

CAMCO Times

A Camco Technologies Magazine

September 2025

NEW IN THE BRIDGE

Camco's unified platform expands with new features that further enhance its already impressive versatility.

INTERVIEW WITH MARIEKE FRENSCH

How APMT Maasvlakte II and Camco Technologies shaped a CO₂-neutral terminal — together... and what's next to come.

SMART AND TARGETED SOLUTIONS

Powerful and advanced, yet smart and targeted: discover new solutions designed to help terminals achieve ambitious goals.

NEW MARITIME GATES FOR INDIA

Vizhinjam's new deepwater terminal is setting India on course to become a maritime superpower. Here's how.



FROM INSIGHT TO IMPACT

Empowering your terminal

- ▶ AI-driven intelligence
- ▶ Reliable, high-performing software
- ▶ Smarter, safer, future-ready operations

Progress is a shared effort

The world is changing. And so is our industry. Technology has become an essential part of every container movement. But what truly stands out is a growing awareness of the bigger picture. Efficiency remains crucial, but is increasingly paired with priorities like safety, sustainability, reliability, and social impact. We see this shift happening across the globe — and it's not by accident.

At Camco Technologies, we believe that progress happens when technology and partnership go hand in hand. Because innovation is never the goal in itself. It's a means to help terminals evolve.

That belief is reflected in our long-standing collaboration with **APM Terminals Maasvlakte II**. In this edition of Camco Times, you'll find our conversation with CTO Marieke Frensch. There, CO₂ neutrality isn't

an ambition for the distant future — it's the starting point. Every choice around automation is guided by clear operational and ethical values. Camco has been part of that journey since 2012, helping to implement solutions that evolve, perform, and adapt alongside the terminal's needs.

We saw that same ambition take shape at the **opening of the Vizhinjam International Seaport** in South India, a milestone moment for Camco. Inaugurated by Prime Minister Narendra Modi on May 2nd, Vizhinjam — along with the upcoming terminal in Colombo — is a flagship project in every sense. It brings together nearly all of Camco's latest innovations: **THE BRIDGE platform, Real-Time Digital Twin, 4th-generation BoxCatcher**, and above all: **yard automation**.

Yard automation, powered by **RTLS and RFID**, completes a long-standing

puzzle. Until recently, automation mainly focused on gates and cranes, while the yard — the link between them — remained largely manual. This created a weak spot in the flow. With our latest systems in place, that gap is closed. We now offer full end-to-end container tracking and validation, from the moment a container enters the terminal to its precise placement on the vessel.

Along this path, each container is verified at multiple stages — typically five or more — for its identity and location. In a manual terminal, the chance of a wrong move is around **0.1%**. Camco's mission is to digitize and automate all those verification steps — from gate to vessel — to bring that error margin as close to zero as possible. Every move is captured with **images, timestamps, location checks, and TOS data**. The TOS and the physical terminal are in sync —

continuously and in real time. On top of that we have software platforms as **THE BRIDGE** and our Real-Time Digital Twin to visualise this path.

That's what innovation looks like when it's driven by real needs, real collaboration, and real-world constraints. And it doesn't stop with technology. In **Africa**, we're seeing similar movements: new terminals, new potential, and a clear focus on connectivity, safety, and growth. Here too, Camco is actively contributing — not as a vendor, but as a long-term partner.

In this Camco Times, you'll also find a closer look at the technology behind these results — what we do in **hardware** and **software**, and how we make the two work together in seamless, integrated systems. Because true progress comes from integration — of systems, of teams, of shared goals. That's also why the **Camco Academy** plays such a key role in our approach. It ensures that the people working with our technology fully understand it, and use it to its fullest potential.

We're not just a supplier. We're a builder. A partner. A trailblazer when it's called for. And we've been doing that for over 25 years.

Progress isn't about working harder. It's about working better — together. Welcome to Camco Technologies.

“

At Camco, we believe **real innovation** doesn't happen in isolation. It happens in **partnership** — when shared ambition, smart technology, and practical experience come together **to solve real problems** and **open up new perspectives**.

Jan Bossens
CEO Camco Technologies

Contents

- 04 | WELCOME TO THE WORLD OF CAMCO TECHNOLOGIES**
- 06 | SOFTWARE SOLUTIONS**
THE BRIDGE expands with RTLS, VBS and OIDC Authentication
- 10 | CLOSE-UP**
Port Khalifa occupies a key position along the Maritime Silk Road and opens this year
- 12 | INTERVIEW**
Marieke Frensch, CTO APM Terminals Maasvlakte II and Camco's Jef De Geeter on innovation by collaboration
- 16 | INNOVATION**
 - Smart & targeted solutions
 - R&D
- 24 | IN FOCUS**
From road to vessel: how to make container flows fail-safe through digitization
- 30 | INTEGRATION**
- 32 | CASE STUDY**
Vizhinjam's state-of-the-art terminal: a key driver in India's maritime transformation
- 38 | TECHNOLOGY**
How radar and AI are reshaping smart sensing within Camco technology
- 40 | CLOSE-UP**
Camco at work in Ghana, Kenya, and Benin
- 44 | CASE STUDY**
DUSS and its 23 terminals: technology at the heart of intermodal operations in Germany
- 52 | CAMCO ACADEMY**
- 54 | NEW CAMCO PROJECTS**
- 58 | CAMCO IN THE WORLD**



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1999

PIONEERING
SINCE 1999



300K

TRUCKS REGISTERED
EACH DAY



5000+

GATE AND
GRID KIOSKS



300+

TERMINALS
WORLDWIDE



6

REGIONAL OFFICES
FOR GLOBAL FOOTPRINT



250+

HIGHLY SKILLED AND
SPECIALIST STAFF

Welcome to the World of Camco Technologies

CAMCO TECHNOLOGIES IS THE LEADING TECHNOLOGY PARTNER IN INNOVATIVE TERMINAL AUTOMATION SOLUTIONS AND SERVICES. SINCE 1999, OUR SYSTEMS HAVE EMPOWERED MARINE AND INTERMODAL TERMINAL OPERATORS TO INCREASE LOGISTICS PERFORMANCE AND SAFETY WHILE REDUCING OPERATING COSTS.

As a pioneer in OCR and RTLS, image processing, and software/AI development, Camco's mission is to develop solutions that improve terminals' efficiency, cost-effectiveness, and safety. We do this by automating the registration process of containers, trucks, wagons, and trailers. As a result, data becomes available more quickly and serves more purposes, so the process management of terminals increases efficiency.

Already 300+ terminal operators worldwide have successfully optimized their gate, rail, crane, and yard processes using Camco's solution in the container terminal.

“

Camco's systems **accurately register** containers entering or exiting the terminal by any means of transport – truck, train or vessel – enabling Terminal Operating Systems to make the right **planning** decisions, reducing unproductive moves and idle time to **optimize operations** and **improve customer service** level.



Our software solutions



The **Camco Vehicle Booking System** or VBS is a smart truck appointment system connecting truck drivers, trucking companies and terminals, increasing gate efficiency through up-front booking registration.



THE BRIDGE, our **unified platform for all your automation** technologies, ensuring optimal visibility and manageability of your complete container terminal for all levels of responsibility.



Real Time Digital Twin: a **real-time digital representation** of all assets and associated processes and systems. The ultimate automation step for process analysis, optimization and simulation.



Bay Load Verification (BLV) captures precise stowage positions of containers on board a vessel. By incorporating deviations from the load or discharge plan into the TOS, our BLV helps in generating optimized BAPLIE files.



Highly accurate AI-based **OCR/OFR camera technology**: ensuring precise identification and registration of containers, trailers, trucks, and trains for reliable data in terminal operations.



Advanced **real-time location solutions**. AI based cutting edge real time container and equipment tracking on the terminal, everywhere even under the STS cranes. This gives terminals improved operational visibility.



Robust and intuitive **kiosk registration technology**: streamlining registration for trucks, drivers, and loads at terminal entrances, optimizing overall efficiency.



The **Camco Camera portal** is the cornerstone of every terminal automation project. The OCR/OFR camera portal automatically identifies and registers containers and other attributes that determine truck, train and cargo processing.

EFFICIENCY MEETS SIMPLICITY IN TERMINAL OPERATIONS

SINCE ITS RELEASE IN SEPTEMBER 2023, THE BRIDGE HAS EVOLVED INTO THE UNIFIED PLATFORM FOR AN INCREASING NUMBER OF CAMCO SOLUTIONS. WHILE THE PREVIOUS UPDATE (MAY 2024) ALREADY REPORTED FULL SUPPORT FOR THREE CORE SOLUTIONS (GOS, COS AND ROS), PARTIAL INTEGRATION OF ADI, AND AN INITIAL RTLS MODULE, NEW STRATEGIC EXPANSIONS HAVE SINCE BEEN ADDED.

NEW IN THE BRIDGE

**CAMCO'S UNIFIED PLATFORM EXPANDS
WITH RTLS, VBS AND OIDC AUTHENTICATION**

THE BRIDGE

Both functionally and architecturally, the platform has made significant progress. The latest developments focus on three main pillars: the continued expansion of RTLS, the introduction of a new authorization framework using OpenID Connect (OIDC), and the launch of the new Vehicle Booking System (VBS).



REAL TIME LOCATIONS SERVICES

Further
RTLS
integration

Integration of the Real Time Locations Services (RTLS) within THE BRIDGE has been significantly extended. In addition to the existing Yard Operator module, the new Yard Area Manager is now available. It enables users to create and edit stack areas, including mapping to the TOS. Yard Operator has also been enhanced with new features such as:

- ▶ A list view of all areas, with quick-add functionality for simple zones
- ▶ Inventory lookup: search for containers in the TOS and visually locate them on the map, provided the TOS area is known

The Archive module now also supports RTLS-specific data. Users can:

- ▶ Search and analyze units within the RTLS system
- ▶ Search work orders and view detailed histories of yard entities (if equipped with a Mobile Location Tracker)

In parallel, a new application has been launched: VmtDisplay. Running on the Vehicle Mounted Terminal (VMT) inside mobile equipment cabins, this app displays jobs according to the customer's job-stepping process.



OPENID CONNECT

Flexible
authentication

With the integration of OpenID Connect (OIDC), THE BRIDGE now supports external authentication systems such as enterprise identity providers (e.g., Azure AD), while retaining internal authentication as an alternative or fallback. The Users module has been redesigned and now includes:

- ▶ Support for both internal and external users
- ▶ Management of users, groups, and roles
- ▶ The ability to grant or restrict access for specific external accounts

The Profile module has also been updated. Users can now save personal settings, such as language preferences. External users also have access to the familiar solution and module filters.

THE BRIDGE
is more than
just a tool –
it's the **nervous
system** of
our terminal
solutions.



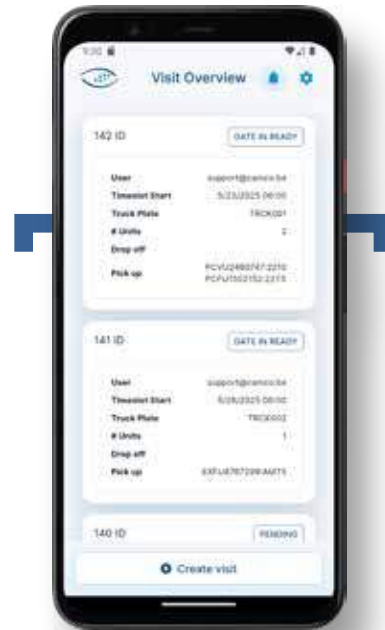
VBS

Launch of the Vehicle Booking System

THE BRIDGE now includes a fully developed Vehicle Booking System, designed to organize truck traffic in (inter) terminal environments. This solution is made up of several modules:

- ▶ **Appointments:** manage bookings
- ▶ **Timeslots:** configure time windows for appointments
- ▶ **Resources:** register trucks or other assets per customer
- ▶ **Notifications:** send dashboard alerts, emails, and app messages
- ▶ **Find my unit:** search and bookmark containers in the TOS

A separate mobile app was developed for truck drivers. It shows their appointment overview and guides them through the booking process. The app is available for both iOS and Android, and is customized per customer.



With RTLS, OIDC, and VBS, we're taking another significant step toward a fully integrated, intelligent terminal environment.



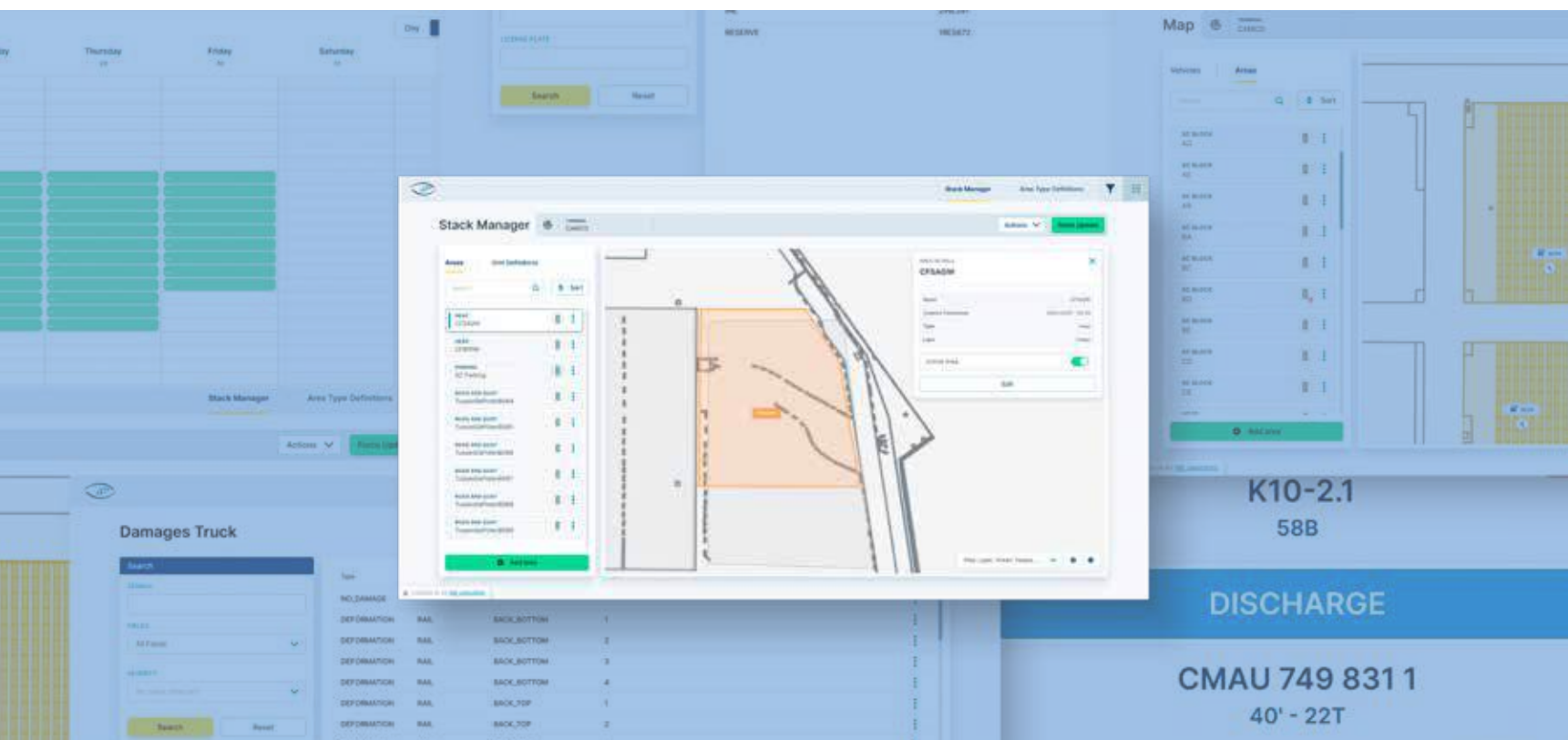
THE FUTURE

Looking ahead to 2025

The 2025 roadmap confirms the platform's continued growth. A new Maintenance module will centralize all available hardware statuses of Camco equipment, including a history view. Full ROS-ADI support will also be added to both Rail Operator and Archive.

Initial user feedback has been highly positive. Where Camco previously offered standalone systems, THE BRIDGE now brings them together in one integrated interface. This unified approach provides users with real-time insights across multiple terminals, regardless of device. THE BRIDGE is positioning itself as a catalyst for transformation in terminal operations. ■

THE BRIDGE brings **clarity, simplicity, and control**, exactly what's needed in terminal management



THE BRIDGE – WHAT'S IN A NAME?

EFFICIENCY MEETS SIMPLICITY IN TERMINAL OPERATIONS

THE BRIDGE IS MORE THAN AN INTERFACE – IT'S THE CENTRAL LINK BETWEEN SYSTEMS, USERS, AND DATA. FOUR CORE PRINCIPLES DEFINE ITS ADDED VALUE:

CONSOLIDATED DATA

Information from multiple systems is brought together in a single, clear interface, giving users faster access to relevant data at the right time.

BEST-IN-BREED APPROACH

THE BRIDGE combines specialized applications into one coherent platform, without compromising on functionality or flexibility.

CONTROLLED ACCESS

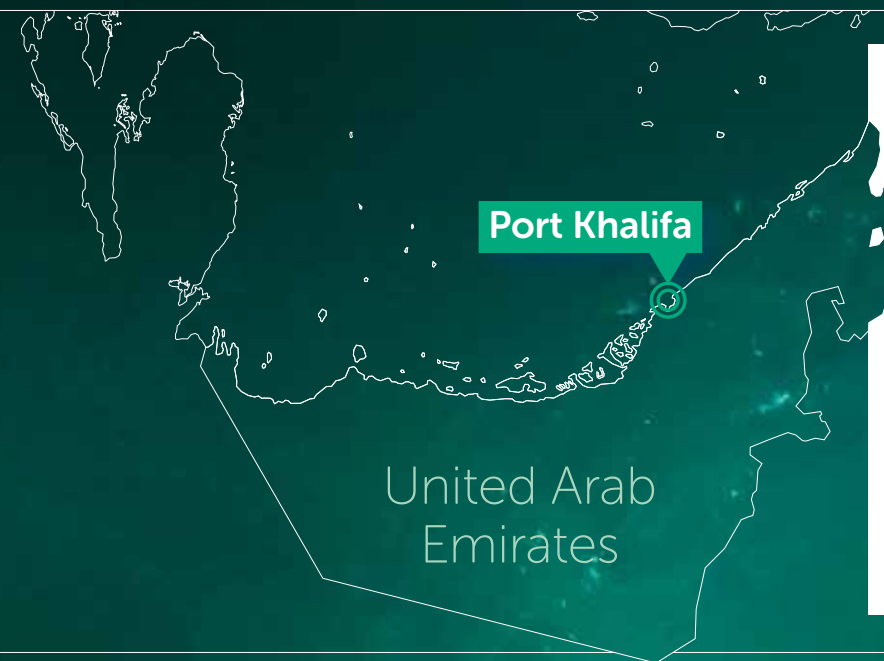
Roles and permissions are managed centrally. By restricting access to systems, sensitive data remains better protected.

CENTRALIZED MAINTENANCE VISIBILITY

All terminal equipment is monitored via a single interface, offering real-time visibility into status and maintenance needs.

AD PORTS GROUP AND CMA CGM GROUP HAVE ENTERED INTO A 35-YEAR CONCESSION AGREEMENT FOR THE DEVELOPMENT OF A NEW CONTAINER TERMINAL AT KHALIFA PORT. THE TERMINAL IS EXPECTED TO OPEN IN 2025 WITH AN INITIAL CAPACITY OF 1.8 MILLION TEU. SITUATED BETWEEN ABU DHABI AND DUBAI, THE TERMINAL WILL BENEFIT FROM EASY ACCESS TO LOCAL ROADS AND HIGHWAYS AND WILL ALSO BE CONNECTED TO NEW ETIHAD RAIL NETWORK FOR FURTHER CONNECTIVITY

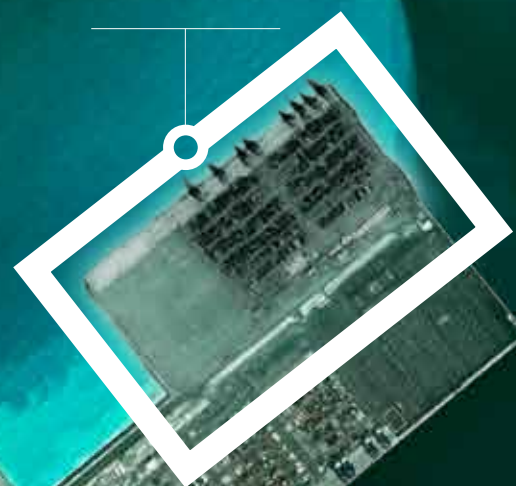
Port Khalifa



THE AREA

Khalifa Port occupies a key position along the Maritime Silk Road, connecting China to Europe via the Indian Ocean, Mombasa, the Red Sea, and the Mediterranean. This location supports efficient cargo flows between Asia, Africa, and Europe. The onshore area connects directly to the Khalifa Industrial Zone Abu Dhabi (Kizad), forming an integrated logistics and industrial hub with customs, inspection, and security facilities, enabling streamlined container handling.

[CMA-CMG ABU DHABI]



THE BRIDGE, our unified platform ensuring optimal visibility of the complete container terminal for all levels of responsibility.



Complete auto gate system and advanced RTLS yard automation solution

THE PORT IS LOCATED
5 KM
FROM THE MAINLAND

LINKED BY
TWO CAUSEWAYS
AND A
1 KM BRIDGE

HOSTS THE
REGION'S ONLY
SEMI-AUTOMATED
CONTAINER
TERMINAL

BUILT ON A
2.7 KM²
OFFSHORE ISLAND

IT FEATURES
NINE
OF THE WORLD'S
LARGEST
SHIP-TO-SHORE
CRANES

42
AUTOMATED
STACKING AND
23
SHUTTLE CARRIERS

GATE AUTOMATION

Camco delivers a comprehensive **automated gate system** that integrates advanced kiosk-based driver registration with cutting-edge **OCR/OFR container recognition**.

- **Inbound**, the system includes two truck OCR portals, traffic barriers, and seven dedicated lanes for both standard trucks and out-of-gauge (OOG)

cargo. A separate rejection lane handles exceptions efficiently.

- **Outbound**, a similar configuration ensures consistent and streamlined traffic flow in both directions.
- **Light vehicles** are processed in separate lanes, avoiding interference with heavy truck traffic.
- To complete the setup, Khalifa Port will also feature a **state-of-the-art en-**

rollment station, enabling secure and efficient driver onboarding as part of the overall gate automation process.

YARD AUTOMATION

- Both internal and external trucks are equipped with RFID tags, enabling automatic handovers at the E-RTGs, which are fitted with Camco RFID readers.
- All internal mobile equip-

ment—including terminal tractors (TTs), E-RTGs, and ship-to-shore (STS) cranes—is equipped with location technology. Their positions and activities can be viewed in 2D via THE BRIDGE system and in 3D through our real-time Digital Twin.

- Our **CHEOPS RTLS yard automation software** is fully integrated with **Navis N4**, enabling seamless and automated handovers.

“Technology only works when people work together.”

APM TERMINALS MAASVLAKTE II

GETTING SMARTER THROUGH COLLABORATION

BACK IN 2008, THE FIRST PLANS FOR APM TERMINALS MAASVLAKTE II WERE FORGED, DRIVEN BY A BOLD AMBITION: TO BUILD THE MOST ADVANCED, SAFE, AND SUSTAINABLE CONTAINER TERMINAL IN EUROPE. FULLY AUTOMATED, CO₂-NEUTRAL, AND SEAMLESSLY INTEGRATED DOWN TO THE SMALLEST DETAIL. MUCH OF WHAT WAS NEEDED SIMPLY DIDN'T EXIST YET—IT HAD TO BE INVENTED. INNOVATION LIKE THIS WAS ONLY POSSIBLE THROUGH COLLABORATION. FROM DAY ONE, TEAMWORK WAS ESSENTIAL, AND A FEW YEARS LATER, THIS LED TO THE PARTNERSHIP BETWEEN APM TERMINALS MAASVLAKTE II AND TECHNOLOGY PARTNER CAMCO TECHNOLOGIES—ONE THAT HAS CONTINUED TO EVOLVE AND THRIVE EVER SINCE.

Since December 2023, Marieke Frensch has been leading APM Terminals Maasvlakte II as Chief Technical Officer through a major transformation. The goal: doubling terminal capacity while keeping sustainability and collaboration at the core. For Marieke, innovation is not a goal in itself, but a means to enhance reliability and efficiency in this highly automated terminal. Together with Camco Technologies, APM Terminals Maasvlakte II has built a strategic partnership where automation and human talent go hand in hand. This interview offers insight into their joint journey, lessons learned, and a bold vision for the future.

Building innovation together

When APM Terminals Maasvlakte II began developing its automation plans, strong technology partners were key. Camco Technologies was involved from the start and played a crucial role in automating container flows across all modalities. “Our partnership with Camco goes far beyond technology,” Marieke explains. “We weren’t looking to automate for automation’s sake, but to create innovations that truly work for people and processes. Technology only succeeds when it’s embraced across the organization.”

Jef De Geeter, COO of Camco Technologies, echoes the importance of collaboration: “We didn’t design our solutions from behind closed doors—we were right there in the terminal with key user groups. That allowed us to iterate fast and deliver real impact.”

To make innovation work, Marieke introduced multi-skilled teams and promoted full transparency and knowledge sharing between suppliers wherever possible. “Even a fully automated terminal runs thanks to the people behind it. By breaking down silos and encouraging collaboration, we’ve really been able to move forward,” she says.

Technology as a driver of reliability

To align with Maasvlakte II’s strategic goals, Camco Technologies worked closely with APM Terminals to develop advanced systems for automated identification, OCR, and logistics optimization. Technology played a crucial role in this development phase—but it was never the end goal. The mission was always to ensure a reliable, efficient, and error-free container flow. “The real challenge wasn’t just developing the technology—it was building something that didn’t exist yet,” Marieke stresses. “Our goal of being

LOCATION

TWEDE MAASVLAKTE, PORT OF ROTTERDAM

OPERATIONAL SINCE

2015

CURRENT CAPACITY

2.7 MILLION TEU PER YEAR

TARGET FOR 2027

>6 MILLION TEU PER YEAR

HIGHLIGHTS

FULLY AUTOMATED, ELECTRIC VEHICLES, CO₂-NEUTRAL, INTEGRATED OCR SOLUTIONS

TECHNOLOGY PARTNERS

INCLUDING ABB, KALMAR & CAMCO TECHNOLOGIES

KEY INNOVATIONS

BOXCATCHER, CHECKER INSIDE, TRAIN GATE AUTOMATION, TANDEM OPERATIONS

MARIEKE FRENSCH

CHIEF TECHNICAL OFFICER,
APM TERMINALS MAASVLAKTE II

Marieke plays a leading role in automation, optimization, and transformation. She combines deep technical expertise with a strong collaborative vision. For her, technology is not about systems—it’s about people. “Even a fully automated terminal relies on the people who operate it.” Her mission: smarter, safer, and more efficient loading and unloading through better teamwork, breaking silos, and fostering a culture of continuous improvement.

fully CO₂-neutral and automated meant rethinking every process. Everything had to be connected—no solution could stand alone.”

When the terminal went live in 2015, it was the result of a massive coordination effort. “Expectations were sky-high. But because everything was new and nothing worked perfectly at first, it was a challenge to meet them. Over time, we developed an integrated way of working that allowed us to learn and improve continuously. Small steps forward, supported by people—that made all the difference,” Marieke adds.

Trust is built by solving problems

A key milestone in the partnership was the

‘Checker Inside’ project, which enabled crane operations without a checker on the crane. Despite a solid technical foundation, the OCR hit rate was initially too low. “This was the moment we had to put everything on the table,” Marieke recalls. Instead of focusing blame on a single supplier, they formed an interdisciplinary team—including superusers, software developers, and Camco’s technical experts—to work on the solution together.

“We follow a no-blame approach,” Marieke explains. “Mistakes are opportunities to improve processes and technology. It’s not about who made an error, but about finding solutions that truly work.” This approach led to major improvements in crane automation,

OCR tuning, and maintenance optimization of Camco’s products. “If you work with the right, passionate people, there’s always a way forward,” Jef says.

Small changes, big impact

Innovation in a container terminal often comes down to small tweaks that make a big difference. After all, three hundred improvements of 0.1% still add up to 30%. One example is the optimization of tandem operations. “At first, it was chaos,” Marieke laughs. “My first thought was: not again! But through collaboration and testing, we refined the software. Solving a problem isn’t always hard—what’s hard is solving it without creating five new ones.”

Thanks to a culture of continuous improvement, not only did the technology evolve, but trust between the partners grew. “That’s the difference between a supplier and a partner,” Jef adds. “A supplier delivers. A partner keeps thinking with you.”

The future of automation? People make the difference!

Looking ahead, Marieke sees a growing role for AI, electrification, data-driven decision-making, and the integration of fully sustainable solutions. “The future isn’t just about automation. It’s about creating smarter, safer, and more sustainable processes. We want to double our capacity while improving reliability across the entire asset lifecycle.”

Jef stresses that technology must remain flexible and modular. “We don’t build rigid systems. Technology should enable, not obstruct. If a solution becomes too complex to maintain, it loses its long-term value.” Even though a local container terminal is part of a much larger global network, its decisions still matter. “The choices we make today shape the supply chain of tomorrow,” says Marieke. “We aim to stay ahead—using technology to create real value.”

Final word

For Marieke, collaboration remains the cornerstone of success. “You don’t build great technology without great collaboration. Mistakes? They’re part of the journey. If you treat them as opportunities, every problem becomes a step forward. One day, everything clicks—and you’ve become the most modern and advanced gateway in Europe. The key is to find the right partners—and Jef is certainly one of them.”

She believes true progress happens only when people embrace the technology they work with. “I’ll know we’ve succeeded when the cranes are singing on the quay and we’re whistling as we walk by.”

As always, Jef closes with a smile: “Let’s sit down again in two years and see where we are then. Until that time, we’ll keep building together—towards growth and progress.” ■

MARIEKE FRENSCH’S VISION ON INNOVATION

- ▶ **Start from business objectives**, not technology
- ▶ **Technology is a means, not an end.** It must support sustainability, reliability, efficiency, and safety
- ▶ **Collaboration is key.** Multi-skilled teams and knowledge sharing drive effective innovation
- ▶ **People first.** We’ve succeeded when the cranes are singing on the quay and we’re whistling as we walk by.
- ▶ **Continuous improvement.** Small optimizations create big long-term impact
- ▶ **No-blame culture.** Mistakes are opportunities to improve
- ▶ **Sustainability at the core.** CO₂-neutral and electrified operations for the future
- ▶ **Flexibility and modularity.** Innovation must adapt to changing circumstances
- ▶ **Simplicity and strategic choices.** Solve problems without creating new ones



“
The real power lies
in the details of
the design. Technology
only works when
people work
together.”

Jef De Geeter
Chief Operating Officer,
Camco Technologies



AMBITIOUS TARGETS REQUIRE SOLUTIONS THAT ARE NOT ONLY POWERFUL AND ADVANCED, BUT ALSO SMART AND TARGETED

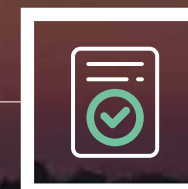
CONTAINER TERMINALS FACE MAJOR CHALLENGES: GROWING VOLUMES, INCREASING COMPLEXITY, AND THE NEED TO OPERATE SAFELY, SWIFTLY, AND SUSTAINABLY — ALL AT ONCE. AT CAMCO TECHNOLOGIES, WE UNDERSTAND THAT SUCCESSFUL AUTOMATION IS NOT JUST ABOUT BIG LEAPS FORWARD, BUT ABOUT THOUGHTFUL, FLEXIBLE INNOVATIONS TAILORED TO EACH TERMINAL'S REALITY. WHETHER IT'S STREAMLINING GATE OPERATIONS, ACCURATELY TRACKING CONTAINERS OR PREVENTING INCIDENTS: EVERY IMPROVEMENT CONTRIBUTES TO MAKING TERMINALS SAFER, MORE EFFICIENT, AND FUTURE-PROOF.

SMART AND TARGETED SOLUTIONS

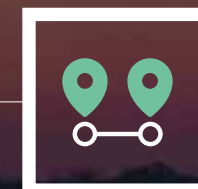
**TAILORED INNOVATION
FOR AMBITIOUS TERMINAL GOALS**



Argus



Vehicle
Booking
System



Real-time
Container
Tracking



Argus

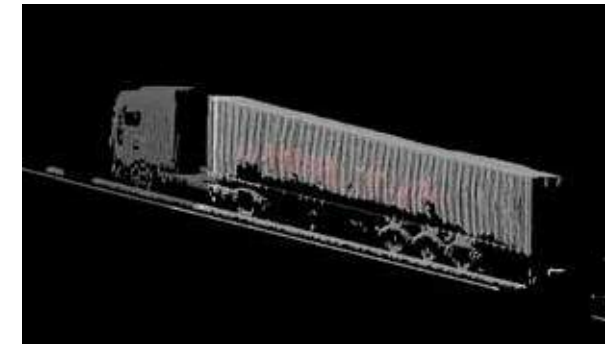
automatic oversize detection at the gate

Container terminals are busy hubs where gate safety is not a detail but a priority. Camco's ARGUS system, known for automated damage inspection of incoming containers, has recently received a major upgrade: automatic oversize detection using LIDAR technology.

Where ARGUS once detected only visible damage, it now also recognizes irregular shapes or sizes in containers and trailers — such as bulging or excessive height. These anomalies often go unnoticed but pose real risks to infrastructure or cranes. Thanks to LIDAR, ARGUS now performs 3D scans and intervenes in case of oversize loads before they enter the terminal.

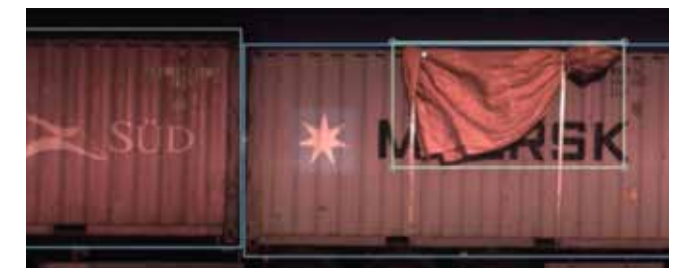
With this upgrade, ARGUS evolves from an inspection tool to a full-fledged safety guard. Terminals around the world using the system report fewer incidents and increased confidence in gate processes.

- ▶ Detects oversize cargo using 3D LIDAR
- ▶ Prevents damage to infrastructure and downtime
- ▶ Improves safety for staff and assets
- ▶ Enables faster, automated gate decisions



With advanced oversize detection, Argus stops damaging loads at the gate.

Camco's ARGUS system, known for **automated damage inspection of incoming containers**, has recently received a major upgrade: automatic oversize detection using LIDAR technology.





Vehicle Booking System

Smart scheduling for smoother gate processes

It's increasingly common for terminal access to be managed through a Vehicle Booking System (VBS). Camco's VBS integrated in THE BRIDGE avoids queues for trucks arriving to collect containers that are not yet available. VBS also helps flatten peak times through the use of optional timeslots.

VBS allows terminals to set quotas and time slots for container pickup and drop-off. This predictability smooths traffic flow and shortens queues. Even without strict slots, VBS functions as a robust pre-registration tool that collects visit data in advance.

Linking the booking to a truck or driver ID enables near-full gate automation via OCR cameras and kiosks. Since a strong VBS system has already handled logistics verification, the gate need only confirm the physical presence of the truck, driver, and container.

Truckers can manage appointments, complete missing info, and receive alerts via a free VBS app — all from their cab. The app boosts flexibility, improves communication, and prevents surprises at the gate.

As part of THE BRIDGE, Camco's RTLS provides location accuracy of key vehicles like terminal trucks



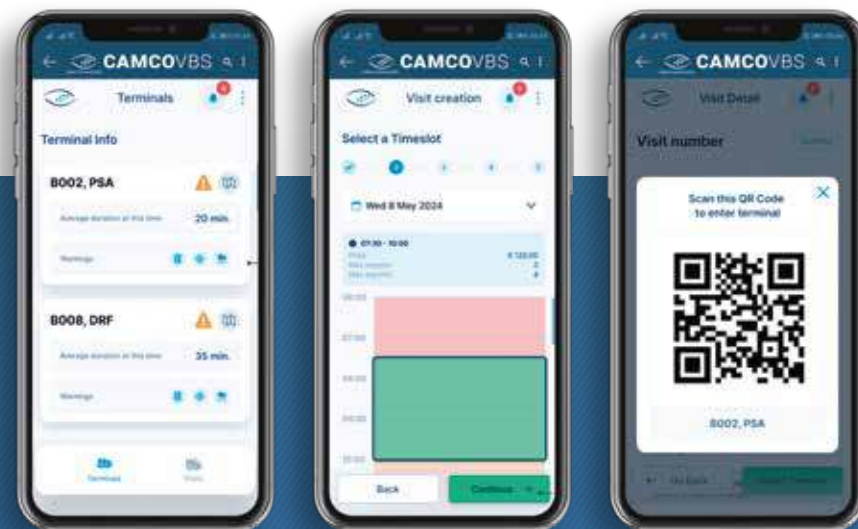
Real-time Container Tracking

Smarter tracking, safer movement

In a modern terminal, knowing a container's location is just the beginning. Equally important is understanding how it moves and whether the journey is safe. Camco combines several technologies to create a complete digital shadow of every container and each vehicle transporting it.

At fixed points such as gates, AI-driven cameras ensure accurate identification through image recognition. Once inside the yard, other systems take over. Real-time location systems (RTLS) don't track the container itself but the vehicle carrying it — like straddle carriers, terminal trucks, or reach stackers.

Camco's RTLS — completely integrated in THE BRIDGE — relies on sensor fusion: a combination of GNSS (satellite navigation) and UWB (Ultra-Wide Band) technology. This data fusion provides location accuracy down to 5 cm — precise enough to position vehicles perfectly at STS cranes, allowing containers to be picked up without manual correction. The result: reduced waiting times, improved KPIs, and smoother vessel handling. ■



IN SHORT

TERMINALS

- ▶ Less congestion and faster check-in
- ▶ Better safety and capacity planning
- ▶ Fewer exceptions and errors
- ▶ Increased efficiency and asset use
- ▶ Fewer gate lanes needed (cost reduction)

TRUCKING COMPANIES

- ▶ Accurate bookings avoid empty trips
- ▶ Faster vehicle turnaround
- ▶ Better visibility and fleet management

DRIVERS

- ▶ Shorter waits through pre-announced visits
- ▶ Insight and communication via mobile app
- ▶ No surprises upon arrival

“

With **upfront booking data** linked to the driver or license plate, kiosk registration becomes **up to 99% automated** — significantly improving truck turnaround.

Jonas Globevnik,
Software Project Developer



Safeguarding the future of R&D and quality

R&D AT CAMCO CONTINUES TO BUILD ON QUALITY AND LONGEVITY

WITH THE ARRIVAL OF FILIP FORIER AS R&D MANAGER, CAMCO TECHNOLOGIES IS TAKING THE NEXT STEP IN EXPANDING ITS DEVELOPMENT DEPARTMENT. THE NEW POSITION FOLLOWS THE STRONG GROWTH OF CAMCO AND THE INCREASING PACE AT WHICH NEW PRODUCTS AND TECHNOLOGIES ARE BEING DEVELOPED.

Filip has been tasked with safeguarding the future of R&D and quality, with a focus on sustainable, robust, and well-considered development. With an R&D budget of 10% of our turnover Filip has a very challenging job.

Experience from the automotive sector

Filip brings extensive experience from the automotive industry—a world where durability and reliability under extreme conditions are the norm. “Deserts, cold, monsoons... Temperatures ranging from -30 to +70 degrees Celsius, combined with exposure to seawater and sand—those are far from ideal conditions,” he says. “In the automotive sector, components are subjected to exactly the same challenges. That’s why we adopt those strict requirements.”

Camco had already been intuitively following many of these principles, but under Filip’s leadership, they are now being structurally embedded in the R&D approach—with clear design rules, internal and external requirements, and a stronger focus on testability and product lifespan. “For many products, we aim for a service life of ten to fifteen years, depending on the type and application.”



Filip Forier,
R&D Manager

“For many products, we aim for a service life of ten to fifteen years, depending on the type and application.”

THREE EXAMPLES OF HOW WE TEST RELIABILITY

VIBRATION PLATFORM

Heavy port equipment generates constant shock and vibration. To guarantee resilience, our hardware is tested on a dedicated vibration platform that reproduces these forces over extended periods. By identifying weaknesses before deployment, we make sure our products withstand years of daily use in the harshest operational settings.



CLIMATE CHAMBER

Every prototype is subjected to extreme heat, cold, humidity, and salt mist inside our climate chamber. From desert-like conditions of +70 °C to freezing cold at -30 °C, we simulate the full spectrum of environments in which our systems must operate. This ensures that performance and reliability remain stable, whatever the climate.



SOFTWARE VALIDATION

Reliability is not only a matter of hardware. Each software release undergoes rigorous validation and stress testing, covering everything from AI-driven detection algorithms to operator interfaces. We verify stability, speed, and fail-safety under real-life scenarios, so our customers can count on accurate performance day after day.



Smarter testing and validation

Camco is also investing in improved testing infrastructure. With new equipment, prototypes can be exposed to temperature fluctuations and vibrations over extended periods—without needing to travel to the actual deployment environments. But effective testing starts with a solid foundation, Filip emphasizes: “We’re building that with a growing team of highly qualified engineers and a clear focus on high-quality design.”

Sustainable and efficient

Camco is sharpening its focus on sustainability even further, pursuing energy-efficient designs that use less power and lighting, and more compact and lightweight materials. The certification process is also becoming more stringent: every electronic component is certified, meeting all necessary BIS, FCC and CE standards. AI remains a key technology. “Especially in challenging conditions like fog or dust, AI is often the only way to ensure reliable detection,” Filip says.

Control and pride

Finally, Filip is impressed by the fact that Camco develops and manufactures all of its electronics—both hardware and software—in-house. “That gives us full control over the entire process, from concept to finished product. And ultimately, that’s the best guarantee of quality.” ■

IN CONTAINER TERMINAL OPERATIONS, PRECISION IS EVERYTHING. VESSEL TURNAROUND TIMES ARE SHRINKING, CUSTOMER EXPECTATIONS ARE RISING, AND EVEN SMALL MISTAKES CAN HAVE FAR-REACHING CONSEQUENCES. AMONG THE MOST PERSISTENT CHALLENGES FOR TERMINAL OPERATORS ARE THOSE CAUSED BY HUMAN INTERACTION—ERRORS THAT QUIETLY DISRUPT CARGO FLOW, CONSUME RESOURCES, REDUCE EFFICIENCY, AND CREATE HIDDEN COSTS.

Making container flows fail-safe

From road to vessel

**ELIMINATING HUMAN ERROR
THROUGH DIGITIZATION**

0.05%

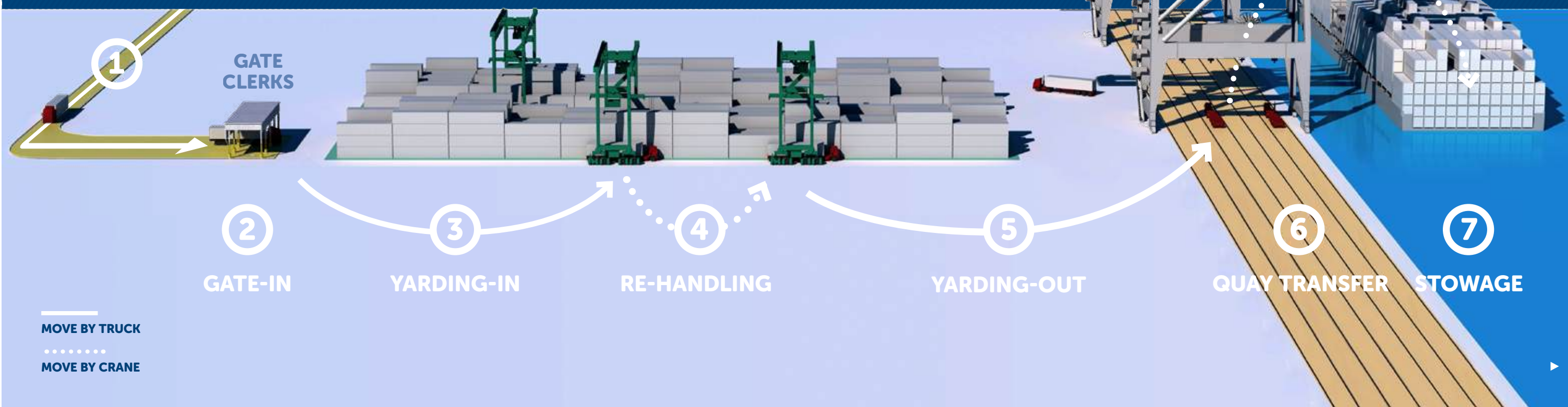
In container handling, even the smallest error rate becomes significant. A typical container journey from road to vessel involves 11 visual checks (ID and location). With a conservative 0.05% error rate per check, more than 5 out of every 1,000 moves will face a problem caused by human error alone.

1

One wrongly entered container ID or a misplaced stack doesn't just affect a single move. It can cause vessel delays, unnecessary equipment moves, congested yard space, and—most visibly—dissatisfied customers waiting for their cargo.

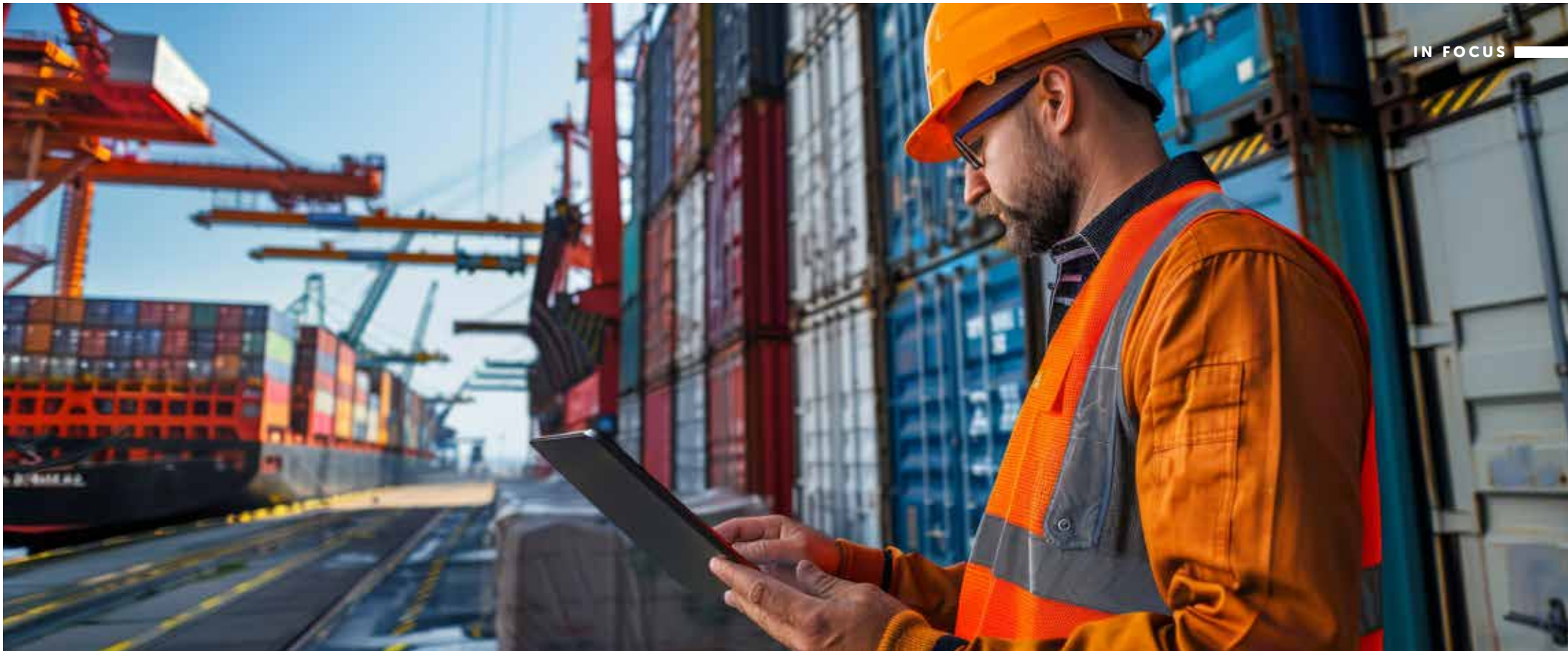
100%

Digitization gives the TOS "eyes." Every container move is automatically logged with pictures, GNSS-based location data, and precise timestamps. The result is a 100% accurate reflection of the physical terminal—enabling smarter planning, real-time decisions, and immediate detection of anomalies.



Despite significant investments in Terminal Operating Systems (TOS), many container terminals still rely heavily on manual processes for execution and communication. Even in the most efficient setups, it typically takes multiple process steps and at least five individual moves to transfer a container from a truck at the gate to a vessel at berth.

Each of these steps is orchestrated by the TOS, which dispatches tasks to frontline workers—gate clerks, tallymen, and crane operators. Instructions are usually sent via handheld terminals or two-way radios, with feedback returned in the same way. And that is exactly where the vulnerability lies.



WHEN HUMANS DISRUPT THE FLOW

The 7 stages and 6 moves	Container or truck ID Check	drop/pickup location check
Arrival		
Gate-in	1	1
Yarding-in	1	1
Re-handling/reshuffling		2
Yarding-out	1	1
STS handover	1	1
STS vessel stowage		1
Total visual checks	4	7

It's time to **rethink** how human dependency impacts your operations—and move toward becoming fully traceable, digitally visible, and future-ready—from road to vessel.

FROM MANUAL MISTAKES TO DIGITAL PRECISION

Type of terminal	Estimated error rates
Manual & old terminals	Up to 1 to 2%
Modern semi automated terminals	Between 0,1 to 2%

delays, unnecessary equipment moves, congested yard space, and dissatisfied customers waiting for missing containers. These errors are particularly frustrating because they are entirely preventable—but only by fully digitizing every step of the process, from road to vessel.

Manual checks: small errors, big impact

The two most critical sources of error in terminal operations are container identification and location accuracy. Small mistakes in these areas can escalate quickly. Errors typically occur during manual reading of container or truck numbers and visual verification of pickup and drop-off locations.

Consider a typical container journey from road to vessel. This process involves seven stages. Across these stages, the container or truck ID must be checked four times, and the pickup or drop-off location verified seven times. That's 11 manual visual checks—and this is a conservative estimate assuming only one re-handling event.



The hidden risk of human-dependent TOS operations

The successful execution and accurate feedback of every single move in this setup rely entirely on human workers. These individuals often perform long, repetitive shifts, frequently in harsh weather conditions. Even the most experienced personnel are susceptible to fatigue, distraction, or simple human error.

The result? The TOS becomes effectively blind. It has no autonomous means of verifying whether its work orders have been executed correctly. Over time, this can lead to significant operational issues—such as containers being

unaccounted for, misplaced in the yard, or even lost entirely, with no reliable data trail to recover them. As terminals strive for greater efficiency, the limitations of human-dependent operations become increasingly apparent. Addressing this blind spot is critical—not only to improve productivity, but also to reduce costly errors and enhance traceability.

The true cost of human error

Mistakes in container handling don't just delay a single container—they trigger a chain reaction. A wrongly entered container ID, a misplaced stack, or a miscommunication between departments can lead to vessel

When numbers reveal the risk

In reality, re-handling is often more frequent, which increases both the number of checks and the risk of error. Even with highly attentive staff, every check carries a small chance of error. Assuming an extremely low 0.05% error rate per check (99.95% accuracy), the cumulative failure probability across 11 checks becomes significant.

The probability that all 11 checks are correct is roughly $0.9995^{11} \approx 0.9946$. That means the probability of at least one error is $1 - 0.9946 \approx 0.0054$, or 0.54%. In other words: more than five out of every 1,000 container moves from road to vessel may encounter a problem purely due to human error during visual verification.

Even with well-trained personnel and low individual error rates, the sheer volume of manual checks across complex container flows introduces unavoidable operational risk.

As terminals seek to increase throughput and reduce errors, automation and AI-driven verification are no longer optional—they are essential. Industry reports and anecdotal data confirm these theoretical calculations.



Digitization as the key to terminal efficiency
Digitizing identification and location verification across gates, yards, rail areas, and cranes represents a major leap in terminal operations. By removing the human factor from critical control points, terminals can deliver digitally verified jobs directly to the TOS—eliminating uncertainty and improving data accuracy.

Each container move can be automatically logged with pictures, GNSS-based location data, and precise timestamps, all stored in a central database. This provides full traceability, supports audits, and enables powerful operational optimizations based on real-world movement data. With a complete digital mirror of the terminal—covering the yard, vessel stowage, and rail cars—the TOS becomes a 100% accurate reflection of the physical environment. In other words: the TOS is no longer blind.

This new level of precision enables smarter planning, real-time decision-making, and immediate detection of anomalies. The benefits go beyond data accuracy. Digitization reduces the need for human clerks at gates and crane operations, lowering operational costs and improving workplace safety by minimizing exposure to high-risk areas.

In addition to automating container and vehicle ID checks, digital systems can take over other routine tasks traditionally handled by clerks, including seal verification, IMDG compliance checks, and automatic damage inspection. By streamlining and accelerating gate, yard, and crane processes, digitization reduces human dependency while boosting efficiency, consistency, and overall terminal performance. ■

KEY OPERATIONAL BENEFITS OF DIGITIZATION

Automated checking reduces truck, train and vessel turnaround time. Faster and more accurate checking means better use of the infrastructure, leading to shorter visits increasing throughput and capacity.	Providing man less access control at perimeters and validation of asset ID to eliminate the human element so common in theft, pilferage and other criminal activities.	By digitalization and automation of the operation process, one can save on operational costs. Some experts project operational cost savings up to 55% with automation.
ENHANCING PRODUCTIVITY AND MAXIMIZING EFFICIENCY	REMOVING HUMAN MISTAKES AND FRAUDS	REDUCE COSTS
INCREASE OPERATIONAL CONTROL	INCREASING SAFETY	ENHANCE SUSTAINABILITY
Providing real-time visibility of an asset and its location to enable process automation and control.	Ensuring the safety of personnel and equipment, typically within a facility environment.	Offset Carbon emissions > 10% or more



FROM ROAD TO VESSEL

DIGITIZATION SOLUTIONS



GATE AUTOMATION

CONTAINER & TRUCK IDENTIFICATION

Truck OCR portals can read the container numbers, truck license plate and RFID tag at arrival

LOCATION TECHNOLOGIES

Pictures are used for 20' location(s) on the truck chassis.



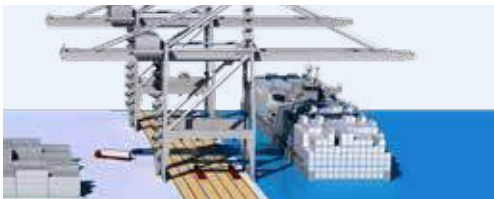
YARD AUTOMATION

CONTAINER & TRUCK IDENTIFICATION

Internal & external truck identification (=container number) at the RTG/RMG by use of RFID, RTLS and Sky Track&trace technology.

LOCATION TECHNOLOGIES

RTLS Location technology on RTG/RMG with PLC interfacing



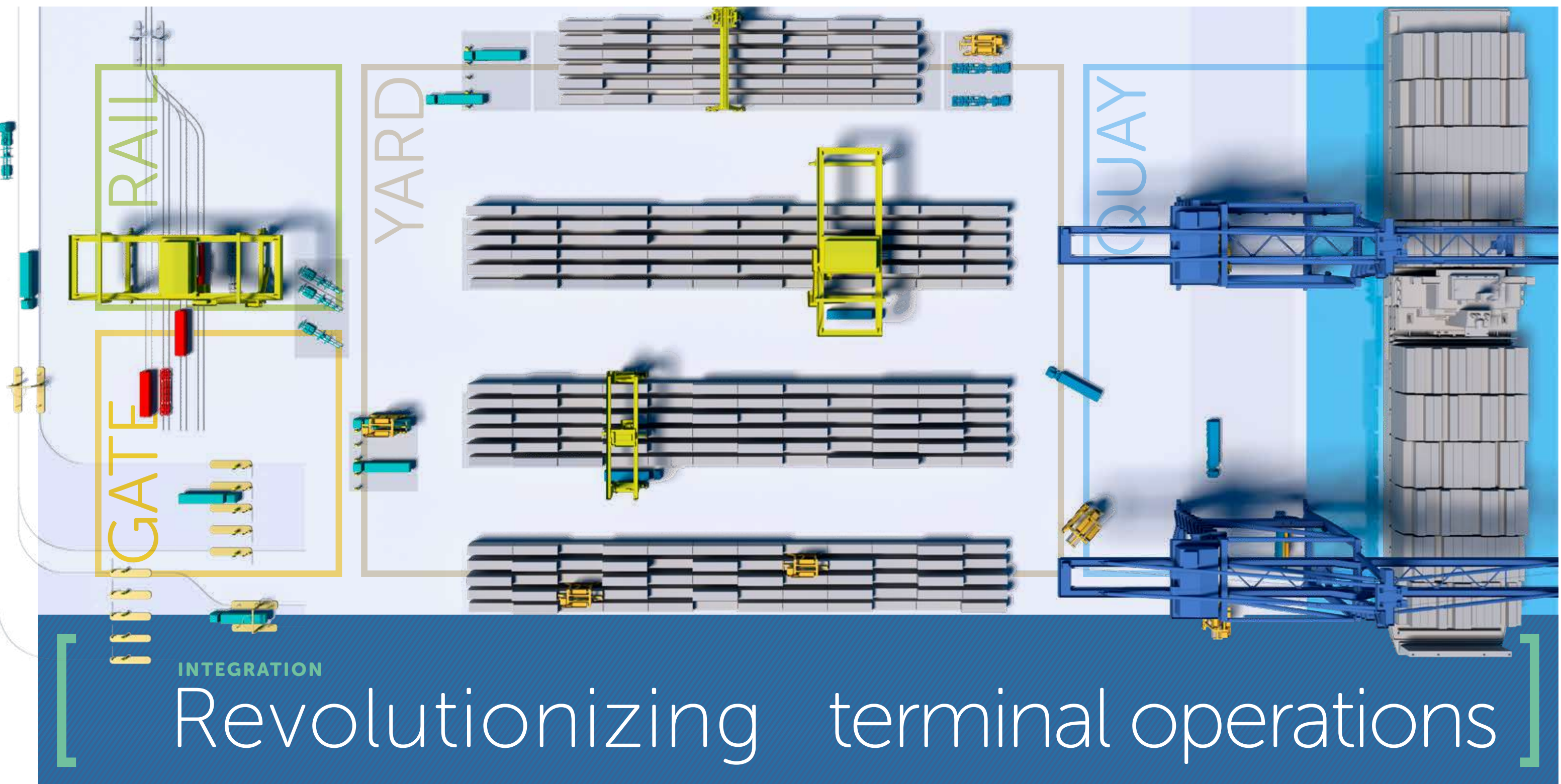
CRANE AUTOMATION

CONTAINER & TRUCK IDENTIFICATION

Boxcatcher crane OCR for container identification

LOCATION TECHNOLOGIES

Roof cameras, RTLS & UWB location technologies for lane matching and VLB for vessel loading



RAIL AUTOMATION

START PROCESSING TRAINS WITHOUT DELAY AND IMPROVE TRAIN TURNAROUND TIME

- ▶ OCR RAIL PORTAL
- ▶ RMG OCR CAMERAS
- ▶ RTLS
- ▶ SPREADER CAMERA

GATE AUTOMATION

THE INDUSTRY REFERENCE IN VISION-BASED GATE AUTOMATION SOLUTIONS

- ▶ OCR PORTALS
- ▶ KIOSKS
- ▶ VBS VEHICLE BOOKING SYSTEM
- ▶ RFID

YARD AUTOMATION

FROM A STEP BY STEP INTEGRATION TO FULL INTEGRATION OF TERMINAL PROCESSES

- ▶ RFID RTG/RMG TRUCK HANDOVER
- ▶ VMT MANUAL/AUTO JOB STEPPING
- ▶ RTG/RMG OCR CAMERAS
- ▶ ASC KIOSKS
- ▶ RTLS
- ▶ SPREADER CAMERA

QUAY AUTOMATION

IMPROVING WATERSIDE OPERATIONS FOR A LEANER, GREENER INDUSTRY READY FOR INCREASING TRAFFIC

- ▶ OCR BOXCATCHER
- ▶ TT AND SC IDENTIFICATION AND ALIGNMENT
- ▶ BLV BAY LOAD VERIFICATION
- ▶ RTLS
- ▶ SPREADER CAMERA

THEBRIDGE

Camco's recently developed integrated platform, **THE BRIDGE**, enhances integration across all operational levels by providing a unified web-based system that connects GOS, truck OCR, rail OCR, RTLS, and Crane OCR, enabling the management of multiple terminals and Camco installations from a single screen.

New maritime gates for India

INDIA

**DEPTH**

18–20 METERS, SUITABLE FOR ULCS VESSELS

LOCATION

ONLY 10 NAUTICAL MILES FROM INTERNATIONAL SHIPPING ROUTES

CAPACITY

5 MILLION TEU PER YEAR (AFTER PHASE 3)

INVESTMENT

₹18,000 CRORE (APPROX. €1.98 BILLION)

TEST PHASE

285 VESSELS AND 620,000 TEU HANDLED

FIRST

INDIA'S FIRST TERMINAL WITH A PREDOMINANTLY FEMALE OPERATIONS TEAM



NEW DELHI

THE AREA

Vizhinjam is a coastal area in Thiruvananthapuram, the capital of Kerala. It is the only village in Neyyattinkara Taluk that falls under the Thiruvananthapuram Corporation. Located 16 km south of Trivandrum International Airport, it lies along National Highway 66.

Thiruvananthapuram

The new port, located in Thiruvananthapuram, is not only a **technological breakthrough** but also a **symbol of social progress**, featuring a team of female operators at the helm of the terminal.

the terminal, seamlessly aligning all processes—from gate access to cranes and yard management. At the gates, OCR and OFR cameras and kiosks ensure smooth and error-free registration of drivers and containers. Camco's BoxCatcher technology was installed on the eight STS cranes for reliable container recognition, day and night. In the yard, a Real Time Location System (RTLS) guarantees precise tracking of containers and equipment, while the Real Time Digital Twin provides a visual overview of all terminal activities. These solutions come together in THE BRIDGE, Camco's unified platform that enables full visibility and control over operations. In short, Camco's technology forms the backbone of the terminal, making Vizhinjam a pioneer in port automation in India.

NEW MARITIME GATES FOR INDIA

ON MAY 2, 2025, THE VIZHINJAM INTERNATIONAL DEEPWATER MULTIPURPOSE SEAPORT WAS OFFICIALLY INAUGURATED BY INDIAN PRIME MINISTER NARENDRA MODI, TOGETHER WITH KERALA CHIEF MINISTER PINARAYI VIJAYAN. THE OPENING MARKS A SIGNIFICANT MILESTONE IN INDIA'S AMBITION TO BECOME A MARITIME SUPERPOWER.

Vizhinjam is India's first fully automated deepwater terminal, designed to accommodate the largest container ships in the world. Built through a public-private partnership between the Kerala government and Adani Ports, the port will help India drastically reduce its dependence on foreign ports such as Colombo, Singapore, and Dubai.

Prime Minister Modi emphasized the importance of this development:

"Vizhinjam will not only enhance India's maritime capabilities but also contribute to economic growth and create numerous job opportunities." With an annual capacity of 5 million TEU, the terminal will play a crucial role in relieving pressure on existing ports and improving national economic efficiency.

Camco's key role in automation

Camco Technologies delivered a fully integrated automation package for

Vizhinjam as an economic engine

With the completion of phase 1 out of three planned phases, the terminal reaches a potential of 1 million TEU. From the start of operations, Vizhinjam has the capacity to fundamentally transform India's maritime sector. Currently, about 75% of India's transshipment cargo is handled at foreign ports. Vizhinjam can drastically reduce that share, generating annual savings of 200 to 400 million dollars. The extensive use of Camco's automation technology also guarantees optimal terminal operation with a strong focus on customer orientation. This gives Vizhinjam strong cards to claim its regional role.

Supported by technology

Camco's technology plays an indispensable role in the daily work at Vizhinjam. It is not just about smart systems but, above all, about making the work easier for the people running the terminal. With advanced cameras and real-time tracking, employees gain immediate insight into ongoing activities, allowing them to respond faster and avoid errors. As a result, operations run safer and smoother, enabling operators to focus on their core tasks without constantly struggling with technical hassle. The collaboration between humans and machines makes Vizhinjam not only one of India's most modern ports but also a place where technology truly makes a difference for the people who work there.

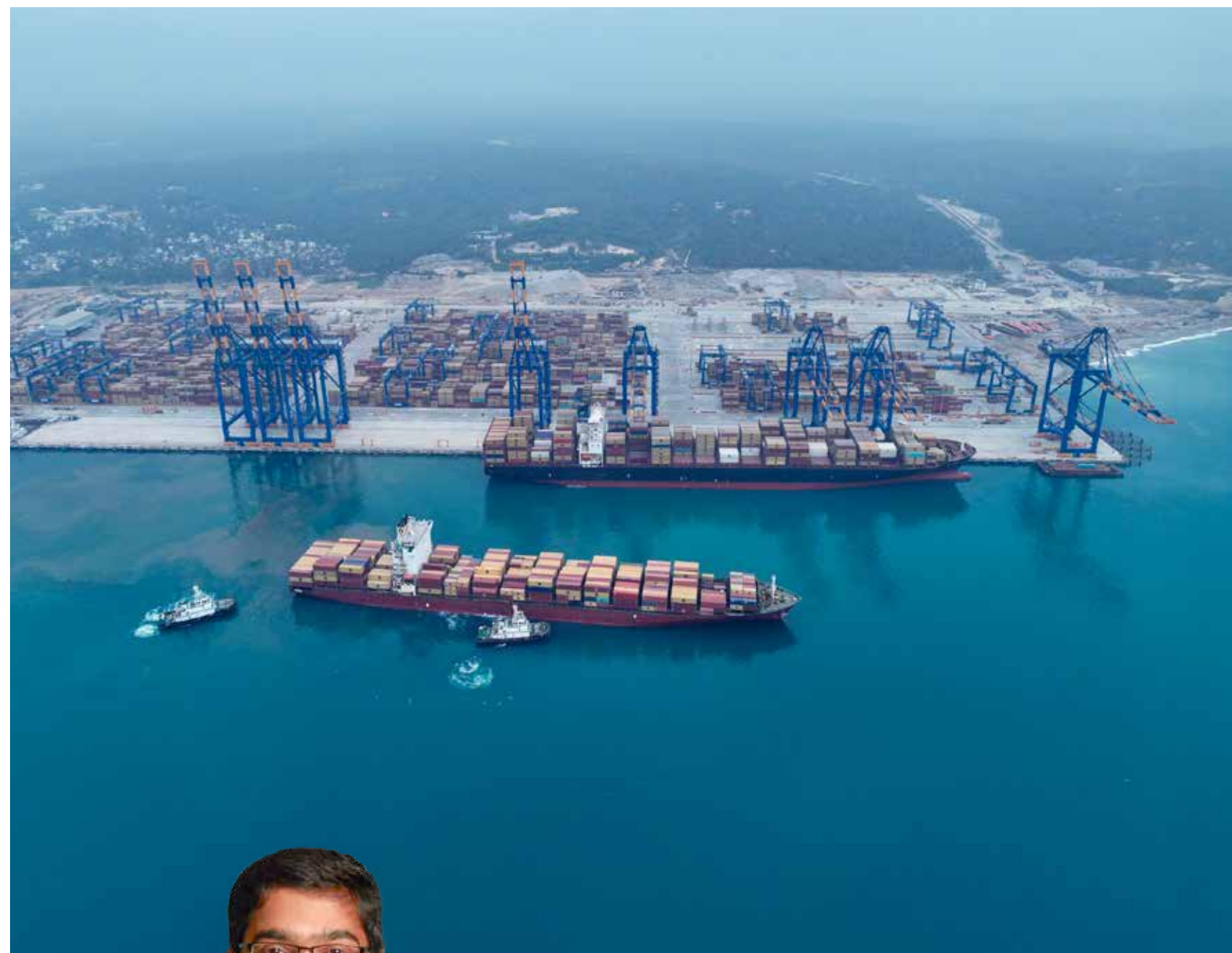
Technology and gender equality hand in hand

One of the most remarkable aspects of the new terminal is the deployment of an all-female team to operate the automated container cranes. These nine female operators come from local fishing communities and were trained at the Adani Skill Development Centre. They are the first women in India to manage such advanced equipment.

Prime Minister Modi praised their dedication and referred to the collaboration with technology partners like Camco as a catalyst for this social progress. "This is a milestone for India, an example of how technology and social entrepreneurship can reinforce each other," Modi said. Their success demonstrates that technological innovation and social inclusivity can go hand in hand in the maritime sector. ■

Adani Vizhinjam Port is designed to become one of the most efficient ports – not just in India, but globally – with the ambition to streamline operations and significantly reduce logistics costs for Indian importers and exporters.

Situated on the southern tip of Kerala, Adani Vizhinjam Port enjoys a prime location along one of the world's busiest shipping lanes – making it a strategic gateway for global trade.



During the grand inauguration on 2 May, India's top leaders joined Adani partners to celebrate the official opening of Adani Vizhinjam Port – marking a significant milestone in India's emergence as a global maritime hub.



WHO IS PRADEEP JAYARAMAN?

Since April 2024, Pradeep Jayaraman has served as CEO of Adani Vizhinjam Port Pvt Ltd, overseeing the development of India's first major transshipment port in Kerala. He also leads the group's digital transformation as Head of Analytics at Adani Ports & SEZ.

He brings over 18 years of experience in analytics and digital strategy, having held leadership roles at Fractal,

Maersk, Cognizant, and Dell. At Maersk, he established the analytics centre in Chennai and built commercial analytics teams.

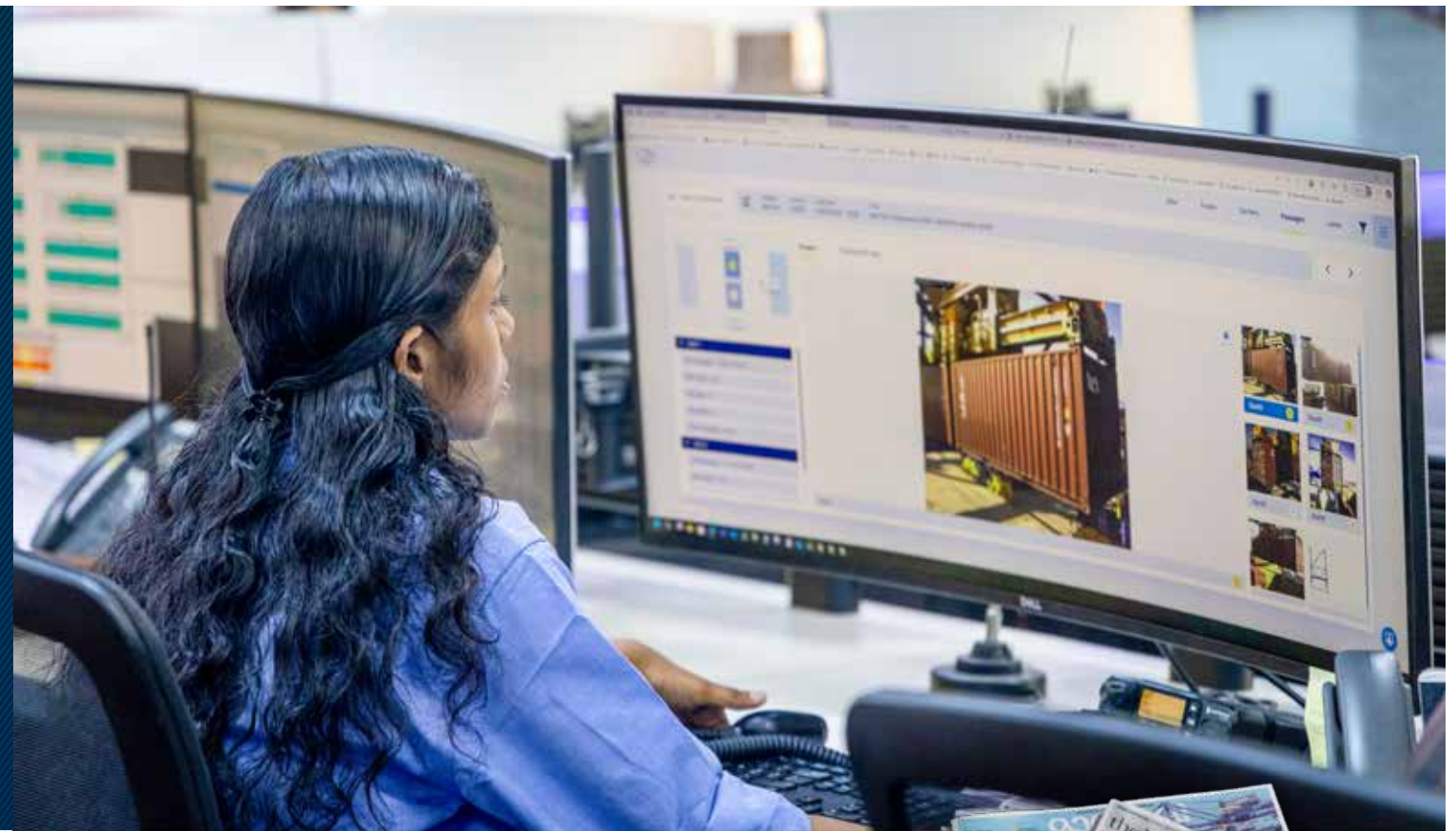
As CEO of Adani Vizhinjam Port, he is driving the rollout of one of India's most advanced ports, which completed its first phase in December 2024 and has been handling export-import traffic since January 2025.

NEW TECHNOLOGY

FOR THE NEW DEEPSEA CONTAINER TERMINAL IN VIZHINJAM, CAMCO DELIVERED A FULLY INTEGRATED AUTOMATION SYSTEM THAT CONNECTS ALL LOGISTIC PROCESSES — FROM GATE TO CRANE. IN ADDITION TO PROVEN SOLUTIONS, VIZHINJAM INTRODUCES SEVERAL NEW TECHNOLOGIES FOCUSED ON MAXIMUM EFFICIENCY, RELIABILITY AND FUTURE READINESS. FOUR CORE INNOVATIONS STAND OUT.

Technology

THAT DRIVES VIZHINJAM FORWARD



1

SMART IMAGE RECOGNITION AND REAL-TIME TRACKING

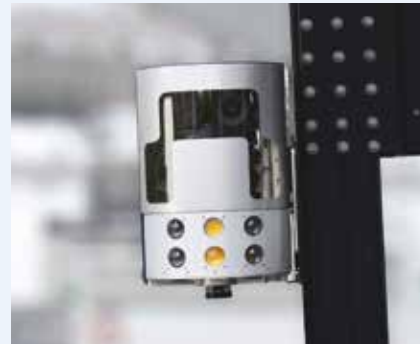
Container registration starts with OCR cameras at fixed checkpoints like the terminal gate. Vizhinjam adds an extra layer with Real Time Location Systems (RTLS), which track not the container itself but the transport equipment — from straddle carrier, terminal trucks to reach stackers. Terminal trucks are equipped with Vehicle Mounted Terminals. These screens can show instructions or confirm which container needs to be picked up or dropped off — reducing errors, improving traffic flow, and increasing transparency.



2

NEXT-GENERATION RFID FOR SMOOTH GATE FLOW

RFID has long been used to identify external trucks, mainly at the gate. In Vizhinjam, Camco takes it a step further. The RMG cranes are equipped with next generation Tritech RFID readers. Those readers read the tags on the external and internal vehicles, this vehicle identification guarantees a correct container move at the RMG cranes. At the entrance of the blocks the RFID reader already announce the entering vehicles to the TOS to reduce the waiting times.



3

BOXCATCHER: FAST AND SAFE CRANE OCR

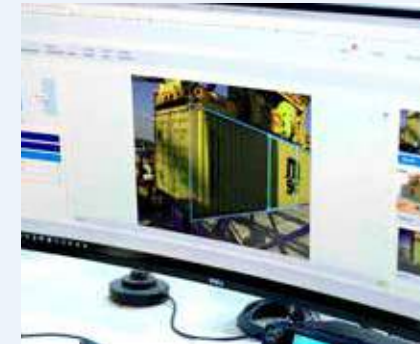
At the crane handover points, Camco's BoxCatcher provides high-speed, high-precision container identification. Using industrial-grade cameras mounted safely below the crane boom, BoxCatcher captures all critical container data — even in challenging lighting or weather conditions. By eliminating the need for manual input and ensuring reliable crane-to-TOS registration, it boosts both safety and throughput at the berth.



4

RT DIGITAL TWIN: LIVE 3D TERMINAL INSIGHT

Vizhinjam's Digital Twin technology offers a three-dimensional, real-time view of terminal operations. Operators can monitor container and equipment movements live, in a virtual replica of the site. Fully integrated with existing systems, the Digital Twin lays the foundation for future developments in AI-driven predictive analytics and operational optimization.



5

THE BRIDGE: ONE INTERFACE FOR EVERYTHING

All technologies converge in THE BRIDGE — Camco's centralized platform that provides visibility and control over the entire terminal automation landscape. Vizhinjam is the first site where THE BRIDGE is combined with RTLS, RT Digital Twin and next-gen RFID, delivering unmatched insight into the current status and flow of terminal operations at all organizational levels.



MEDIA WELCOME VIZHINJAM WITH ENTHUSIASM

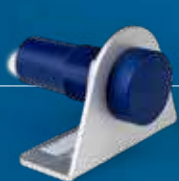
The inauguration of the Vizhinjam International Seaport on May 2, 2025, was widely covered in the media. Headlines described it as a "symbol of new-age development," highlighting the strategic significance of India's first deepwater transshipment hub. The joint presence of Prime Minister Narendra Modi and opposition leaders like Shashi Tharoor emphasized the project's national importance. Both local and international press praised the collaboration between public and private actors, positioning Vizhinjam as India's new maritime gateway. The coastal town came alive with celebration, reflecting the pride and high hopes of the community for economic growth and global connectivity.

HOW RADAR AND AI ARE RESHAPING SMART SENSING AT CAMCO

RADAR WAS ONCE RESERVED FOR HIGH-END AUTOMOTIVE AND MILITARY APPLICATIONS. TODAY, IT'S AT THE CORE OF SEVERAL NEW CAMCO SOLUTIONS. BY PAIRING RADAR WITH AI, WE'RE PUSHING THE BOUNDARIES OF SMART SENSING—IN TERMINALS, AT GATES, AND ALONG THE TRACKS.

Innovation spotlight

From traffic barriers to train buffers, radar offers a powerful combination of robustness, reliability, and precision. Unlike technologies such as LiDAR, which struggle in fog, rain or dust, radar operates with ease in even the harshest environments. Add AI to the mix, and you get real-time object classification, motion detection, and noise filtering—all without the need for human intervention.



TRAFFIC BARRIER
SENSOR



RAIL BUFFER
SENSOR

1. TRITECH RFID READER WITH RADAR

In 2024, Camco launched its own long-range RFID reader, built on the latest technology and fully compatible with EPC GEN2 and RAIN standards. This year, we enhanced the reader with a radar sensor and a camera.

Depending on the antenna type, the reader can scan tags in a lobe up to 12 meters long and 5 meters wide. In gate lane applications, we want to ensure we're only reading tags from trucks that are actually stationary in the lane. The integrated radar confirms the presence of a vehicle and reduces false readings.

Another use case involves RTG or RMG operations, where the radar helps determine whether a tag belongs to a waiting truck—or one simply passing by in a different lane.

“

Radar is a game changer—not because it's new, but because we now know how to use it smartly. By combining it with AI, we can deliver **reliable, low-maintenance sensing systems** that perform in all conditions.

Jan Bossens
CEO of Camco Technologies.

2. TRAFFIC BARRIER SENSOR

One of Camco's latest innovations is the radar-based sensor for traffic barriers. This new sensor replaces older ultrasonic models, which were more prone to failure in high winds and heavy rain. The radar sensor detects trucks or pedestrians under the barrier arm before it closes.

Some companies still use ground loops for this purpose, but ground loops cannot detect people. Our radar solution offers greater reliability and robustness, and is also more cost-effective—delivering better value for money. For ease of integration, we designed the new presence sensor in the same shape as the ultrasonic version, ensuring both mechanical and electronic compatibility.

3. TRAIN BUFFER SENSOR (TBS)

The Train Speed Buffer Sensor (TBS) is a groundbreaking product from Camco, developed to replace the older LMS system. The LMS used a Sick laser scanner to measure train speed by scanning the wheels just above the rail. While it offered basic functionality—such as detecting wheel clusters (bumpers) and calculating speed—it was sensitive to installation errors and environmental factors like weeds, debris, fog, and dust.

The new TBS system is a much more reliable and robust alternative. It uses three radar sensors to accurately measure train speed, a camera system that detects wagon bumpers in real time, and an integrated AI processor. Unlike laser-based systems, radar is unaffected by fog, dust, or vegetation—making it far more dependable in terminal environments.

Currently being field-tested at CTB and Poko, the TBS is already showing marked improvements in the speed and efficiency of train inspections.

4. EMPTY LANE SENSOR

Monitoring an empty lane on the landside of a stacking crane (ASC) using radar is significantly more reliable than camera-based systems. Radar doesn't require any maintenance and performs consistently, regardless of weather or lighting conditions.

CAMCO CONTINUES TO INVEST IN RADAR-POWERED INNOVATIONS

Not for the sake of novelty, but to bring practical, scalable, and resilient sensing solutions to the front lines of terminal automation. Radar and AI are no longer just supporting technologies—they're becoming central to how we think about automation itself.

CAMCO AT WORK IN GHANA, KENYA, AND BENIN

AFRICA'S PORTS ARE UNDERGOING A QUIET BUT PROFOUND TRANSFORMATION. WHAT WAS ONCE SEEN AS AN INFRASTRUCTURAL DISADVANTAGE IS NOW RAPIDLY EVOLVING INTO A STORY OF DIGITAL MODERNIZATION. WITH NEW PROJECTS IN GHANA, KENYA, AND BENIN, CAMCO TECHNOLOGIES IS SUPPORTING THIS GROWTH – NOT AS A SUPPLIER, BUT AS A PARTNER IN PROGRESS.

IN AFRICAN PORT INFRASTRUCTURE ALONE, OVER \$100 BILLION IN UPGRADES AND EXPANSIONS IS PLANNED

AFRICAN CONTAINER TRAFFIC CONTINUES TO GROW AT 6 % TO 8% ANNUALLY

PORTS SUCH AS MOMBASA, TEMA, AND COTONOU ARE BECOMING ESSENTIAL GATEWAYS

THE GROWTH COMES WITH HIGH DEMANDS FOR EFFICIENCY, SAFETY, AND SCALABILITY

AFRICAN TERMINALS ARE INCREASINGLY TURNING TO ADVANCED AUTOMATION SOLUTIONS

CAMCO IS WORKING ON MAJOR AUTOMATION PROJECTS IN
TEMA [GHANA]
MOMBASA [KENYA]
COTONOU [BENIN]

African ports in acceleration

[WHY PORTS MATTER FOR AFRICA]

- Africa is growing. Population growth, urbanization, and rising domestic consumption are driving trade and logistics – and placing increasing pressure on port infrastructure.
- At the same time, more and more African countries are embracing regional trade through initiatives.



THE EAST AFRICAN COMMUNITY (EAC)

An economic union with free movement of goods and people



ECOWAS IN WEST AFRICA

Fostering collaboration between countries like Ghana, Benin, Côte d'Ivoire, and Nigeria



THE AFCFTA

A continent-wide free trade agreement that encourages intra-African trade

COMMON THREADS ACROSS PROJECTS

Whether it's a top-tier terminal in West Africa or a national port authority in East Africa, we see the same needs and ambitions everywhere. For Camco, this means thinking along with our clients, delivering tailored solutions, and ensuring that technology not only gets installed – but truly works.

- Improved traceability of cargo and vehicles
- Faster and more reliable access systems
- Integration with other systems in the logistics chain
- Enhanced safety and predictability

From local port to regional hub

Automation isn't just about working faster. In the African context, it's about contributing to broader ambitions. A well-functioning port acts as a lever for national economies, regional cooperation, and global trade. Camco's technology helps make that possible – today in Tema, Mombasa, and Cotonou, and tomorrow in other ports ready for the future.

COTONOU [BENIN]

With smart access control and parking management systems

TEMA [GHANA]

With BoxCatcher OCR, safety systems, and washing stations on 10 STS cranes at the MPS terminal

MOMBASA [KENYA]

With Rail OCR, gate automation, and truck & driver registration

The technology Camco provides **reduces human error, manages traffic flow, and improves safety** – all vital in a sector where every minute counts and where incidents have both human and economic consequences.



COTONOU

[BENIN]

The Port Autonome de Cotonou is Benin's main sea-port, handling 90% of the country's foreign trade. With an ambitious modernization plan, PAC aims to reach an annual capacity of 15 million tons and 800,000 TEU by 2026, reinforcing its role as a logistics hub in West Africa. The African Development Bank recently allocated €80 million to upgrade port infrastructure, including digital monitoring systems and new quay cranes

- ▶ Parking Zongo Nord and Sud feature automated entry and exit lanes for trucks and OOG traffic, equipped with OCR, RFID, and integrated parking management.
- ▶ Gate Accès Centralisé provides controlled access to and from the port with separate lanes for light vehicles and trucks, including OCR, RFID, and OOG capabilities.
- ▶ General pedestrian access control ensures a secure and monitored environment.



GHANA PORTS AND HARBOURS AUTHORITY

[GHANA]

The Ghana Ports and Harbours Authority manages the country's key ports, including Tema and Takoradi. With a vision to become the leading trade and logistics hub of West Africa, GPHA continues to invest in modern infrastructure and efficient services to support regional trade. GPHA recently deployed 15 new heavy-duty trucks to improve cargo throughput at the quay.

GPHA VIA CONTRACTOR ACVL

- ▶ Automated Gate Solution for 7 GPHA gates (OCR portals + kiosk lanes).
- ▶ VBS system integrated into the The BRIDGE platform.
- ▶ RFID and fingerprint enrolment for truck drivers.



KENYA PORTS AUTHORITY MOMBASA

[KENYA]

The Kenya Ports Authority manages the Port of Mombasa, the largest and busiest port in East Africa. It serves as a vital trade gateway to the Indian Ocean for several landlocked East African countries. Ongoing tenders aim to rehabilitate four berths. KPA is seeking public-private partnerships to accelerate infrastructure modernization.

KENYA VIA CONTRACTOR BRINKER SOLUTIONS

- ▶ Phase I of the Automated Gate Solution deployed at one of the eleven KPA gates.
- ▶ Phase II in preparation to equip the remaining ten gates.
- ▶ Rail OCR solution under development.



At
home
in Africa

FROM TANGIER TO DURBAN, FROM THE ATLANTIC COAST TO THE HORN OF AFRICA – CAMCO HAS BEEN ACTIVE ACROSS THE AFRICAN CONTINENT FOR MANY YEARS. OUR TECHNOLOGY SUPPORTS LOGISTICS IN PORTS AND TERMINALS ACROSS A WIDE VARIETY OF REGIONS – ALWAYS ADAPTED TO THE LOCAL CONTEXT, ALWAYS BUILT ON COLLABORATION AND TRUST. A SELECTION OF THE PLACES WHERE YOU'LL FIND US AT WORK:

HOW DUSS AND CAMCO TECHNOLOGIES DIGITALISED THE COLOGNE
TERMINAL – CREATING A BLUEPRINT FOR THE FUTURE

DUSS – SHORT FOR DEUTSCHE UMSCHLAGGESELLSCHAFT SCHIENE-STRASSE MBH – IS A WELL-ESTABLISHED NAME IN GERMANY'S INTERMODAL RAIL FREIGHT SECTOR. WITH 23 TERMINALS SPREAD ACROSS THE COUNTRY AND AROUND TWO MILLION TRANSSHIPMENTS PER YEAR, THE COMPANY PROVIDES A SIGNIFICANT PORTION OF THE TRANSFER CAPACITY FOR COMBINED ROAD-RAIL TRANSPORT. DUSS PLAYS A CENTRAL ROLE BOTH WITHIN GERMANY AND ACROSS INTERNATIONAL FREIGHT ROUTES THROUGHOUT EUROPE AND BEYOND.

TECHNOLOGY AS A LEVER FOR INTERMODAL SUCCESS

FULL NAME

DEUTSCHE
UMSCHLAG-
GESELLSCHAFT
SCHIENE-STRASSE
MBH

FOCUS

INTERMODAL
FREIGHT
TRANSPORT –
RAIL & ROAD

NETWORK

23
TERMINALS
ACROSS
GERMANY

VOLUME

2 MILLION
TRANSSHIPMENTS
PER YEAR

ROLE

KEY PLAYER
IN NATIONAL AND
INTERNATIONAL
FREIGHT
CORRIDORS

FLAGSHIP TERMINALS

MUNICH
COLOGNE
HAMBURG
BASEL

OWNERSHIP

SUBSIDIARY OF
DB INFRA AG
(PART OF
DEUTSCHE BAHN)

MISSION

ENABLING
EFFICIENT,
RELIABLE MODAL
SHIFT FROM
ROAD TO RAIL



WHO IS JÜRGEN KARL?

Jürgen Karl has been with Deutsche Umschlaggesellschaft Schiene-Straße (DUSS) for 25 years and has grown alongside Germany's intermodal transport sector. After studying business administration with a specialisation in logistics, he joined the then-emerging combined transport segment in 2000. At DUSS, he found the ideal mix of technology, process-oriented thinking, and societal relevance – three elements that continue to motivate him today.

As digitalisation project manager, Jürgen develops solutions to facilitate the shift from road to rail. His focus is on efficient processes – not just for trains, but also for the trucks that deliver and collect intermodal loading units. He keeps a close eye on the entire chain – from planning to on-the-ground operations.

At major DUSS terminals such as Munich, Cologne, Hamburg, and Basel, numerous connections come together, generating strong network effects and securing DUSS's position in Europe's logistics hinterland. "This scale inevitably brings complexity," says Jürgen Karl, digitalisation project manager at DUSS. "Due to the high number of transshipments alone, we can no longer rely on manual processes. Standardisation and digitalisation have become essential to ensure continuity and quality."

Cologne as a technology flagship

As part of DUSS's digitalisation strategy, the Cologne terminal was assigned a key role. One of the network's largest and busiest locations, it was selected as the site for an ambitious modernisation programme. And that choice was far from random.

"Cologne is both complex and representative," Jürgen explains. "We serve a wide variety of customers and loading units there – which means a wide variety of

“
In an increasingly
automated logistics system,
terminals must evolve into
digital nodes within a broader
ecosystem. No one
can do that alone.”

Jürgen Karl
Digitalisation Project Manager, DUSS

processes. If you can implement a robust and high-performing system here, you know it will work elsewhere too."

Cologne's digital journey started back in the early 2000s, with infrastructure expansion and the introduction of the first OCR solutions. In 2017, paper-based check-ins were replaced by a digital system. The



current project, launched in 2021, marked another major milestone: the complete modernisation of the gate area, including OCR portals, LMS sensors, barrier control, traffic management, and seamless integration with the terminal operating system.

"We deliberately chose Camco Technologies because they could deliver

WHAT DEFINES JÜRGEN KARL'S MANAGEMENT STYLE?

- ▶ **PURPOSEFUL CHANGE**
"Change only works if you know what needs to change – and want it to change."
- ▶ **FROM VISION TO PRACTICE**
He doesn't believe in just lab-based pilot projects. "Only when solutions are pursued in real-world settings can we call it real innovation."
- ▶ **PATIENCE AND PERSEVERANCE**
"Turning good ideas into reality and making success visible requires stamina and determination."
- ▶ **STRONG TEAMWORK AS A FOUNDATION**
Jürgen values collaboration across all levels – from management to frontline staff.
- ▶ **TECHNOLOGY WITH PURPOSE**
"Not everything needs to be digitalised immediately. Technological progress is not a goal in itself."
- ▶ **ALWAYS A PLAN B**
With a nod to his love of science fiction and action scenarios: "I believe in progress – but also in robustness. Always have a plan B!"

a complete concept,” says Jürgen. “Their technology had already proven itself in demanding port environments. Just as important: they had the experience and the commitment to actually bring the project to life.”

Smart details make the difference

The installation in Cologne is technically advanced and includes some standout features. The OCR portals are equipped with additional 45° cameras, allowing optimal reading of tank container IDs. “These are crucial,” says Jürgen. “On cylindrical containers, the ID is often placed high on the curve. From a side angle, it’s hard to read. The tilted cameras solve that issue.” The cameras can also inspect the roofs of loading units – useful for detecting damage or irregularities before transshipment.

The LMS sensors play a key role as well. They monitor in real time whether vehicles are correctly positioned within the video gate and regulate traffic and barrier control accordingly. “There must be no double detection. The sensors ensure vehicles are admitted one at a time, maintaining data quality and preventing congestion.”

The project was executed in phases – right in the middle of daily operations with an average of 900 vehicles per day. “That demanded a lot of flexibility and mutual understanding,” says Jürgen. “We also renewed cables and rearranged lanes to make optimal use of the available space.”

A clearer view of reality

According to Jürgen, the impact on operations is significant. “Processing is faster and more streamlined. Drivers are recognised automatically, and checks are completed within seconds.”

“We deliberately chose Camco Technologies because they could deliver a complete concept. Their technology had already proven itself in demanding port environments.”

Jürgen Karl
Digitalisation Project Manager,
DUSS



But it’s the improved transparency that makes the biggest difference. “We can now map out error-prone processes and recurring patterns far more effectively. Ideally, all we have are ‘happy flows’ – uninterrupted, accurate processes and data streams.”

With Camco’s analytics tools – such as the Reporting and Archive modules within THE BRIDGE, the technology- and terminal-independent unified platform – DUSS can now also trace cause-and-effect relationships behind errors. “That’s valuable for everyone involved: our staff, customers, drivers, and management.”



WHAT DUSS REPRESENTS IN GERMANY AND EUROPE

Deutsche Umschlaggesellschaft Schiene-Straße mbH (DUSS) is one of the most important players in Germany’s intermodal transport landscape, acting as a vital link between road and rail freight systems. Its role is not just about managing cargo movements—it’s about enabling efficient, sustainable, and scalable logistics in a country that sits at the crossroads of European trade routes.

DUSS serves as a national infrastructure operator of intermodal terminals—those crucial hubs where containers and semi-trailers switch between trains and trucks. With over 20 full-service terminals across Germany, including in cities like Hamburg, Munich, Frankfurt, and Duisburg, the company ensures that the flow of goods continues smoothly between inland regions, major ports, and international borders.

Germany is central to European freight traffic—and DUSS terminals are often the first or last mile connection in cross-border intermodal transport. Several of its terminals, like those in Basel-Weil am Rhein, are positioned to connect with Switzerland, France, Italy, and beyond. This makes DUSS a key node in the Trans-European Transport Network (TEN-T) and Alpine corridor initiatives.



Feedback from the field has been overwhelmingly positive. “Of course, with any new technology, there are questions and adjustment periods. But the system brings more calm, fewer manual actions, and better predictability. The key is that both hardware and software are reliable – and issues are quickly resolved.”

A model for the future

The experiences in Cologne are now shaping DUSS’s broader digitalisation strategy. “Not every terminal is as large or complex,” Jürgen notes. “So, we always analyse what each location truly needs – and what can be added in a future phase.”

For new construction projects, insights from Cologne provide a valuable foundation. “We can already account for data flows, identification needs, camera positioning,

and traffic during the layout phase. And we build everything modularly – expansion remains possible.”

OCR remains the preferred solution for ID recognition. “We work with an enormous variety of loading units – from different generations and in various conditions. OCR is currently the most effective way to process all that information accurately and quickly.”

Still, DUSS closely monitors technological developments. “There’s a lot of research into alternative recognition methods. But compatibility, cost-efficiency, and robustness remain our guiding principles.”

Partnership as the key to success

The collaboration with Camco has now led to rollouts at eight locations. “What I appreciate is the open dialogue, regular alignment, and

“
In the coming years,
DUSS aims to further
expand its network,
harmonise supporting
systems, strengthen
broadband connectivity,
and introduce IT
infrastructure redundancy.”

Jürgen Karl
Digitalisation Project Manager,
DUSS

joint evaluations,” says Jürgen. “We’ve formed a dedicated team that now acts as a catalyst within our organisation.”

That foundation of trust is essential. “Technology projects aren’t just about software and hardware. They also have to make human sense. Staff will only accept what is technically sound, user-friendly, and reliable. That requires a partner who not only delivers products but also contributes to implementation, maintenance, and long-term development.”

Sustainability is also a focus. “We don’t want solutions that are outdated after two years. Our industry needs stability – including in terms of service and support.”

Toward a digital terminal network

Digitalisation at DUSS doesn’t happen in isolation. The company has developed a strategic IT vision encompassing all goals and priorities. “We want to move away from standalone solutions and isolated systems, towards a platform-based approach,” Jürgen explains. “And for video gates, that’s already largely in place.”

In the coming years, DUSS aims to further expand its network, harmonise supporting systems, strengthen broadband connectivity, and introduce IT infrastructure redundancy.

And in five years? “We’ll have largely digital handling processes at all our terminals, and we’ll be testing autonomous crane systems. But we’re taking it one step at a time – with a focus on reliability, safety, and integration.”

In an increasingly automated logistics landscape, terminals will no longer just be transshipment hubs, but digital nodes in a wider ecosystem. “And that’s exactly why collaboration is essential. No one can do this alone. The success of a digital network depends on the willingness to connect, to share – and to build together what truly works.” ■



Every day, about 900 trucks and their containers are registered seamlessly by Camco’s entrance gates in Cologne – the result of hardware and software working hand in hand.

PREPARING OUR SPECIALISTS FOR REAL-WORLD SITUATIONS

SINCE OCTOBER 2021, CAMCO HAS BEEN OPERATING ITS OWN TRAINING CENTRE: CAMCO ACADEMY. A SPACE TO LEARN, GROW AND CONNECT. BOASTING HANDS-ON TECHNICAL INSTRUCTION COMBINED WITH REAL-LIFE TERMINAL VISITS, CAMCO ACADEMY PLAYS A KEY ROLE IN PREPARING OUR PEOPLE FOR THE CHALLENGES OF THE CONTAINER TERMINAL INDUSTRY.

CAMCO ACADEMY smart support starts with smart training

Our training programs are designed to deliver in-depth technical training on Camco's extensive product portfolio, with a particular focus on technicians and helpdesk employees. But the scope goes beyond that. New colleagues in roles such as business development, analysis, software development and support also benefit. So do external partners we rely on for certain tasks or in specific regions.

Learning by doing

The hands-on training sessions keep participants up to date on the latest technologies and product developments. Technicians and helpdesk staff in Australia, the USA, Asia and the Middle East follow the program either at our headquarters in Belgium or – in some cases – online. All training materials are published on the intranet and are accessible to all Camco employees at any time.

First-hand experience

As part of their onboarding and Camco Academy program, many new hires also

visit MSC PSA European Terminal (MPET) in the port of Antwerp. Experiencing a large, leading container terminal for the first time—and seeing Camco's technology in action—leaves a lasting impression. Impressed by the hustle and bustle of the industry and equipped with fresh insights, our colleagues return even

more committed to developing smart solutions for our clients. This first-hand experience strengthens not only their technical understanding, but also their commitment to supporting our clients in the long run—helping terminals operate more efficiently, safely and successfully, today and in the future. ■

“We are able to offer a **better service to our clients** when helpdesk staff and field technicians have **deeper insights into how our products work** and how to install our equipment.”

Véronique
Team Lead Camco Academy



WHO BENEFITS FROM CAMCO ACADEMY?

BUSINESS DEVELOPMENT

Our business development managers and business analysts are often the first to engage with terminal operators looking for automation solutions. While expert technical knowledge isn't essential in their role, it certainly helps us understand how our solutions contribute to the customer's goals—both during the selection process and later during actual operations.

TECHNICIANS

They're our boots on the ground, whether they're part of the Camco team or working through an external partner. After all, they're responsible for the correct installation, set up and ongoing maintenance of the systems over their entire operational lifetime.

PROJECT ENGINEERS

At the start of a new project, our Project Engineers work closely with the technical team to bring our systems to life. While they can rely on our technicians for implementation, they're not afraid to get hands-on themselves — especially when it helps speed up delivery and ensures a smoother go-live.

SOFTWARE PROJECT DEVELOPERS

As the final team to work on a project before go-live, our Software Project Developers fine-tune the operation and integration of our systems. Like the Project Engineers, they count on the technicians on site—but being able to solve an issue independently is always a source of pride.

HELPDESK EMPLOYEES

Once a system is operational, incidents are inevitable. At Camco, we pride ourselves on solving problems quickly. That's why we rely on our helpdesk staff across different continents. Working remotely, they need deep product knowledge to quickly identify and resolve issues—often without even seeing the equipment.

OUR CLIENTS

Camco Academy isn't just for our internal teams. Terminal operators around the world also rely on our training modules to onboard and upskill their personnel. Whether it's gate clerks, maintenance staff, planners or control room supervisors—anyone working with Camco systems benefits from a better understanding of how they work. By sharing our knowledge, we help customers get more value from their automation investment.

Camco Academy equips new technicians and engineers with the skills needed to keep terminal automation running smoothly.



New Camco projects



WASHINGTON UNITED TERMINALS USA



Washington United Terminals is a container terminal located in the Port of Tacoma, Washington. It offers comprehensive container handling services and plays a crucial role in the region's maritime trade. WUT selected Camco Technologies to replace and upgrade its old gate and rail OCR systems. Camco is introducing its latest generation of Truck OCR portals, All-in-one kiosks and a rail OCR portal, preparing the terminal for more efficient operations.

PANAMA INTERNATIONAL TERMINAL PANAMA



Panama International Terminal, operated by PSA International, is strategically located on the Pacific side of the Panama Canal. It provides extensive container handling services and plays a key role in global shipping. Camco won the RFQ for the introduction of a comprehensive gate automation solution comprising two truck OCR portals, six kiosk systems, THE BRIDGE unified platform for centralized gate operations, and the GOS-TOS interfacing software.

ICTSI RIO BRASIL TERMINAL BRAZIL



ICTSI Rio Brasil Terminal is a major Brazilian container terminal operated by International Container Terminal Services, Inc. It plays a key role in regional container handling. ICTSI plans to expand the site with a second private-use terminal, strengthening its presence along Brazil's southern coast. Recently, ICTSI choose Camco for the introduction of a comprehensive automated gate solution comprising a Truck OCR portal; thirteen truck height kiosks, THE BRIDGE and Argus Automated Damage Inspection software.

RAILPORT TERMINAL TURKEY



Located near Köseköy in the Izmit region, Railport Terminal is emerging as a key intermodal platform for freight flows between Europe and Asia. Developed by Arkas Logistics and Duisport, the terminal brings modern rail-road integration to one of Turkey's most dynamic industrial corridors. To streamline truck handling and increase operational visibility, Railport partnered with CAMCO Technologies to equip the terminal with OCR portals, gate kiosks, and integrated gate automation software. The result: smoother truck check-ins, reliable data capture, and a scalable solution ready to support the region's growing intermodal ambitions.

PORT AUTONOME DE COTONOU BENIN



The Port Autonome de Cotonou is Benin's main seaport, handling 90% of the country's foreign trade. With an ambitious modernization plan, PAC aims to reach an annual capacity of 15 million tons and 800,000 TEU by 2026, reinforcing its role as a logistics hub in West Africa. The African Development Bank recently allocated €80 million to upgrade port infrastructure, including digital monitoring systems and new quay cranes. The port choose Camco for the implementation of an automated gate system with RFID integration.

KENYA PORTS AUTHORITY MOMBASA KENYA



The Kenya Ports Authority manages the Port of Mombasa, the largest and busiest port in East Africa. It serves as a vital trade gateway to the Indian Ocean for several landlocked East African countries. Ongoing tenders aim to rehabilitate four berths. KPA is seeking public-private partnerships to accelerate infrastructure modernization. Through contractor Brinker Solutions, the Kenya Ports Authority has completed Phase I of its Automated Gate Solution at one of the eleven KPA gates, integrating OCR portals and kiosk lanes. Preparations are currently underway for Phase II, which aims to equip the remaining ten gates with similar infrastructure. In parallel, development is ongoing for a rail OCR solution to further enhance operational efficiency across the port network.

MERIDIAN PORT SERVICES TEMA GHANA



Meridian Port Services operates the container terminal in the Port of Tema, responsible for 80% of Ghana's national import and export. The terminal is undergoing continuous expansion to boost capacity and efficiency. Terminal 3 was recently expanded with an additional 127 hectares, equipped with 15 electric yard cranes and upgraded backup power systems to prevent blackouts. At MPS Ghana, ten BoxCatcher systems are currently being deployed on existing ZPMC STS cranes to support real-time container tracking and improve crane productivity. A new Empty Platform Gate project is also in progress, featuring two OCR ingate lanes with driver kiosks, integrated Container ADI, and a dedicated Empty Container Checking App, enabling visual inspections by MPS clerks after ingate processing. Additionally, three BoxCatcher systems are being prepared for installation on newly ordered ZPMC cranes as part of the terminal's broader modernization efforts.

GHANA PORTS
AND HARBOURS
AUTHORITY
GHANA



The Ghana Ports and Harbours Authority manages the country's key ports, including Tema and Takoradi. With a vision to become the leading trade and logistics hub of West Africa, GPHA continues to invest in modern infrastructure and efficient services to support regional trade. GPHA recently deployed 15 new heavy-duty trucks to improve cargo throughput at the quay. In partnership with contractor ACVL, the Ghana Ports and Harbours Authority is implementing an Automated Gate Solution across seven gates, each equipped with OCR portals and kiosk lanes. The project includes integration of a Vehicle Booking System (VBS) within the existing BRIDGE platform, streamlining appointment and entry processes. Furthermore, truck drivers will be enrolled using an RFID and fingerprint identification system to strengthen access control and improve gate throughput.

PSA VECON
ITALY



Vecon S.p.A., located in the Venetian Lagoon, is a container terminal in the Port of Venice and a key player in maritime trade for Northern Italy and Europe. As part of a broader sustainability strategy across Northern Italian ports, PSA Italy has ordered three new electric RTG cranes for Vecon. Now, the terminal is taking its first step towards automation. In collaboration with Camco, an automated exit lane is being implemented to make truck processing faster and more efficient. This investment lays the groundwork for further automation, in line with the upcoming upgrade of the Terminal Operating System (TOS).

PD PORTS
TEESPORT
UK



Teesport, operated by PD Ports, is one of the largest ports in the UK, handling over 56 million tons of cargo annually. PD Ports recently announced plans to develop the Teesport Offshore Gateway, a £200 million investment that will transform 180 hectares into a hub for offshore wind energy manufacturing and deployment. Teesport relies on Camco for the installation of a Truck ORC portal.

APM TERMINALS
MAASVLAKTE II
NETHERLANDS



APM Terminals Maasvlakte II is one of the most advanced automated container terminals in the world. The terminal is currently undergoing a 51-hectare expansion, including 1,000 meters of deep-sea quay and the deployment of 30 electric automated terminal trucks. It is also collaborating with Rocsys to implement hands-free charging systems, contributing to fully automated and sustainable operations. Camco will deliver Rail OCR, Crane OCR with Box-Catcher, kiosks and Waiting Area Automation.

APM TERMINALS
TANGER MED II
MOROCCO



APMT TMII has awarded Camco the project to equip four additional STS cranes with the BoxCatcher OCR solution. It brings the total number of cranes with the BoxCatcher equipment to 24 at APMT TMII. A second project Camco is executing at APMT TMII is the installation of a new gate complex allowing an exact tracking and tracing of all containers being shared with the neighbouring terminal as part of the new Gemini initiative.

SEA-INVEST
– ANTWERP
CONTAINER
TERMINAL
BELGIUM



The Antwerp Container Terminal (ACOT), part of the SEA-Invest Group, recently ordered two additional Liebherr ship-to-shore cranes to increase efficiency in container handling. SEA-Invest is also investing €250 million in a new tank terminal at the Delwaiedok, further strengthening its position in the Port of Antwerp. Camco installs Crane OCR Solutions at Antwerp Container Terminal. The terminal is equipped with Camco's BoxCatcher on three Liebherr cranes and two Nelcon cranes. Each BoxCatcher comes with its own washing station to ensure optimal visual performance. Operations are centrally managed via THE BRIDGE.

HUPAC
BARCELONA
SPAIN



On the outskirts of Barcelona, HUPAC is steadily developing a future-proof terminal that plays a key role in intermodal transport between Southern Europe and the rest of the continent. Its strategic location—close to both the port and the city—makes it a crucial hub for seamless transfer between rail and road. In collaboration with CAMCO Technologies, the terminal has implemented a highly automated gate process, including OCR portals and self-service kiosks. HUPAC Barcelona also opted for THE BRIDGE and Argus Automated Damage Inspection.

ICTSI SUBIC BAY
INTERNATIONAL
TERMINAL
CORPORATION
PHILIPPINES



Located in the Subic Bay Freeport Zone, SBITC offers direct access to major highways and shipping routes. It serves as a gateway to Northern and Central Luzon and was recently added to the CTP service by Ocean Network Express, enhancing connectivity with East Asia. The terminal is increasingly attracting major e-commerce players who see Subic Bay as a viable alternative to Manila. Recently, ICTSI acquired an auto gate system of Camco.

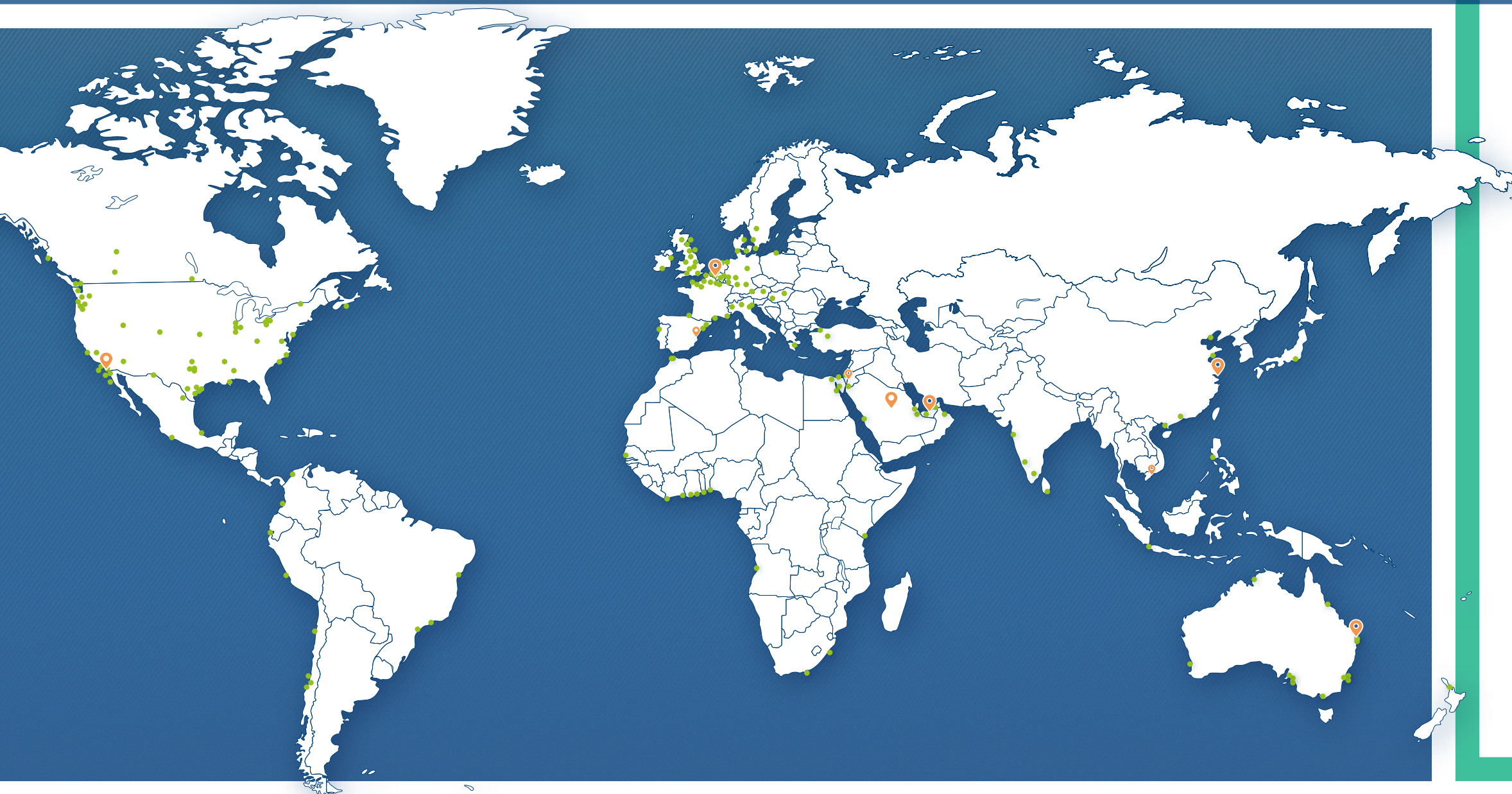
CMA CGM
YOKOHAMA
JAPAN



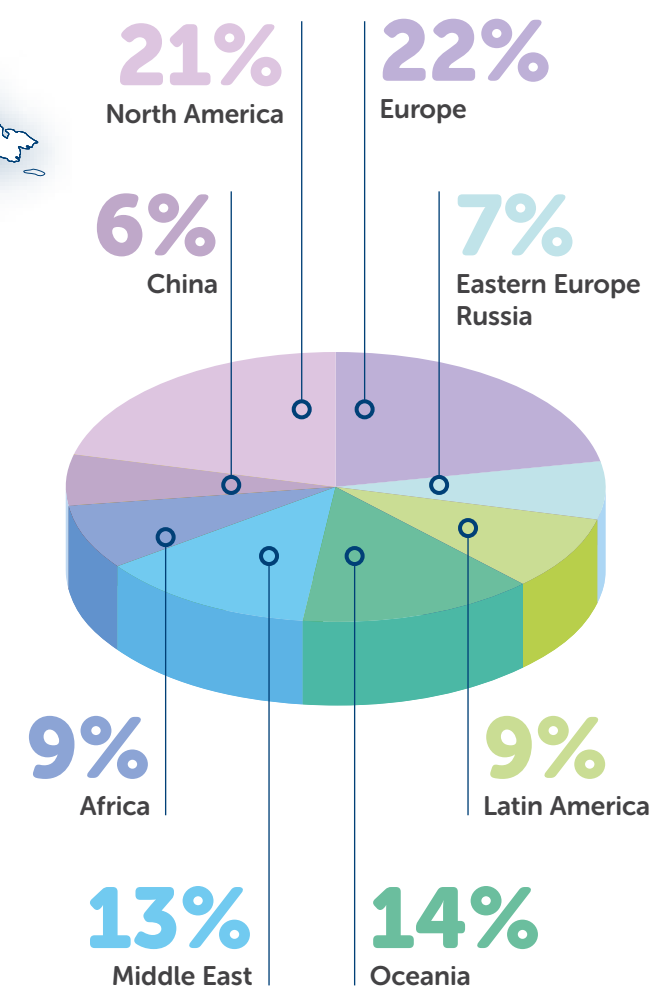
CMA CGM has announced that it will relocate its operations at the Port of Yokohama from Terminal D4 to the larger, more modern Terminal T5. Scheduled for October 2026, the move marks a significant step in expanding the company's operational footprint in Japan. To support the transition, Camco Technologies has been selected to deliver a comprehensive gate automation solution aimed at optimizing access control and terminal efficiency. The deployment will include six Truck OCR Portals for automated vehicle and container identification, sixteen Self-Service Kiosks to streamline driver processing, and THE BRIDGE, Camco's unified platform for centralized gate operations. Integration with Navis N4 will ensure seamless data exchange and smooth end-to-end coordination. This strategic upgrade is expected to significantly improve gate throughput, shorten truck turnaround times, and boost overall terminal performance.

Staying close to our customers, on all four corners of the world

With over 300 projects on six continents, we pride ourselves in staying close to our customers. We also keep close to our values and our own strengths. That's why at Camco Technologies we continue to innovate and invest. Because we automate, you operate.



SHARE OF EXPORTS



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Camco India

Ahmedabad

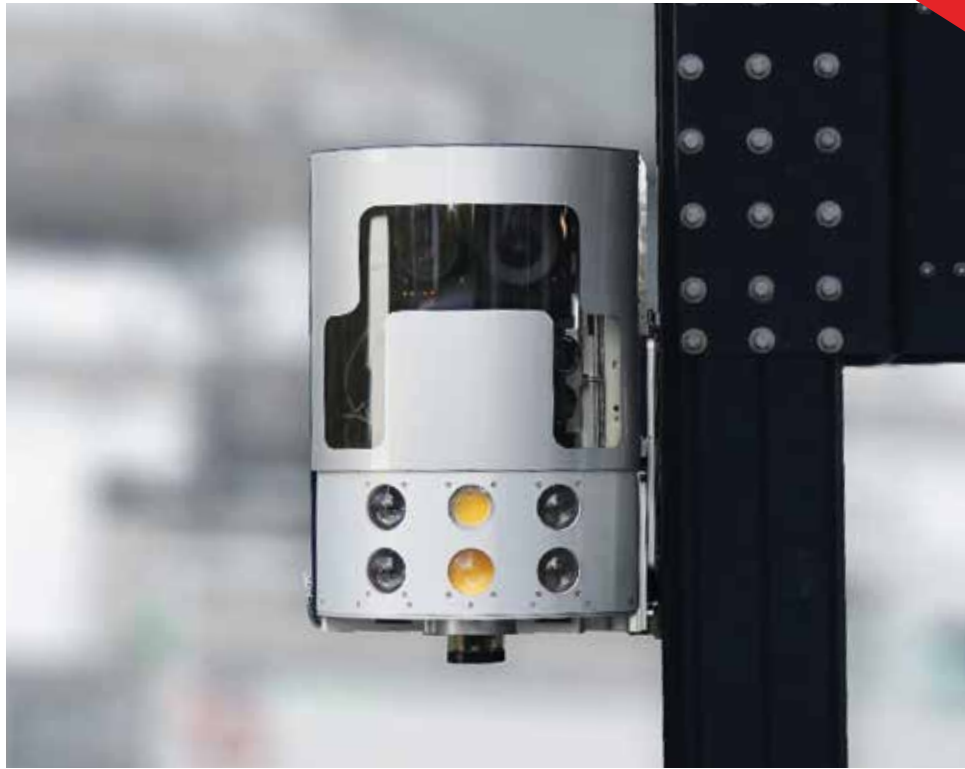
Camco Israel

Support office



camcotechnologies.com

Already more than **400** cranes outfitted



Maritime



Intermodal



Ro-Ro

No box escapes the **BoxCatcher**

The flying STS crane camera.

It takes only 2 BoxCatcher per STS crane to register every box. Mounted on vertical rails and linked to the spreader PLC, the BoxCatcher travels automatically to the best position to identify every container and to provide 360° pictures. The system even includes a washing station for automatic front cover cleansing without disrupting crane operations. Designed for minimal Opex and maximum uptime, BoxCatcher operates 24/7 in terminals across the globe.

Camco. We automate, you operate.

PATENTED
400+ INSTALLED

To find out more, go to
camcotechnologies.com

