The future of terminal automation technology

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Introduction

The maritime industry has perhaps been slower than most to embrace container terminal automation, however, confidence in automation technology is now at its highest level ever and the development of automated terminals is quickly approaching the point where the rush is about to begin.

The history of terminal automation

Seventeen years ago, the innovators at Thamesport began part-automating its terminal operations, a development which was quickly followed by the world's first fully automated terminal at European Combined Terminals (ECT) at the Port of Rotterdam. Back when Thamesport began operations, the technology available to the design team was very different to that which is available now and the plan required in house development of a whole range of new, purpose built technologies to integrate the automated operation. Nowadays, the challenge is far less significant and almost all such technology is available 'off the shelf'.

Much has changed since 1993. During the design stages for Thamesport, many other terminal operators would still move cards or paper slips around a wall chart to manage container movements in the terminal yard and to plan shipside operations. Today shift managers can use iPhones to email the operations managers to, for example, warn of a rain storm picked up from a weather apps radar screen, or MMS a photo of the first 18,000 TEUs ship arriving!

In the early nineties, the largest container ship in service was less than half the cargo size of the current 12,000plus TEUs ships and hardly any terminal operators thought about buying quay cranes large enough to deal with ships 22 containers wide. It is hard to believe that it is already over four years since the Emma Maersk entered service, but the economies of scale offered by these huge ships is now well established, and the number of these vessels operating in international waters will continue to grow over the next decade.

Despite the massive increase in ship size and significant advancements in technology, not much seems to have changed since the development at ECT. Automation and terminal operating software are obviously far more advanced than ever before and process automation has increased efficiency and reliability, but the fundamental designs for automated terminal equipment and for terminal planning has surprisingly seen little change. It's almost as if there remains a certain reluctance amongst terminal developers and technicians to challenge the founders and the concepts of terminal automation as we know it.

Looking to the future

The rate of change in the industry has continued to accelerate over the past decade, particularly the global demand for more sustainable operations and for higher safety, as well as some exciting new technologies that are already beating at the door. However, it may also be time for some more fundamental, but no less significant changes to be made to terminal designs and automation technologies, to adapt to industry trends and to further optimise automated operations. As circumstances and challenges change, so must the solution and now it's perhaps time to start to think a little further 'outside of the box'.

The super post-Panamax container ships have encouraged development of new waterside handling techniques, such as tandem lifting, but the full potential has yet to be realised. The focus of the next decade must be on how equipment designs can be changed to further improve sustainability, and how automation can contribute in this ever demanding industry.

The recent agreement between China Merchants Holdings International and the Port of Long Beach to develop more 'green' technologies and practices, on both sides of the Pacific, is a very positive step and a goal shared by many other countries around the world. China's commitment to becoming more sustainable strengthens the case for automated and sustainable port operations in Asia, which is why I am looking forward to this year's TOC Asia in Shanghai. The event will provide the perfect forum for industry leaders to debate the future and the benefits of automation.

Howard Wren will be discussing the future of terminal automation technology at this year's TOC Asia conference in Shanghai, from 16-18 March 2010. His session takes place on Wednesday, 17 March, at 2.30pm.

ABOUT THE AUTHOR AND COMPANY

Howard Wren is Director of Logistics at Jade Software, and is due to speak at the TOC Asia conference in March 2010. Howard has more than 30 years experience in the maritime industry, as a seafaring officer in Ship Management, and over 16 years in the design, development and automation of international container terminals. His motivation is to proactively find innovative, new and special solutions for terminal development and logistics, and to think as far outside of the square as life permits.

Jade Software Corporation is a specialist technological services company with over 30 years experience in helping organisations quickly respond to business, customer and supplier demands. Currently serving more than 3,000 organisations across the world, its customers span multiple sectors, from logistics to shipping, finance and insurance, national security, and enterprise risk assessment. A privately owned New Zealand based company, Jade has offices in New Zealand, Australia, the United States, Canada and the United Kingdom.

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