



Container terminal modernization and automation

HATCH



The integration of various sophisticated elements is crucial for the successful operation of modern automated container terminals. From the civil infrastructure and control systems to the people supporting the operations, supply chain partners, and operational processes, each part must be seamlessly integrated. Failure to address integration appropriately could lead to system malfunctions, manual workarounds, and subpar performance, even for simple automation projects.

Hatch recognizes the complexities of automated container terminals and has a proven history of applying methodical project execution to successfully delivering projects. With a focus on an integrated, collaborative approach, we bring together experts to develop solutions that are cohesive and not siloed. We also offer specialty expertise and experience in functional safety, operationally driven business and systems requirements specifications, terminal layout for automated operations, QA and commissioning services, and data analytics and operational visibility solutions to ensure successful and safe operations of automated container terminals.



The importance of integration for automated container terminals

Modern automated container terminals are complex operations with sophisticated elements that need to be highly integrated to achieve the business’s operational needs. Integration does not only refer to interfaced software or the integration of container handling equipment with IT systems—it needs to encompass the civil infrastructure and its control systems, operational processes, the people supporting the operations, and supply chain partners such as the customs agencies, shipping lines, trucking companies, and rail companies.

For even the simplest automation projects, failure to appropriately address integration will result in

system malfunctions, manual workarounds, and subpar performance. Additionally, while automation allows for safer operations by removing humans from unsafe tasks and environments, the system needs to be re-examined and adjusted to introduce new safeguards and mitigate any new risks that were introduced because of machine control and human interaction.

Often these aspects are considered in silos and may only be contemplated “just in time,” resulting in expensive rework, lengthy ramp-up periods, and subpar outcomes. The civil infrastructure is often engineered and equipment is often purchased before the operational models are articulated.



Our approach

The principles of methodical project execution for successful ramp-up are largely the same whether building a mine, smelter, or container terminal.

Hatch has a long history of applying these principles across each of the sectors we work in and offers frameworks and expertise at all phases of the project life cycle, from concept and business case definition to engineering and operational readiness.

We bring experts and stakeholders together as part of an integrated team to work collaboratively and develop an integrated solution.

Our exceptional project management and engineering delivery services means that you can trust us to deliver high-quality solutions that meet your needs on time and within budget. We have a proven track record of successfully executing complex projects in various industries, and our experienced team is dedicated to ensuring that every project we undertake is a success. Our commitment to excellence and customer satisfaction has earned us a reputation as a reliable and trusted partner in project management and engineering.



Functional safety

Safety is a requirement for the license to operate – any safety incidents can shut down the operation, and certifications from equipment providers are not necessarily sufficient. Operators need to understand how that equipment functions within the context of the terminal and associated risks, and that inappropriately designed safety controls can impede the operation. Our experts can guide you through the functional safety processes with practical insights into what has worked, and what would not in an operational container terminal environment.

Operationally driven business: function and systems requirements

Our engineers have experience specifying and implementing operational and equipment control systems for container terminals and can help with specifications that are grounded in and included in operational realities and scenarios. The specifications are typically the vehicle against which acceptance criteria are written – they are important tools in the commercial toolkit and it is therefore important to contemplate how the system will need to work in a busy terminal when exceptions are bound to occur, and not just the ideal “happy path” situations.

Terminal layout for automated operations

Terminal layout can have significant operational impact, and inappropriate layouts can affect the interactions between container handling equipment, causing operational delays. Automation may introduce new needs for container handling, (e.g. where will containers which could not be identified by OCR be taken for resolution). Any changes to layout after the terminal has been constructed can be costly. Our terminal planners work alongside our operational experts to ensure that the delivered layout suits the selected equipment and operational mode.



QA and commissioning services

Traditional approaches for software testing and equipment commissioning are insufficient for a complex system of systems involving integrated software, hardware, equipment and civil infrastructure. Our team has experience providing terminals with services in QA strategy, emulation (environment design, implementation, execution), live equipment testing and ramp-up support. Knowing what needs to be tested, and how to conduct those tests and the tools required will help avoid costly and lengthy fixes and rework during commissioning and ramp-up.

Data analytics and operational visibility solutions

Hatch has successfully delivered data solutions that supply operational insights not only to the clients, but to systems and equipment vendors. Automation removes the “human” from the task and feedback previously reported by humans (e.g. equipment mishandling) now needs to be gathered from machines. With data produced in silos by different equipment and system providers, it is difficult to get meaning and insights from the data. We understand the systems, equipment, and the operational processes, and we can extract, integrate, and model the data in a meaningful way.

Hatch brings an integrated team to collaboratively develop integrated solutions, exceptional project management and engineering delivery services, specialty expertise, and experience in the container terminal sector. Our approach is grounded in understanding the nuances of the container terminal business context and operational modes.

You can avoid costly and lengthy fixes and rework during commissioning and ramp-up and achieve a successful, efficient, sustainable, and safe project that meets your business case.

We can help.





About Hatch

Whatever our clients envision, our engineers can design and build. With over six decades of business and technical experience in the mining, energy, and infrastructure sectors, we know your business and understand that your challenges are changing rapidly.

We respond quickly with solutions that are smarter, more efficient, and innovative. We draw upon our 10,000 staff with experience in over 150 countries to challenge the status quo and create positive change for our clients, our employees, and the communities we serve.

hatch.com



Scan the QR code to learn more about what our Ports and Terminals team can do.



Please consider the environmental impact before printing this brochure. If you would like a printed copy, please reach out to us. We would be happy to send you one printed on 100% recycled paper.