A U T O M A T E D T E R M I N A L S Y S T E M S

Container Terminal Solutions for the 21st Centurysm



Washington DC, • Ashburn Virginia, * Rome ...* Singapore





Stacking Test Automated RMG

History

For more than thirty years Automated Terminal Systems [ATS] and its predecessor companies have provided advanced cargo handling and automation solutions to Marine Terminals, Air Cargo Operators and Heavy Industry. Building on this experience, ATS has developed the first fully automated method for handling containers in Marine Terminals and Intermodal Facilities.

Integrated Automated Container Terminal [IACT]TM

The IACT is an integrated hardware and software solution that addresses the most pressing operational issues facing the Container Shipping Industry.

- Land Constraints the IACT is a high density configuration that takes advantage of large, industrial-grade Rail Mounted Gantry Cranes [RMGs] to achieve volumetric efficiencies that are 3 times greater than typical Straddle Carrier designs and twice that of terminals employing Rubber Tired Gantry Cranes [RTGs];
- **Reliability** The cornerstone of the IACT is large RMGs built to the Severe Duty Standards of the Association of Iron and Steel Engineers [AISE] or Class F of the Crane Manufacturers Association of America [CMAA]. That is, continuous operation at or near design loads for a minimum of 25 years;
- **Cost of Acquisition** Is reduced by replacing a large number of small fragile machines with a few large robust RMGs and associated equipment;





Conventional Mixed Operation



Clean Green and Quiet

- **Congestion** Throughput per acre exceeds that of the most efficient European and Asian Terminals.
- **Cost of Operation** -is reduced through the use of fewer low maintenance machines to handle the same or greater number containers on less land;
- Environmental Impact The IACT is an all-electric system that is clean and quiet. There are no particulate emissions and hydrocarbon spills. The IACT is KYOTO Compliant.SM

The IACT replaces the piecemeal methods employed in conventional Marine Terminals and Intermodal Facilities with a simple integrated solution that implements proven Industrial Automation techniques. *The IACT™ brings Industrial Automation to the Waterfront.*^{5M}

Although the IACT is a complete container handling solution, it does not replace a Terminal Operator's existing higher-level business or operational systems, The IACT is designed to integrate easily with existing Terminal System components such as Gates, Maintenance, Billing or Payroll.



ATS Tailored Solutions

ATS customers want to solve problems current in the industry: Increase Density; Minimize Environmental Impacts; Improve Productivity; and of course Increase Profitability. And, although the IACT is a complete system solution, it may not be appropriate for all circumstances. However, the underlying design principles, embedded capabilities and design alternatives provide a basis for tailoring solutions for existing operations

Case Example

US Steel wanted to simplify the processing of Oil Field pipe, increase the flexibility of its production process and make more effective use of land. at its Birmingham Alabama Fairfield Plant. ATS personnel with Morgan Crane developed a container based In Process Storage and Retrieval solution that employs Mono-Box Cantilever RMGs along with Input Output Stations. The facility produces 660,000 tons of pipe per year with 6 workers per shift. It has experienced virtually no down-time since start up.

The system can retrieve randomly selected containers at a moments notice, deliver or retrieve any of 1,400 containers from the CY or Input Output Stations. Using the crane cantilevers eliminates transfer devices between the cranes and the Input Output Stations. The cranes are capable of temporarily storing and transporting up to 4 containers on their legs while the spreader is employed in regular operations.

The dense-stack container system reduced the IPS footprint significantly. The total cost to US Steel for the building, equipment and system was less than the cost of a building to house a conventional production line.



US Steel IPS



Volumetric Efficiency:

A measure of the number of TEU Slots available within a given Terminal footprint compared to a baseline measure. In the examples used in this document we compare the number of Slots that would be available in the Container Yard [CY] behind a berth 1,000 ft in length and 1,000 ft deep.

The baseline is the number of theoretical Slots created if that space were filled with TEUs stacked 6 high, without consideration of the method of operation within the CY. The result is 31,680 TEU Slots. If all of the slots were occupied the Volumetric Efficiency would be 100%.

Next, we layout typical arrangements for

- Wheeled Operations
- Straddle Carriers
- RTGs operating 1 over 5 and 6 Rows Wide
- RMGs operating 1 over 6 and 38 Rows Wide

The Chart to the right describes the result.





AS CAPABILITIES

AUTOMATED SYSTEMS BRINGS A UNIQUE BLEND OF EX-PERIENCE AND TECHNICAL DISCIPLINES TO THE PROB-LEM-SOLVING ARENA. OUR PEOPLE AND MANUFACTUR-ING PARTNERS KNOW:

- CONTAINER TERMINAL OPERATIONS
- INDUSTRIAL AUTOMATION
- COMPUTER SCIENCE
- INDUSTRIAL ENGINEERING
- **Operations Research**
- Systems Integration

AS SERVICES

WORK WITH AS AND TAKE ADVANTAGE OF OUR ADVANCED TECHNOLOGY TO IMPROVE YOUR OPERATIONS THROUGH:

- DESIGN
- **PLANNING**
- **SIMULATION**
- PROJECT MANAGEMENT

CONTACT AS

44352 ROCK COVE TERRACE • ASHBURN VIRGINIA • USA TELEPHONE: +1.202.213.5212 • FACSIMILE: +1.703.368.7390 INFO@ATSYSUSA.COM

CONTACT DAN REISS, PRESIDENT + CEO DAN.REISS@ATSYSUSA.COM

