CITY AND BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY
COMMUNITY DEVELOPMENT

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Juneau Commission on Sustainability. Royal Princess Environmental and Electrification Tour Report 2019

An Environmental and Electrification Tour was hosted and arranged by Mike Tibbles and Lalanya Downs and the Cruise Line International Agency-Alaska, Alaska and Princess Cruises.

JCOS and community members attending: Michelle Hale, CBJ Assembly, Duff Mitchell, JCOS Commissioner, John Smith, JCOS Commissioner, Mike Levine, CBJ Planning Commission-JCOS Liaison, Tim Felstead, CBJ Staff-JCOS Liaison, Dana Herndon, US Senate Delegation representative, Lalanya Downs, CLIA-Alaska, Mike Tibbles, CLIA-Alaska, Mitch Jackson, JEDC Board Member, Eva Bornstein, Program Officer, JEDC.

On August 14, 2019, Juneau community member toured the Royal Princess, a 1065-foot vessel that entered service in 2013. The Royal Princess is a frequent visiting ship to Juneau and ports at the Franklin Dock where it, along with other Princess vessels connect on the Port (left) for electricity with Juneau's Grid.

The purpose of the visit was to learn and see firsthand the environmental, recycling, waste reduction, emissions, and shore electrification systems employed on the Royal Princess. The Royal Princess's first deployment to Alaska was with the 2019 cruise season.

We went through security and boarded the Royal Princess where we were met by the Royal Princess Chief Environmental Officer, Simon Reiter.

We were led to a lower deck conference room where we were provided a safety briefing and an agenda for our tour that would cover the environmental, emissions, waste reduction, recycling, and shore power applications and systems utilized and employed by Princess Cruises. While each ship is a bit different, the standard, processes, and care by crew are similar on each ship operated by Princess. Since 2006, Princess Cruises has achieved and maintained certification to the ISO 14001 Environmental Management System standard.

The group watched a video on the Exhaust Gas Cleaning Systems (EGCS), the Emission open loop scrubber system employed on the Royal Princess and a video on the sewage waste system. All of Carnival system ships: Princess, Holland America, Carnival, and Seabourn switch to lower sulfur Marine Gas Oil (MGO) at Dupont (south Juneau) and operate on MGO while arriving, docking, hoteling and departing the Juneau port.

The group then visited the recycling and waste reduction processes employed by Princess. All food waste is separated from plastic and paper where all three items go to separate processes. Princess employs a policy to reduce on- ship use of plastic and uses china plates, metal silverware, and glass to cut down on waste.

Aside from state-of-the-art recycling systems was the noticeable cleanliness and absence of odors in all recycling and waste areas. The floors and work areas are kept meticulously clean. These were not static displays as workers would be walking by and bringing recycled boxes and materials during our visit and it was mentioned that what we were seeing was the standard of cleanliness kept at all times by the crew.

Our Juneau Group then met the Chief Engineer Team, Gaetano Guida and William Witt who demonstrated the detailed and state of the art capabilities of their command and control room that included the ability to monitor the ships' entire environmental and electrification system. In addition to real-time data readouts of every control process, there are also cameras to monitor functions and operations in real-time.

The onboard electrical system that monitors use and demand with shore power is the equivalent of monitoring the electricity required for a small city of several thousand people. We received a detailed briefing of the multi-step process it takes to connect and disconnect a vessel to and from shore power in Juneau. Juneau has the first and therefore the oldest shore power system in existence and many technological and control advancements have occurred in the shore power technology area.

Specifically, the Engineer team was asked what could speed up and smooth out the connection and disconnection process that can take up to 45 minutes. Some areas that could speed up the connection and disconnection are process and mechanical. One item is that the ship power crew that helps connect the ship to shore power is sometimes held up by Juneau Security in the disembarkation process and they could have a priority in the process that would allow the crew to advance the connection and disconnection more quickly. Minutes delayed by clearing the crew are minutes it takes longer to connect the ship and reduce emissions. Secondly, there are dock mechanical areas that could be improved that would make connections and disconnections easier, safer and more efficient. Many ports now have articulating and telescoping crane/gantry and shore power connection systems that make connections simpler, safer and quicker. The Juneau system does not have some of these technological capabilities. An articulating connection improvement would help in inclement weather or if the ship does not dock in perfect alignment to shore power. The lack of this feature on the Franklin Dock can delay connections.

It was discussed with CLIA-Alaska and Princess Chief and Asst Chief Engineers that when the CBJ Harbor Department initiates its scoping process for electrifying Juneau's CBJ 16B docks that the scoping process should wisely include key engineers from Princess who have a wealth and depth of practical knowledge and experience from the vessel's perspective and experience of electrification in ports worldwide. The Princess engineering staff has connected shore power in

many ports of the world and some systems simply work better than others. It would be wise to ensure that CBJ Harbors engineering staff capture this knowledge and lessons learned for application to the design of pending 16B dock electrification.

Some information provided by CLIA-Alaska and Princess staff on the state of shore power in the industry and the trend is to responsibly work with local ports to reduce emissions, lower costs and avoid or mitigate local air quality concerns through dock electrification. In port, cruise ships are increasingly equipped with the technology to allow delivery of shoreside electricity, thus allowing engines to be switched off, and there are many collaborations with ports and governments going on worldwide to increase the availability.

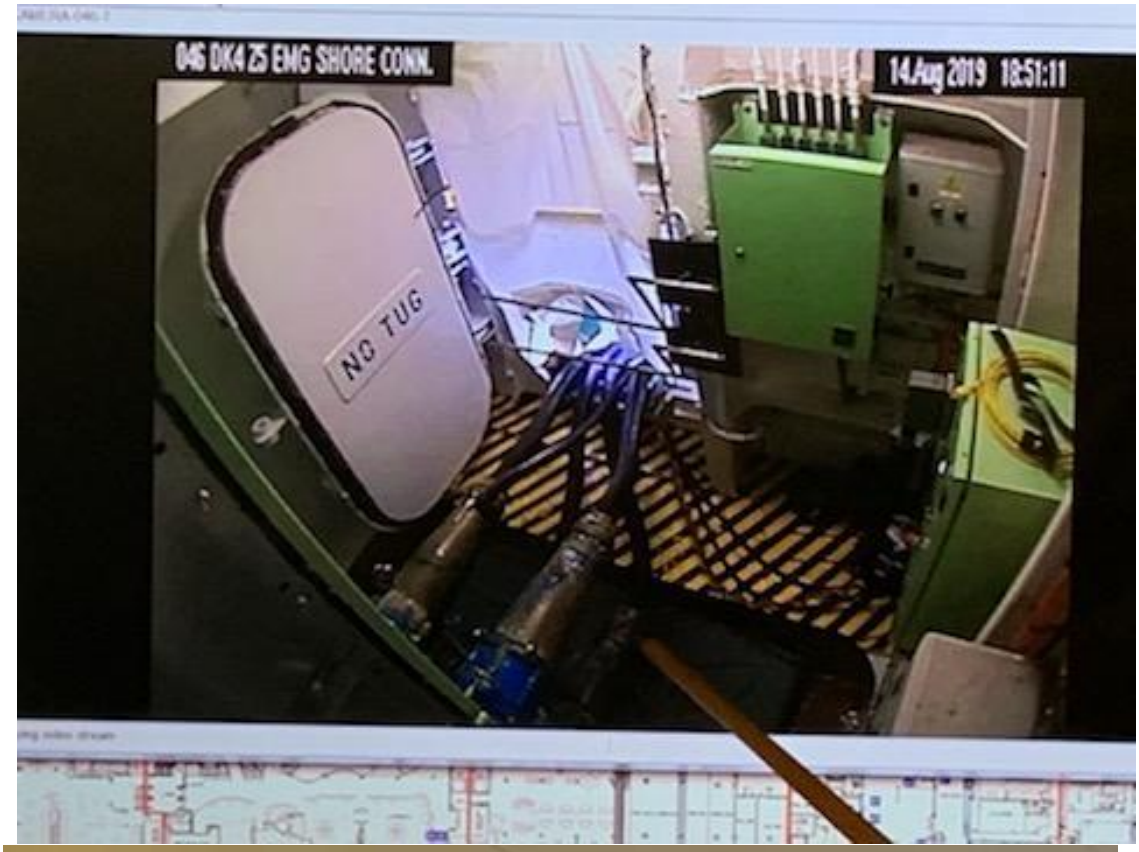
New ships being built are shore power ready. 88% of the new build capacity in the industry is either committed to be fitted with shore-side electricity systems or will be configured to add shore-side power in the future. This level of shore power ready shipbuilding demonstrates a commitment from the industry to shore power connections to reduce emissions.

In 2019, 30% of global capacity (up 10% since 2018) is fitted to operate on shore-side electricity in the 16 ports worldwide where that capability is provided in at least one berth in the port.

An additional 18% of the current capacity is planned to be retrofitted with shore-side electricity systems, representing a more than 300% increase in capacity compared to last year.

The number of ships in the CLIA Cruise Lines fleet far outpaces the number of ports with shore-side power capacity; however, there are many collaborations with ports and governments to increase availability. Currently, 16 ports visited by CLIA Cruise Lines provide shore-side power capacity; however, not all berths at each port have the technology, and coordination with respect to using the proper berths is underdeveloped. Shore-side power availability is also limited geographically, as almost all of the capability is on the east and west coasts of North America, the port of *Kristiansand (Norway)*, the Port of Hamburg (Germany), and the port of Shanghai.

The bottom line is that the industry is committed to fully utilizing shore power to work with communities to reduce in-port emissions and will connect to shore power where available.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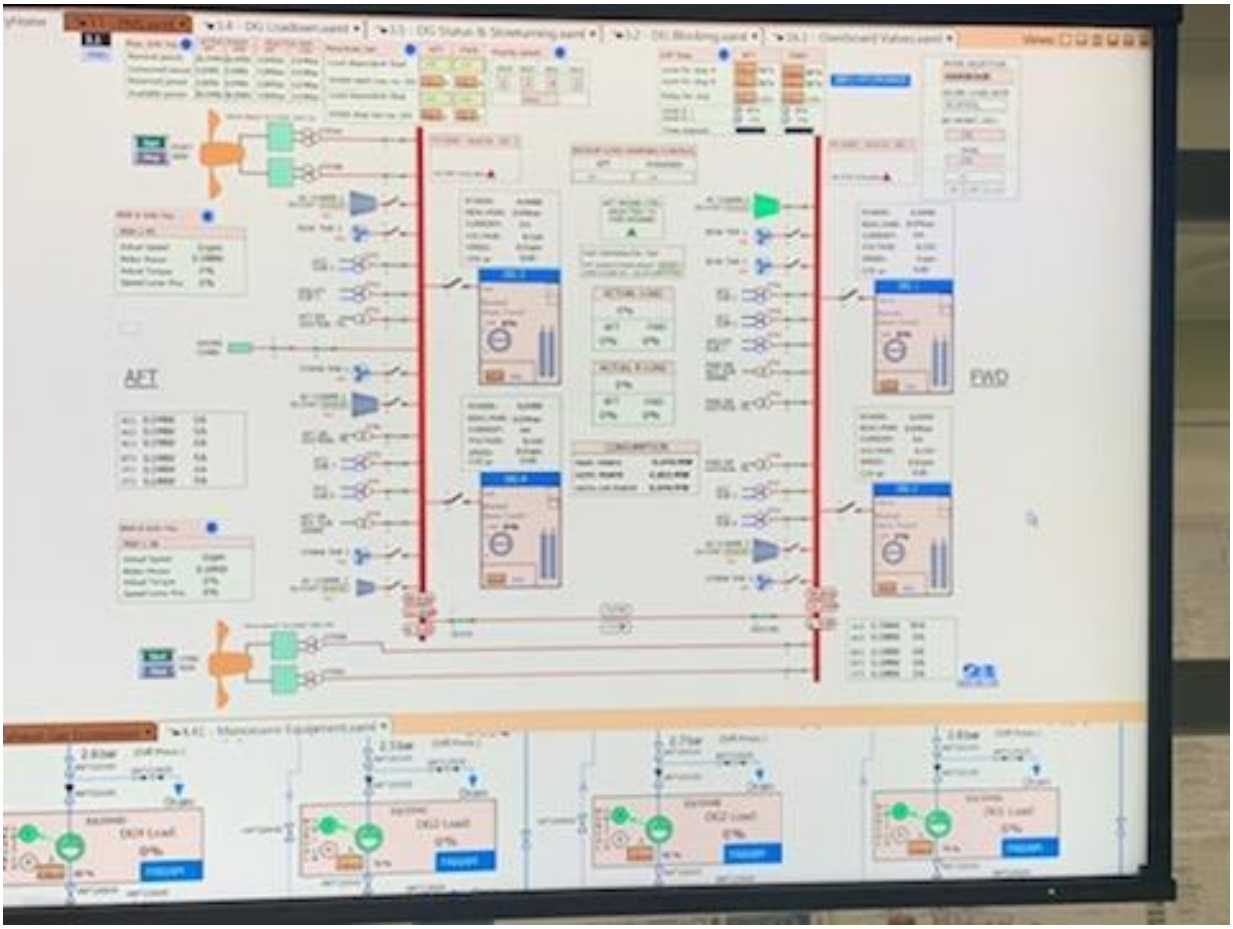
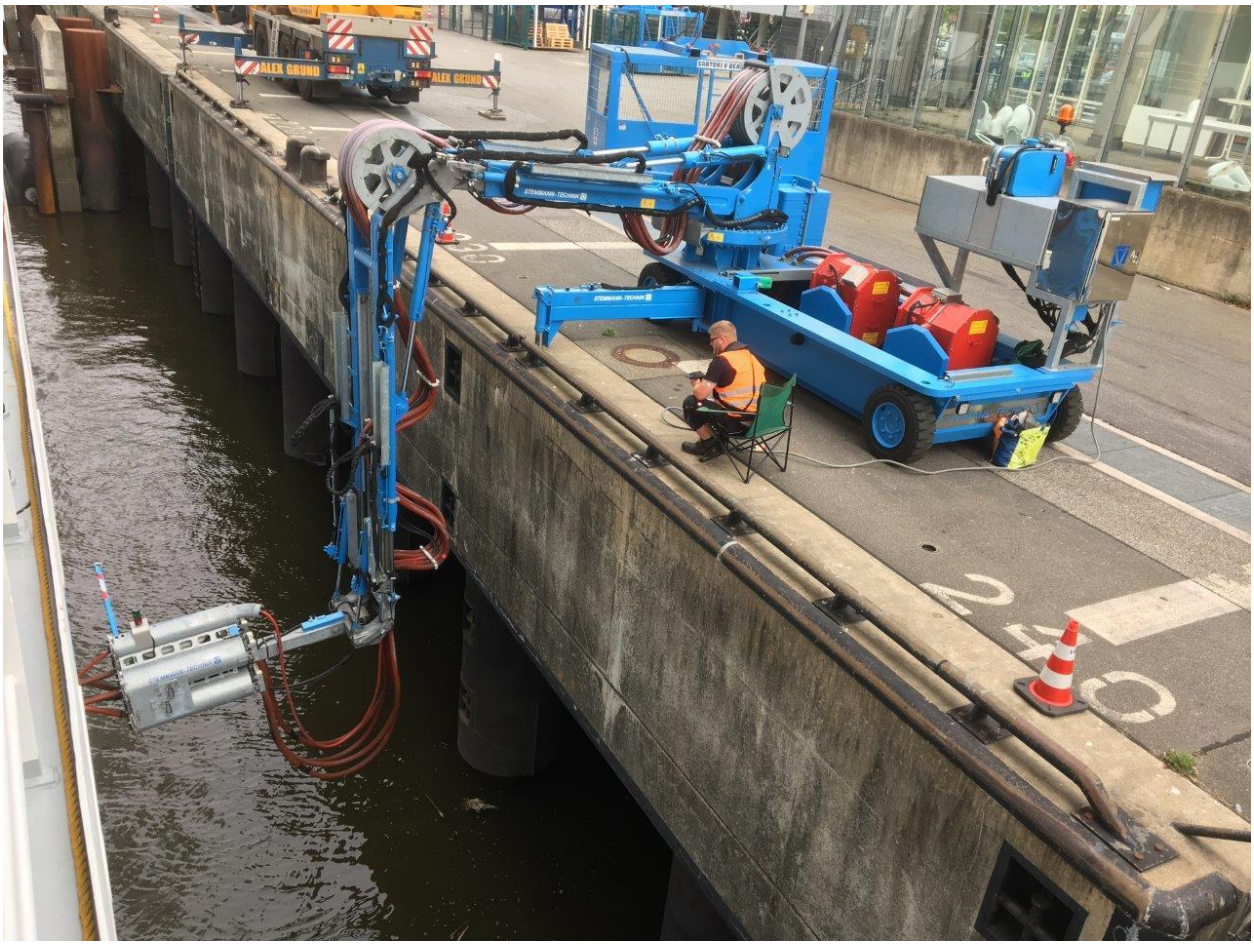


The JCOS team was provided an example of an up to date ship to shore handling system that makes it easier for the ship to quickly connect and disconnect to shore power. They provided an example of a successful system used in Hamburg Germany.



After an extensive and detailed briefing in the Command Room by Chief Engineer Gaetano Guida, we visited the sewage and water treatment facilities on the Royal Princess.


BILGE SYSTEM
PIPING CROSSOVER
EMERGENCY USE
ONLY


SCREENING TANK

The standard of water after treatment for the Royal Princess is at a superior level and standard that exceeds the wastewater treatment employed by CBJ shore side wastewater facilities. Princess delivers “grey water” from showers, hoteling and kitchen operations to CBJ waste treatment facilities.

The bilge separation system employed on the Royal Princess is also a complex but thorough system.

The Juneau group of visitors spent several hours on the vessel and all questions were answered. The officers and staff of the Royal Princess were open, transparent and very knowledgeable of all their systems and were able to answer all questions from the group.

The JCOS would like to thank CLIA Cruise Lines International Association-Alaska and Princess Cruise Line for the tour and assistance for this tour and taking steps to mutually work together to share information, their willingness to work with Juneau community members and to either avoid or mitigate impacts.

This Juneau Commission on Sustainability report was drafted and submitted by John Smith and Duff Mitchell, JCOS Commissioners. Photos in this report were supplied by John Smith. Photo of Royal Princess and photo of Hamburg shore power connection were provided by Princess Cruises.