

Attendanc Event Name	FirstName	LastName	Email	Join Time	Leave Time	Attendance Duration	Question	TW answers	CV Answers	MH Answers	TCC answers	
10 PIANC - Technical Presentation	Michael	Payze	mick@shippingandfreight.com.au	4:57 pm Brisbane Time	6:42 pm Brisbane Time	105.0 mins	And what about on board lashing systems?	On board lashing will likely continue to be done by human workers. This places some limit on the ability to fully automated STS cranes.	There are some discussions about getting away from needing to lash containers on vessels through having structural elements on the ship that support the containers, however this will require a complete redesign of the world fleet which is unlikely.	There are some technical improvements to the existing systems and equipment, but removal of the task would require a wholesale fleet evolution.		
							Are today's automated terminals same productive as manual terminals today in your opinion?	The fastest manual terminals are faster than the fastest automated terminals in service to the ship. Vessel service is, I think, on average, slower in automated terminals. Truck service times are generally faster in automated terminals and truckers seem to prefer them, especially since they don't have to deal with the longshoremans.		Agree with CV - it depends on what determines productivity. Individual machine task may be slower than the fastest human operator, but may be more consistent across the board. Combined vessel performance rates may be higher due to more equipment being utilised due to decreased costs per unit or through greater coordination and control.		
							Are you taking twistlock handling in digital twins and simulation to account ?	Twistlock handling has always been considered in discrete event simulations that I have done. The modeler has to undertake a close examination of the time and motion, as it varies from terminal to terminal depending on local work rules.	While on a task comparison a manual terminal is generally faster it loses out on consistency and toilet and meal breaks etc. Automated terminals are about being consistent in output not being faster.		Further to other responses, simulation can also be useful to test the best location for the twist lock removal task, e.g. behind seaward crane leg, seaward side of landside leg, landward of landside leg. Particularly for dual trolley cranes to get the right balance between each trolley's operations	
32 PIANC - Technical Presentation	Vinny	Kavanagh	vinny.kavanagh@portbris.com.au	5:03 pm Brisbane Time	6:43 pm Brisbane Time	100.0 mins	Did you have any issues with Wireless or radio communication in container yard due to container stacking or is it mostly fibre network and hard wired?	Fiber communication is preferred for all high-bandwidth applications, such as crane/truck interface monitoring, crane remote control, etc. Wireless communication is preferred for voice and low-bandwidth applications such as intermittent crane position reporting. 5G may shift some of the high-bandwidth uses to wireless, or it may not.		Yes - should be factored into models as a time cost.		
											Further to the other responses, where automated container handling equipment relies on wireless communication it is very important to carefully consider the locations of the wireless access points and redundancy. The equipment needs the connection to know where it is and where it is going, so even temporary loss of connection could cause significant problems.	
											Container stacks and crane legs do present major challenges for ensuring adequate coverage. Part of the reason "full" automation of rail yards is problematic is that to allow people to still be in the area where the automated crane is working, current solutions rely on workers wearing wirelessly tracked tags to constantly monitor where they are but there has to be 100% confidence that the connection could not be lost, which is proving difficult to achieve. Hence a degree of manual control of automated cranes in rail yards is still required,	
79 PIANC - Technical Presentation	Tony	Sherriff	tonys@napierport.co.nz	4:59 pm Brisbane Time	6:43 pm Brisbane Time	103.0 mins	Has there been any studies or calculations around the way AGVs are charged? ie is it best to run them to near low and take time charging or cycle their charging on a "quick charge if there's a position available" scenario?	There have been many studies. How AGVs are charged depends entirely on how the AGV manufacturers design and build their machines. For now, the energy requirements for full-shift operations tend to drive us toward battery swap-out rather than dynamic or intermittent charging with the battery in the machine.	All mobile equipment uses wireless technology as it cannot transmit any other way. The design of the wireless system need to be cognisant of the container yard layout and make sure there's full coverage across the yard.	Wireless and radio networks are an important part of the design task, and should take into account the deployment environment. Large stacks of steel do impact performance.	Fast 'opportunity' charging would present major benefits, central charging/battery swap buildings are a critical point of risk for operations - loss of the building e.g. due to fire could result in complete terminal shut down. However while opportunity charging AGV models are in development, at least as of a couple of years ago they weren't yet actually in use anywhere in terminals (to my knowledge). The technology is bit more advanced for straddles. Also recommend to engage with your local PIANC chapter	
							I am new to this industry and will this report or presentation material be available to participants? How could I be in touch experts in the industry through, List of contacts ?			Complex model to explore depending on circumstance. Depth of discharge impacts battery life, so balance needs to be struck between frequent opportunistic vs less frequent scheduled charging in light of operational impacts and infrastructure requirements		
							Is automatic twistlock handling a key achieve a fully automated terminals and achieve a higher productivity on automatic terminals?	Achieving automatic twistlock handling will require settling on a few standard industry-wide designs, rather than the 90+ designs currently in use. Twistlock handling is still one of the operations where humans must be involved, at some point.			Automated twist lock handling on the quayside, when sufficiently reliable technology is eventually available, would remove one of the remaining non-automated parts of quay crane operations, but there would still most likely need to be manual operations for the spreader connections at the vessel. So it is probably a long time before quay crane operations can be 'fully automated' in that sense.	
											Whether automated twist lock removal significantly improves productivity is debatable, but it would remove safety risks	
70 PIANC - Technical Presentation	Mehran	Bokaian	m.bokaian@gmail.com	4:59 pm Brisbane Time	6:43 pm Brisbane Time	103.0 mins	Is there any paper, book or sites that speakers can introduce for the people that are new to this industry and would like to understand it better?	American Society of Civil Engineers offers a series of online courses in Port Engineering. One of these, planning of Marine Container Terminals, will be run starting this September. http://mylearning.asce.org/diweb/catalog/item?id=6674633	The PIANC publication WG208 is the most current publication on the subject that I am aware of. There's other PIANC publications on this subject that are of relevance and these are listed in the guideline.		There are a lot of interesting articles at www.porttechnology.org	
							What is the average productivity in automated terminals per crane?			Assuming this refers to Ship to Shore cranes, this varies significantly from one terminal to the other and this data is still a bit sensitive but the latest World Bank/HIS Markit publication "The Continer Port Performance Index 2020" will give you some idea.	Significant variance and comparison requires an understanding of the multiple variables at play. Dreyer is another source of industry data.	
57 PIANC - Technical Presentation	Susan	Grumitt	trac.mcpherson@cgrgroup.com	5:01 pm Brisbane Time	6:43 pm Brisbane Time	102.0 mins	Will the presentations delivered today be available to download after the meetin? Will Tom answer questions?	Yes, but I'm in the US West Coast time zone, so live communication is a bit challenging. Tom Crawford-Condle and Simon Blake are in Australia and can readily help.				
45 PIANC - Technical Presentation	Rob	Nave	rob.nave@portbris.com.au	5:15 pm Brisbane Time	6:43 pm Brisbane Time	88.0 mins	Would seem the biggest advantage for an economy would be to extend the automation and integrate it through the whole supply chain - out the terminal gate and to the container yards. Any thoughts on this or do you leave this up to the trucking & logistics industry?	This has been under consideration for over 20 years, since we started automating gate operations with OCR and automating inventory management. There is no "supply chain". The is no "trucking & logistics industry". There are millions of supply chains, tens of thousands of trucking and logistics entities, all competing with one another based on their relationships and their proprietary knowledge / products. The terminal operator has extremely limited ability to influence or engage with this constantly-shifting environment. There has been some success with some very large customers, but that is one solution at a time. A general solution will not likely be available anytime soon, regardless of what the salesmen, prognosticators, or visionaries tell you. The terminal operator is best off assuming that the terminal is in service to an essentially random demand, and to design control systems that mitigate the impacts of randomness rather than trying to eliminate it.	The integration of automation into the broader community is a matter for the regulators and this technology is still in its infancy with driverless cars likely to be developed before driverless trucks on public roads. This technology is very challenging as the level of accuracy needed for automated trucks to drive autonomously is not available in GPS technology today. Extending the supply chain outside the waterside terminals is likely to be done first through driverless trains as this is a much easier technology to manage as it does not interface with other network users.	Automation can involve both processes and equipment, and the supply chain process is becoming increasing more automated. Optimization of the overall chain and of terminals themselves will be furthered through greater real-time data exchange and analytics.	My view is this is most likely to happen first within or just outside the port boundaries first, e.g. from depots/logistics facilities/warehouses, using autonomous vehicles. Places like Rotterdam are working on solutions but it is proving challenging so agree with Tom Ward it is likely a long way off.	
							Would you be able to give a rough idea on the number of field devices in Brisbane Automated terminal?					
83 PIANC - Technical Presentation	Yanaka	Jayathilaka	yanaka.jayathilaka@portofnewcastle.com.au	5:01 pm Brisbane Time	6:43 pm Brisbane Time	102.0 mins	Would you consider two different technologies for redundant data communication ? say 5G and Fibre	Putting in two systems requires that both systems be maintained. Fibre is the safest, most secure mode for high-bandwidth communications with machines connected to the power grid through a cable that can carry the fiber, including STS, CRMG, and ASCs. 5G or wifi is the cheapest, most effective mode for low-bandwidth communication with machines that cannot be connected to fiber. Use each technology for what it is best at, and don't use it for what it is not best at.	Any mobile technology that is not specifically designed for the terminal in question is not likely to be able to meet the requirements of the terminal operations. Most wireless systems have either redundancy built in to the design or have a separate wireless system to kick in in case of failure of the primary system. Most of these wireless systems are not 5G but local systems.	Depends on risk management circumstance. Redundant systems have been used in circumstances where business continuity justifies it.		
							you are considering automatic twistlocks on trains. Why you are not considering automatic twistlocks on trucks ? And autotic fifthwheel as well?	Street trucks are not under the control of the terminal operator. Yard trucks typically use "bomb carts" that don't need twistlocks. Fifth wheel automation and sensing is available and may be appropriate for situations where trailers are parked, such as under rail yard CRMGs.		Cost / benefit to the truck question, as humans are still involved in driving it is still simpler to have them manage the twistlocks. Flexible, quick and cheap.	There are some auto-docking systems available for terminal tractors, with automated line connection and disconnection.	