

Enterprise asset management for ports and terminals



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For port and terminal operators, optimal use of assets is a key factor in running a successfully performing terminal. Ports and terminals are increasingly based on the concept of driving assets to the maximum, while simultaneously improving the performance in the yard, quayside and gate arena. The end-goal is to continuously improve berth moves per hour and gross moves per hour.

Currently, the challenge facing port operators is how to ensure all their handling equipment is managed in a way that ensures high productivity and improves reliability. Ensuring this requires a well-designed IT solution that can keep port and terminal assets from ageing by implementing maintenance on a regular basis to keep machines in good shape without jeopardising current port operations.

The basic requirements of a terminal could be monitored by an off-the-shelf enterprise asset management (EAM) solution. However, to make things really work, terminal solutions need to be integrated into other port domains such as finance and accounting, procurement, and inventory management to give a full picture of operational efficiency.

Next, a terminal must make the decision between whether to buy an off-the-shelf EAM solution and integrate it with the other systems referred to above, or to go with an enterprise resource planning (ERP) solution. There are various ERP systems that are available in the market that can meet the entire requirements of ports and terminals, and currently, SAP is considered as an industry leader in providing end-to-end solutions in this domain.

The need for enterprise asset management

Terminals require flexible solutions that can analyse data to predict and plan maintenance activities and costs in order to optimise operations. Terminal specific implementations have made it difficult to

compare performances between different terminals in the past. Therefore, the information available from ports rendered it problematic to increase efficiency and to implement techniques such as total productive maintenance.

Having learned from the innumerable challenges unverifiable data manifested, the industry trend has gravitated towards a single system solution that can meet the majority of the needs of a terminal. Using a system with integrated architecture removes key obstacles in IT management, as well as overall business administration, especially through updated and newer versions of systems that are aimed at streamlining business processes.

The benefits of enterprise asset management

A truly effective EAM solution will bring terminals under a global server and under one version of ERP applications. The EAM solution offers key information regarding work order cost, work order execution details and work order downtime. Maintenance monitoring is also a core feature, as it helps in minimising downtime and integrating asset-related data as well as business processes. By defining a global standard for terminal asset management in the areas of equipment, maintenance organisation, work order management and preventive maintenance schedules, this will re-imagine port and terminal organisation from a breakdown maintenance strategy to a scheduled maintenance strategy.

Terminals are then free to redesign solutions to slash the time-expended on breakdowns and are also able to achieve a faster return on investment concerning ERP. EAM solutions can be integrated with other applications such as terminal operating systems (TOS), fuelling systems, barcode systems and crane management systems. An EAM solution which reaches over all important assets such as

terminal operating equipment, tools and fixtures, yard, civil equipment and civil structures enables incident reporting at the appropriate structure levels to provide a solid and reliable cause of failure. With this solution, terminal executives can design preventive maintenance schedules which facilitate smooth terminal operations.

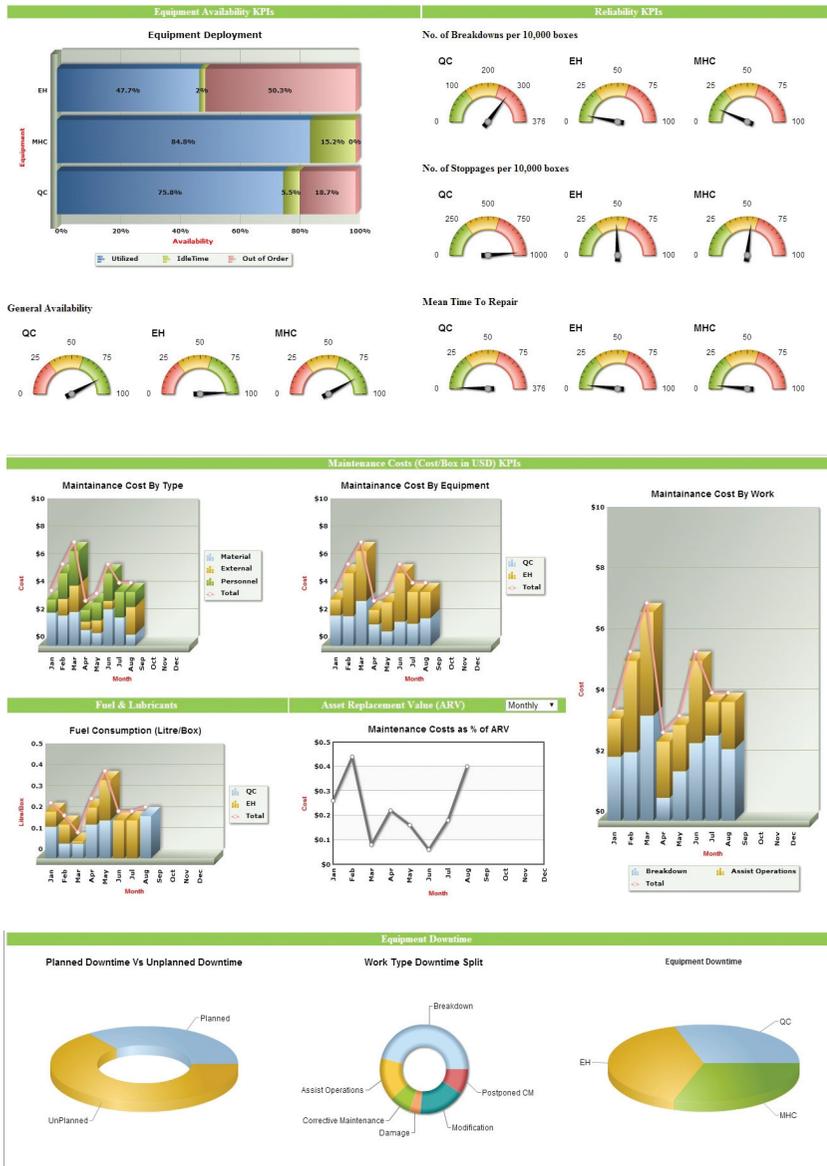
Amongst the myriad challenges ports and terminals face is the need to monitor asset condition and usage information so that assets are not being used for the unauthorised or illicit movement of goods through a port or terminal. With the implementation of an EAM solution, the processes are automated, bringing efficiency and reducing operational overheads. Furthermore, implementation of an EAM solution will provide greater insight into asset performance and maintenance, aiding in effectively managing the expense of assets, enhancing productivity and significantly reducing operating costs whilst improving the strategic planning.

Port authorities utilise EAM solutions to exceed goals and requirements. For ports, unplanned maintenance equals unscheduled downtime and a significant hit to operations, not only in terms of reduced throughput and revenue, but also in terms of managing relationships with shipping lines.

Benefits of enterprise resource planning for terminal management

Ports and terminals routinely face difficulty when systems which have not been, or cannot be, calibrated need to work in tandem to pass information on to each other in order to process transactions seamlessly. That is precisely when the need for integrating systems together arises.

The core of ERP for terminals is in practices such as berth planning and yard planning. Leading ERP products with integrated architecture are a one-stop shop solution for terminals as they meet



Enterprise asset management dashboard

The dashboard provides an overall vista of equipment utilisation and its performance. It offers real-time visibility of data and is especially useful in equipment allocation planning and forecasting the functionality of port operations.

The dashboard calculates the cost of labour, materials and equipment to provide an insight into equipment maintenance costs, maintenance cost by work-specific duties and the monthly fuel consumption of every piece of equipment at a port or terminal.

By providing detail into planned and unplanned downtime, the dashboard allows a terminal to balance the needs of operations and maintenance and allocate upon planned downtime schedules. Port executives can compare the downtime events of multiple terminals and then make decisions to increase their terminal's productivity.

Business benefits

An EAM solution reduces downtime and inventory costs by utilising the optimisation of preventive maintenance schedules. It provides the reliability of real-time data for strategic business decisions and manages third party service providers whilst eliminating duplicative systems and standardising modern port technologies.

a terminal's holistic business needs. ERP is used by many of the global industry leaders within multiple terminals worldwide as it offers an extra-edge in terminal management.

By adopting an integrated architecture, issues relating to the duplication of information and the loss of data integrity will be eliminated. There will also be faster processing of information due to real-time integration, which in turn ensures instantaneous decision making at all levels. Furthermore, there will be a significant reduction in operational costs due to advanced forecasting tools ensuring better equipment availability, as well as better planning and scheduling capabilities. All this constitutes much faster cycle times.

Business intelligence for enterprise asset management

Designing a robust business intelligence (BI) solution by integrating ERP applications, TOS applications and workforce management applications under a single umbrella helps immensely in

making efficient, quick-and-easy strategic decisions. A well acclimatised BI framework provides insightful and intelligent analysis by mining a vast volume of data to ensure optimisation of operations and better management of key performance indicators.

In short, a BI tool provides:

- Analytical capability to perform frequent failure analysis
- Comparative insight into the financial outlay between periods of planned downtime and delayed downtime
- Insight into contributing factors for the delay of maintenance, such as weather, operational issues and maintenance inefficiencies

BI utilises integrated data from a TOS system and ERP, and through the use of graphically rich visualisation tools such as dashboards and cube features, it clearly and accurately illustrates business results and exposes the root cause of problems.

About the author

Mr Rajesh Nair is the director of Envecon IT. He has over 18 years of experience in the maritime industry and has held several positions in IT management at Maersk Line. Specialising in maritime and logistic technology, Mr Nair has worked with ports across the globe.

About the organisation



Envecon is an IT company specifically focused on the maritime industry. It strives to provide innovative technology solutions and services for ports and terminals. Envecon has implemented solutions in Asia, the Middle East, Africa, South America and Europe. Envecon combines practice with technology to enable marine terminal operators worldwide to maximise performance with reduced risk.

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