairs Scope of Work - Review/Approval** Workflow

We also committed to create the "Driving Tanks" Industry Forum where our community of **"Tank** Drivers" will be sharing lesson learned and exchanging experiences in response to posted





# ENGIE Mexico: Transforming Communities Through Sustainable Development

Investment in social issues and community support are fundamental pillars for building a more sustainable world. When companies commit to the development of the communities where they operate, benefits are generated for everyone.

One of the companies with an interesting approach to community relations and social participation is ENGIE Mexico, a leading company in the energy sector with 26 years of presence in the country. For over a decade, one of its priorities has been sustainable development and social responsibility through a social management strategy that transforms communities and generates long-term value.

During its operations in the country, it has positively impacted more than 22 million Mexicans through projects that generate social, environmental, and economic benefits in the regions where it operates. ENGIE bases its work on understanding the needs of the communities, defining four work areas: access to potable water, access to clean energy, capacity development, and the improvement of community infrastructure.

ENGIE Mexico has become an agent of positive change, transforming communities and promoting the wellbeing of people. Its comprehensive approach to social responsibility translates into tangible projects that directly impact the lives of thousands of Mexicans.

### **Potable Water for All:**

In the heart of Bajío, a community that previously suffered from a lack of potable water now enjoys this vital resource thanks to ENGIE's investment in hydro panels. This technology allows solar panels not only to capture sunlight and generate electricity but also to condense and purify water for human consumption. This project, with an investment of \$80,000, has not only solved the issue of water access but also allowed the community to reduce their expenses by using solar energy for water extraction.

### Lighting the Future:

Communities need more than potable water; they also need light. ENGIE understands this and brings clean energy through the installation of lighting in parks and common areas. This not only improves the safety and quality of life of the residents but also creates spaces for gatherings and social interaction.

### More Than a Commitment, a Philosophy:

ENGIE's commitment to sustainable development is not just a business strategy; it is a philosophy that permeates all its actions. The company seeks a positive and lasting social impact that consolidates the transformation of the country's communities.

### Women's Empowerment:

Women are a fundamental pillar in the development of communities. ENGIE recognizes their importance, and thus, 52% of the population benefiting from its renewable energy projects are women. The company provides them with opportunities for training, employment, and leadership, promoting their empowerment and that of their families. To date, ENGIE has demonstrated its commitment to social development through an investment of over 70 million pesos in 384 initiatives. This effort has directly impacted more than 430,000 people, transforming lives and communities.



5



HYDLOGON

# Envisioning the Future of Bulk Terminals

Heiyantuduwa, Ramindu Solutions Offering Leader (Midstream)

The landscape of bulk terminals is rapidly evolving, driven by transformative changes in energy materials, regulatory frameworks, and stakeholder expectations. As we stand on the cusp of a new era, the industry must proactively adapt to ensure its future viability and success.

#### Transition to new energy.

One of the primary challenges facing bulk terminals is the transition to new energy materials. As the world shifts towards cleaner energy sources, terminals must be prepared to handle a diverse range of products, from traditional fossil fuels to emerging alternatives like hydrogen and biofuels. This requires not only physical infrastructure upgrades but also a fundamental rethinking of operational processes and safety protocols.

#### Regulatory compliance.

Regulatory compliance is another critical factor shaping the future of bulk terminals. Stringent emissions regulations and environmental standards are becoming increasingly common worldwide. Terminals must invest in advanced technologies and practices to reduce their carbon footprint and minimize environmental impact. This includes implementing energy-efficient equipment, adopting cleaner handling processes, and exploring innovative solutions for waste management and air quality control.

#### Adopting latest technologies.

To achieve these goals, partnering with reputable technology companies is crucial. These collaborations bring expertise in automation and cybersecurity, two critical aspects of modern terminal operations. Advanced automation systems can optimize processes, reduce human error, and increase throughput, while robust cybersecurity measures protect against everevolving digital threats, safeguarding sensitive data and ensuring operational continuity.

Moreover, future-ready bulk terminals must be equipped to support all modes of transportation efficiently. This includes seamless integration of truck, rail, marine, and pipeline operations. By developing flexible infrastructure and intelligent management systems, terminals can adapt to changing transportation dynamics and offer comprehensive logistics solutions to their clients.

#### Information transparency to the stakeholders.

Information accessibility and transparency are becoming paramount in the digital age. Stakeholders at all levels – from enterprise management to local terminal operators and external partners – demand real-time, accurate data to make informed decisions. Implementing robust digital infrastructure and data management systems is essential for future-proofing bulk terminals. This not only enhances operational efficiency but also improves safety, regulatory compliance, and customer satisfaction.

#### Collaboration of experience to gain expertise.

As industry leaders like Honeywell share their expertise, bulk terminals can leverage best practices and cuttingedge technologies to navigate challenges. By embracing innovation, prioritizing sustainability, and fostering a culture of continuous improvement, the industry can not only adapt to change but thrive in the face of it.

#### Investing in Future-Readiness for Bulk Terminals

The future of bulk terminals lies in their ability to anticipate and respond to evolving needs. Those who invest in future-readiness today – through technological partnerships, multi-modal transportation capabilities, and a commitment to sustainability – will be wellpositioned to lead the industry tomorrow, ensuring the continued vital role of bulk terminals in global trade and energy distribution.

#### ABOUT THE CONTRIBUTOR

Currently Ramindu Heiyantuduwa is the Solutions Offering Leader for the Honeywell's PMT – Mid-Stream sector. Ramindu has over 27 years of experience in the oil and gas industry.

Since beginning of his career as a Software developer and a Software Systems Administrator, Ramindu has held positions in Design, Develop and Commissioning of Terminal Automation Systems, sales & proposal support as a Technical Service Consultant before becoming a Solution Offering Lead for the Mid-Stream sector of Honeywell. He is a resourceful solution-oriented senior leader with direct experience in real-time business applications specifically for Terminal Automation.

Ramindu holds a bachelor's degree in management information system from the National University of Ireland and a master's degree in information technology from University of Moratuwa – Sri Lanka.







Cap. Ricardo Izquierdo CEO RECUMAR

# SLOM XX YEARS

Today, 20 years after taking the first steps towards the creation of the Latin American Society of Oil Marine Terminals Operators and Monobuoys – SLOM, we can acknowledge that thanks to the conviction and persistence of a group of professionals in the sector, and with the support of many individuals and companies, we have progressed on a path that has not been easy. However, 20 years later, we can proudly recognize our achievements as the Society that integrates Oil Marine Terminals Operators from Latin America and other regions.

At the beginning, it was very difficult to "knock on doors" to convince people and companies in the sector that this was a good idea and that the integration among operators would be very useful, aiming to share knowledge and experiences to achieve safer, more efficient, and cleaner maritime-port operations, benefiting our terminals, our ports, our countries, and our own people.

But today, the feeling of gratitude is immense towards all those who, in one way or another, helped us to forge this idea. Likewise, we are deeply thankful to those who have been part of the organization and administration of SLOM during these first 20 years. Thanks to the dedication and sacrifice of each member and their families, today we have an organized, properly structured Society that inspires confidence and credibility in the maritime-port-oil sector.

The challenges that lie ahead as the society that integrates oil marine terminals operators are numerous, and today SLOM is capable of facing these new challenges for the benefit of the region.

New technologies in energy, human awareness as a central axis, and the current environmental commitments compel us to continuously review and update our processes to become increasingly competitive, efficient, and safe in what we do.

The future that awaits SLOM is fantastic, as we strive to be better citizens of this planet and better operators of our oil marine terminals.

Captain Ricardo Izquierdo Gonzalez CEO RECUMAR SAS Founding Member of SLOM SLOM President 2015-2022

53







TRI STANIS

# Hoses & Ancillaries equipment supply for Oil & Gas Industry

# **Our History**

IOCS S.r.L. is a company highly qualified in the design and supply of products and accessories for loading & Unloading Vessel System from Oil & Gas fluids, also specialized in providing consultancy for the development of systems, performing analyses to support problems on pipes &/or hose string, creating all the necessary devices for handling of the equipment, providing, if necessary, also to design them, specialized in design, manufacturing and supply of a whole complete system for mooring, loading and unloading vessel, in Offshore & Onshore fields.

### **Research, Developement & Quality**

The Company is committed to deliver sustainable value to its customers focused on achieving excellence in providing first class quality products, innovation and services to the Oil & Gas Industry.

IOCS is able to supply a complete dedicated customized system.

The quality of our services is the result of constant updating about the modern techniques and technologies.

IOCS S.r.L. Hoses & Ancillaries Equipment Supply for Oil & Gas Industry, pursuing the highest standards of quality and attention to the customer in the offer of its products: the customer is at the centre of all activities planned by the company.

Quality & Environmental Responsibility Working Together.



### IOCS S.r.l.

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### SOFEC, looking to the future in Renewable Energy, based on our existing technology and long experience.

For more than 50 years, SOFEC has been a world leader in the design and construction of marine terminals (CALM and SALM type buoys) and mooring systems (Internal and External Turrets, Tower Yokes, Submerged Yokes, Spread Moorings, Disconnectable Systems, etc.) for floating units like FPSO, FSO, FSRU, FLNG, among others. To date SOFEC has delivered more than 140 projects around the world, from shallow to deep water, in the most severe marine environments and conditions, from cyclonic conditions to the North Sea.

As a responsible company committed to the society and the environmental well-being, SOFEC has developed a new renewable energy portfolio in alignment with our corporate goals. This portfolio comprises products based on existing and proven technologies that, with certain modifications, have been repurposed for use in the renewable and clean energy industry.

### **Our product line includes:**

- Jetty-less solutions for the transport of refrigerated ammonia and other e-fuels

- Mooring systems for floating offshore wind turbine platforms

- Solutions for charging offshore electric vessels

These innovative solutions are illustrated in the accompanying graphic below.

We take this opportunity to congratulate the Latin American Society of Monobuoy Operators and Maritime Oil Terminals (SLOM) on its 20th anniversary! During this time, SOFEC has supported SLOM and participated in most of their annual conferences, as a sponsor, exhibitor, and speaker. We hope that SLOM will continue to grow, and we will continue supporting and accompanying them for many more years to come.





55

# Navigating to a Sustainable Future: The Impact of Terminals on the Energy Transition

Author: Eng. Mario Toyo. INSPENET Content Director.

In the global effort to achieve sustainability and security, terminals are emerging as key players in the energy transition. Traditionally, these infrastructures have been hubs of maritime trade and transportation, but today they are adapting to meet environmental challenges and contribute to a greener future.

### Strategies in the energy transition 1 Reducing emissions:

Electrify equipment: Replacing fossil fuelpowered machinery with electric or hybrid equipment.

Optimize energy efficiency: Implement energy management systems to reduce electricity and fuel consumption.

Use of renewable energy: Incorporate renewable energy sources such as solar or wind power to power port operations.

Green logistics: Encourage the use of alternative fuels and electric vehicles in internal terminal logistics.

### 2. Sustainable Supply Chain Management:

Work with carriers: Incentivizing the use of environmentally friendly vehicles and promoting sustainable transportation practices among ocean carriers and barge operators.

Route Optimization and Waiting Times: Reduce unnecessary emissions by optimizing transportation routes and efficiently managing port waiting times.

Implement traceability systems: Facilitate supply chain tracking to ensure responsible management of goods and reduce waste.

### 3. Investing in innovative technologies:

Intelligent Port Management Systems: Use software and digital platforms to optimize operations management, reduce energy consumption and improve logistics efficiency. Robotics and automation: Automate repetitive and hazardous tasks to improve safety and reduce reliance on intensive labor.

Internet of Things (IoT): Deploy sensors and connected devices to collect real-time data on terminal operations and make more informed decisions for energy optimization and resource management.

### 4. Collaboration and Strategic Alliances:

Establish partnerships with renewable energy companies: Collaborate with renewable energy providers to ensure a clean and sustainable energy supply for port operations.



The energy transition is an urgent environmental necessity and an opportunity for port terminals to become more competitive, resilient and attractive to investors.

It is the perfect time for port terminals to take the lead and sail into a more sustainable and prosperous future.

Work with government agencies: Work with local and national authorities to develop public policies that encourage the adoption of sustainable practices in the sector.

Encourage community involvement: Involve local communities in the energy transition process, informing them of the benefits and raising awareness.

### 5. Awareness and Training:

Implement awareness programs: Educate employees about the importance of sustainability and practices they can implement to reduce their environmental impact at work.

Provide training on sustainable practices: Provide specialized training to employees so they can effectively implement new technologies and practices.

Promote the scholarship plan: Provide training based on workers' behavior and performance (meritocracy) and focused on strengthening their professional development.

In summary, terminals are moving toward a green future by adopting sustainable practices and innovative technologies. Their role in the energy transition is transforming the maritime sector and contributing significantly to the fight against global climate change.



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ENGINEERED TANK PRODUCTS











Buzca



Puerto Bahía







PENSPEN















59



Earl-Crochet Owner at Crochet Midstream Consulting

Inspecting Tanks in 2024 and beyond

How do you inspect your tanks today? A more important question is how will you inspect your tanks tomorrow and beyond?

Are you using robots and/or drones to inspect your tanks today? Should you? As I say frequently when discussing the solution to problems, it depends. For well over 100 years, steel tanks have been used to store large amounts of liquids. Today, we store all kinds of liquids including crude oil, gasoline, diesel, and jet fuel, ethanol, chemicals, and petrochemicals, and more recently, renewables.

When I started in the industry in the late 1980's there was no inspection standard for the industry to use. I was taught on-the-job training by more experienced personnel. It was common practice to wait for a tank to start leaking before deciding to take it out of service. Obviously, this is no longer considered a viable operating scenario.

The main concern from an integrity standpoint for tank owners has always been the condition of the tank bottom. Until relatively recently, tanks had to be taken out of service to determine the condition of the bottom. This was done early in my career by using a manual pit gauge and a hammer. If you wanted to know the condition of the bottom side of the tank for sure, you had to cut out a coupon out of the bottom (and of course then repair the hole).

Sometimes, a handheld ultrasonic meter was used, but they can only access a <sup>1</sup>/<sub>4</sub> square inch of the bottom at a time. To put that in perspective, a 100foot diameter has over 1,000,000 square inches! This translates into hours on your hands and knees for a small amount of data. Plus, you wear out kneepads and gloves quickly; I speak from personal experience.

Today it is common practice to use MFE floor scanners to determine metal loss, then prove up the indications with ultrasonics, which are more accurate than when I started. Today in many instances, a robot can be inserted into the tank that not only can determine the condition of the floor, but often can provide video evidence of any sludge on the floor and other conditions of the tank that an owner would like to know. Drones offer the opportunity to provide owners pictures and/or video of tanks. This can be used for things such as documenting the monthly visual inspections that are required by API 653. Drones can also provide high-definition video of places on the tank that were often previously determined to be too difficult or too unsafe to access inside the tank during out of service inspections.

Some drones can perform ultrasonic thickness readings in locations not normally reached by inspectors. This is helpful both for in-service and out of service inspections, especially in areas hard to reach by an inspector without a lot of time and effort.

How will drones and robotics help in the future? Nobody knows, but I do have a few predictions. I think you will see smaller and more robust robots perform a greater percentage of tank inspections, in more tanks, while they are in service. This will allow owners to make better decisions on when to take a tank out of service, before there are integrity issues.

I also think drones will be utilized more to perform visual inspections, especially when coupled with AI and ML to identify changes that need to be further assessed by an API 653 inspector. Only time will tell if I'm right or not (but I think I am, IoI).







John Evans VP Strategy at Virtual Tank Solutions Navigating the AST Data Deluge with TankFax

In the ever-evolving landscape of industrial digitization, the ability to collect and store data is no longer a challenge facilitating the belief that more data is better, but let's put these oceans of data into the context of what is wanted versus what is needed. Then throw the mass exodus of irreplaceable knowledge and experience from the industry into the mix together with a more challenging regulatory environment, and you clearly have a storm on the horizon.



Aboveground Storage Tanks (ASTs) play a pivotal role in many industries, from oil and gas to petrochemicals and manufacturing. Ensuring the safety, reliability, and compliance of these tanks is paramount given the potential risks associated with the often-hazardous materials contained therein. Traditionally, AST data is collected through typical inspections, which are often time-consuming and prone to human error. TankFax leverages comprehensive work practices derived from, and in combination with, many years of practical field experience, to collate only the most pertinent data from these inspections, subsequently ensuring its accuracy and consistency. This now meaningful and dependable data serves as the foundation upon which actionable insight can be derived.

One of the challenges increasingly faced by industries dealing with vast amounts of data is its interpretation. TankFax structures the collated data in a straightforward, comprehensible manner enabling operators and engineers alike to quickly interpret the information without the need for complex data analysis tools. This ease of interpretation not only facilitates the efficient monitoring of assets but also the decision-making processes ensuring that potential issues are promptly identified and addressed. Furthermore, our engineers at Virtual Tank Solutions review and validate the condition of the ASTs based on the collated and structured pertinent data so that companies can gain valuable knowledge about the performance and condition of their tank assets with minimum delay.



61

### Ing. Andy Stetzler

# **Considerations for Locating Tank** Challenges of Tank Siting

Sometimes the tank location is obvious, and other times not so much. The location must consider access for construction and long-term use. - how you will get product to and from the tank now and in the future? AccessLocation may be limited by access to roads, rail, or pipelines must be considered. Weather can also be a consideration -Is is the site accessible during adverse weatherwhen it needs to be accessible? Experience informs us that vacant property is not necessarily the ideal location because of existing issues that have already been identified.Often tanks are located where nothing is currently present, but sometimes there is a reason nothing is there; empty land may be empty for a reason.

"Tank builders can review gGeotechnical conditions to accommodate , both natural and manmade obstacles which, can affect possible construction," said Steve Pollock, STI/SPFA Technical Manager. Site soils must be able to support the weight of the tank and its contents. Items that must be considered include:

- Soil quality and strength
- High groundwater tables
- Abandoned foundations
- or past construction remnants
- The presence of buried utilities
- Past site contamination

"Allow prospective tank builders to visit the site prior to bidding," recommends Andy Stetzler, Sales Manager at Caldwell Tanks, Inc. "As a tank builder, we can accommodate most site conditions and safety considerations."

To prevent surprises, a thorough site evaluation must be completed. Performing a geotechnical investigation will establish site conditions. The results will determine any improvements needed to provide suitable support for the site.

The amount of space required will depend on the tank's type and size, the secondary containment method selected for the tank, and the space needed for supporting infrastructure such as roads, rail connections, load racks, pumps, valves, and other equipment. Access and supporting equipment may requireAt a minimum, there should be at least 30 feet of clear area around the tank. The total amount of space required will depend on the tank's type and size, the secondary containment method selected for the tank, and the space needed for supporting infrastructure. for access and supporting equipment.

The surrounding area should be free evaluated forof aboveground and buried utilities. Depending on what is

stored inside the tank, the type of utility can require certain setbacks be maintainedSetbacks to various utilities should be considered and honored based on product stored in the tank. It is always also wisegood to consider space for future expansion as the surrounding infrastructure can often be used to support more than one tank.

In the event of a failure, industry standards require secondary containment. Tanks storing regulated materials generally require secondary containment to provide protection in the event of a failure. Options include:

Construction of earthen or lined dikes around the tanks, including:

Placing impervious material below the tank

With a double bottom installed under the tank to provide containment

Building the storage tank inside of a slightly larger containment tank. This option can be used when tanks are located in urban areas. It requires the least amount of space, butspace but may also be more expensive.

The staging location should be accessible to facilitate deliveries and allow equipment and materials to arrive at the construction site. Another consideration is the construction staging area. Field erected tank Cconstruction of field erected storage tanks involves handling large pieces of steel using heavy equipment. These materials must be accessible conveniently placed during the building process to avoid delays on the project. The staging location should be near a highway to facilitate deliveries and allow equipment and materials to arrive at the construction site. Separation between the staging location and the tank construction site can delay the project.







### Christine Schlenker VP, Greater. Houston Port Bureau Making Port Call Efficiency the Standard

Improving port call efficiency is increasingly important as companies strive to reduce emissions, costs, and unproductive time in their maritime supply chains. Major infrastructure projects, like the expansion of the Houston Ship Channel currently underway, are essential to safe and efficient port growth and increased capacity. However, harnessing operational efficiencies allows the port industry to better use the infrastructure that is already in place. The Greater Houston Port Bureau's Efficiency Committee is collaborating with maritime stakeholders to tackle these challenges in the ports of the greater Houston, Texas, area, including Houston, Texas City, Galveston, and Freeport.

The port of Houston is the largest port by cargo tonnage and by deep draft vessel arrivals in the United States. Over 225,000 vessel transits occur annually in the greater Houston port region, including deep draft ships, shallow draft tugs and tows, and ferries. Some of these vessels, predominantly chemical parcel tankers, visit multiple berths in one or more of the local ports. These port call rotations are often complex, requiring tight coordination between the stakeholders.

Our work has revealed a common problem in the port call process: suboptimal communication. But, the solution isn't as easy as sending more emails, especially as the industry is transitioning between analog, digital, and automated processes.

Communication is the key to optimizing the port call rotation. Exchanging the right information, at the right time, between the right parties enables each of the stakeholders to make better decisions. In practice, though, lack of standard processes and data formats can lead to unreliable information exchange.

In June 2024, Stolt Tankers, Dow Inc., SGS, and Vopak IIA Freeport announced the results of an eight-month project to improve communication and standardize processes. The result of increased collaboration was an average reduction of 2 hours of non-cargo transfer time alongside per ship.

The Port Bureau's Efficiency Committee has three subcommittees designed to bring results like this to the Houston-area port community and beyond. A series of whitepapers will be released in 2024 introducing a common data dictionary, process standardization, and key performance indicators.

A common data dictionary ensures that all parties in a communication thread are indeed discussing the same time stamps and pieces of information. Our committee found that even commonly used terms, such as estimated time at berth, were interpreted differently by parties in the same exchange. A data exchange mapping identifies the when, with whom, and by whom information should be exchanged. For example, the cargo owner and the tank terminal need to confirm tank readiness before the vessel can be called to the dock for cargo operations.

One of the main hurdles for process standardization is overcoming the inertia of old ways of working. The Port Bureau's Efficiency Committee is focused on collaboration from inception to implementation so that each stakeholder has ownership of the process standards developed. One of our current projects is standardizing communications between cargo and tank surveyors and the other stakeholders in the port call process. When the committee analyzed reasons for delays that occurred during sampling and surveying, some of the tops reasons again stemmed from gaps in communication. Delays such as not having the correct sampling equipment and surveyors arriving late could be avoided by providing the surveyor with timely and complete information.

The third forthcoming whitepaper will evaluate port wide key performance indicators. Each stakeholder tracks their own KPIs and measures of efficiency. The Port Bureau Efficiency Committee seeks to track portwide performance to show the improvements over time from implementing efficiency projects that encompass many stakeholders in the maritime supply chain.

As more stakeholders adopt standard data fields and processes, we are readying the industry for a shared vision for efficiency and digital collaboration. The Port Bureau and its members will continue to work together on challenging projects that will help our port industry improve sustainability and increase efficiency.

Christine Schlenker Vice President Greater Houston Port Bureau

#### About the Greater Houston Port Bureau

Founded in 1929 as the result of diverse public and semi-public agencies interested in furthering the development of the Port of Houston, the Port Bureau is a member driven, non-profit trade organization dedicated to the success of the port region.

With over 240 member companies and under the leadership of a board of directors comprised of executives from leading companies in and affiliated with the local maritime industry, the Port Bureau partners with members for cooperation and collaboration to advance the port region for the benefit of all. *Learn more at txgulf.org.* 





### Juan Cabellero MCI, PCS,CIP Senior, Owner de NAINSO

Successful Anticorrosive Protection of Monobuoys through Protective Coating Systems:

A Standard of Success for Panama Petroterminals

The Major Maintenance Project of Loading MonoBuoy 6003 of Petroterminales de Panamá has become an exemplary success story that can serve as a reference in the industry. This achievement is due to the effective collaboration of various actors with experience and specialized knowledge of anti-corrosion protection, complying withstrict international standards and clear objectives.

**1. Asset Owner:** Petroterminales de Panamá developed a detailed technical scope that included specifications for surface preparation and coating application. Each activity and area was clearly defined to maximize the efficiency of the work to ensure its efficiency. The process included, among others, solvent cleaning according to the SSPC SP1 standard to eliminate contaminants and an optimal level of subsequent surface preparation using Ultra High-Pressure Water (Watejeritting) according to the SSPC UHP WJ-2 standard, among others. This surface preparation method removes the largest number of contaminants in a single process.

Experienced Contractor: Talleres Industriales was the selected contractor, providing experienced personnel and adequate equipment for surface preparation and application of coatings. They met the quality standards required and verified by the Inspection Company, guaranteeing the durability and integrity of the structure..
 Recognized Coating Manufacturer: On this occasion, International Paint supplied products with their quality certificates, technical data sheets, and safety data sheets of the coating system. They prepared a detailed scheme with all layers, film thicknesses and repainting times, surface preparation recommendations and provided technical support throughout the project.

**4. Independent Coatings Inspection Company:** Naval and Industrial Solutions was the coatings inspection company that audited and validated compliance of the contractor's processes according to the technical specification. The inspection company verified specification compliance during key stages of the process such as: Pre-Cleaning: Verification of the removal of marine fouling, surface defects and contaminants.

Surface Preparation: Verification of the main surface preparation process.

Application of Coatings: Verification of storage conditions, mixing, dilution, application, and curing.

Post-Curing: Verification of the absence of defects, adhesion, discontinuities, and porosities in the coating, among others.

Each stage included qualitative and quantitative tests to ensure compliance with specifications through field tests and trials according to international standards AMPP, NACE, SSPC, ISO, and ASTM. This project demonstrates that, with meticulous planning and expert collaboration, a high standard of anti-corrosion protection can be achieved, serving as a reference for future projects in the industry.

To conclude, this success story involved different actors, each fulfilling their responsibilities thanks to a technical understanding between the parties based on specialized knowledge, management of international standards, and competence through international certifications and training from recognized global entities such as AMPP: The Association for Materials Protection and Performance (Merger of NACE & SSPC). The proven experience in the development of the processes involved was also essential to achieve the stated objectives.

Finally, we can recommend that maintaining high quality standards and continuous improvement in the quality requirements of anticorrosive protection projects not only achieves the performance objectives of the coating systems, but also contributes to increasing productivity by reducing rework, maximizing resources, improves human safety by maintaining safer structures, protects the environment by preventing accidents, and promotes the sustainability of the planet by increasing the durability of assets and a return on investment for asset owners.



### **About the Author: Juan Caballero**

Experience: Globally recognized expert with 22 years of experience in integrity management and corrosion control with a specialty in protective coatings.

Academic Training: Industrial Engineer | Integrity and Corrosion Management Specialist | Master in Higher Teaching | Master in Business Management with Emphasis in Management Strategy

Current Positions: Technical Director - Naval & Industrial Solutions | Chairman - AMPP Global Center Board of Directors | International Trainer - AMPP: The Association for Materials Protection & Performance

AMPP Certifications: Master Coatings Inspector | Protective Coatings Specialist | Senior Coatings Inspector | Bridge & Marine Specialty | Concrete Coatings Inspector Level 2 | Fireproofing Inspector | Quality Control Supervisor | NACE Basic Corrosion Course | SSPC Marine Coatings | NACE Marine Coatings Technology | CIP One Day Bridge Course IS BORN | ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 Integrated Management Systems - Internal Auditor

International Awards: SSPC Richard W. Drisko Education Award | Recognition of Service in the Establishment of AMPP Award | AMPP Global Center - Globe Awar





Foto 2 preparacion de superficie.



Foto 3. Aplicación de Recubrimientos.









Sam Ternowcheck

"On-stream inspections improve tank availability"

Optimizing the time interval between internal inspections of an above ground storage tank is a key element of a tank management program. Too short an interval results in an unnecessary loss of tank availability as well as the expense involved. Or, if the interval between internal inspections is too long, unexpected failure of the tank can occur.

On-stream, non-intrusive inspections play an important part in tank integrity assessments. With this data, a more accurate summary of the condition of the tank is possible.

Among the elements of a tank, the tank floor is a key structural member, and the condition of the tank floor is critical. What is the condition of the floor? Is there active corrosion occurring and where is it located?

To be able to detect, locate and grade the degree of active corrosion on the floor is imperative to the overall tank integrity assessment. The fastest and easiest way to accomplish this is with the technique Acoustic Emission.

Acoustic Emission is a passive, advanced NDT technique. It can detect and locate active corrosion on the tank floor. With this approach, an assessment can be made as to whether active corrosion is occurring. Companies such as Mistras Group, have developed a program, TANKPAC, which is used to detect active corrosion, provides a map of the tank floor showing the location of the active corrosion and assigns a grading to the activity based on internal empirical data.

With on-stream assessments, the internal inspections of tanks can be applied to the tanks

in the greatest need of repair. Tanks in good operating condition can have their internal inspections extended until the data indicates it's warranted. This approach allows for the tanks to safely remain in service, reduces maintenance costs and enhances profitability.

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Ing. Stacy R Cotie. VP Sales

Investing in Reliability: Prioritizing Inspection and NDT for Enhanced Asset Performance in Oil

and Gas

It's been said money can't buy time, but is that true, particularly within the complex infrastructure of oil and gas production and storage? Every stage in the O&G process, from platform, transport, to tank storage, requires reliable and safe assets to prevent losses, failures, and costly delays. In an industry characterized by tight high expectations, margins, and stringent regulations. every dollar spent must be justified. Therefore, where should investments in these critical assets be prioritized?

Inspection, whether using conventional NDE. advanced methods. or visual techniques, provides valuable and essential data for informed decisions on asset reliability. Ageing assets drive the need for more inspection than ever before, demanding advancements in technology, refined NDT techniques, and skilled personnel. Performing non-destructive testing on your assets will aid in identifying potential issues early, helping to minimize disruptions to production schedules. optimize asset utilization, and improve overall efficiency. By advocating, investing, and embracing these advancements and

techniques in the NDE field, we not only enhance asset reliability but also mitigate risks effectively. Having this proactive approach ensures operational continuity and protects against costly downtime and repairs.

While minimal inspection may appear cost-effective initially, it can be counterproductive, leading to higher downtime and reduced profitability. comprehensive Prioritizing inspection plans and protocols in your mechanical integrity program is essential for long-term asset reliability, operational efficiency, and profitability. Reach out anytime to collaborate on development or refinement of a tailored inspection and integrity program that aligns with your specific needs, challenges, and operational goals.

Ing. Stacy R Cotie. VP Sales M: 281.299.1141



### Ing. Malvin Delgado CEO Trustwell Energy The Role of Terminals in the Energy Transition

Terminals play a critical role in the energy transition, acting as pivotal hubs for the storage, transfer, and distribution of various energy resources. As the world shifts towards cleaner and more sustainable energy sources, terminals are evolving to support this transformation in several key ways.

### Facilitating Renewable Energy Integration

Terminals are increasingly equipped to handle biofuels, hydrogen, and other renewable energy sources. By providing the necessary infrastructure for storage and distribution, terminals enable the seamless integration of these sustainable fuels into existing energy systems.

### **Supporting LNG as a Transition Fuel**

Liquefied natural gas (LNG) terminals are crucial during the transition period. LNG serves as a bridge fuel, helping to reduce carbon emissions compared to coal and oil. These terminals facilitate the import, storage, and regasification of LNG, ensuring a reliable supply as renewable technologies continue to develop.

### **Innovative Storage Solutions**

Terminals are adopting advanced storage technologies to enhance efficiency and reduce environmental impact. Innovations such as underground hydrogen storage and the use of cryogenic tanks for liquefied renewable gases are becoming more prevalent. These advancements ensure that renewable energy can be stored and dispatched as needed, supporting grid stability and energy security.

### **Decarbonizing Operations**

Many terminals are implementing measures to reduce their own carbon footprints. This includes the adoption of energy-efficient equipment, electrification of operations, and investment in onsite renewable energy generation. By decarbonizing terminal operations, the overall environmental impact of energy distribution is minimized.

### **Enhancing Flexibility and Resilience**

Modern terminals are designed to be more flexible and resilient, capable of handling a diverse range of energy products. This adaptability is crucial for responding to changing market demands and supporting the dynamic nature of the energy transition.

In conclusion, terminals are essential enablers of the energy transition, supporting the integration of renewable energy, enhancing the use of transition fuels like LNG, and adopting innovative storage solutions. Their evolution towards more sustainable operations underscores their importance in achieving a cleaner, more resilient energy future.



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