



Til Cecilia Lonning-Skovgaard (V)

21. juni 2018

### Landstrøm til krydstogtskibe

Sagsnr.  
2018-0162943

Økonomiforvaltningen har 12. juni 2018 modtaget nedenstående spørgsmål:

Dokumentnr.  
2018-0162943-3

1. Kan Københavns Kommune pålægge krydstogtskibe i Nordhavn og Oslobådene at benytte miljøvenlige landstrømsanlæg, når skibene lægger til kaj i Københavns Kommune?
2. Hvor mange krydstogtskibe, som i dag lægger til kaj i København, har i dag de teknologiske muligheder for at benytte landstrøm?

Sagsbehandler  
Mikkel Krogsgaard Niss

### Økonomiforvaltningens svar

Spørgsmål 1: Kan Københavns Kommune pålægge krydstogtskibe i Nordhavn og Oslobådene at benytte miljøvenlige landstrømsanlæg, når skibene lægger til kaj i Københavns Kommune?

Copenhagen Malmö Port har oplyst følgende:

*"Krydstogtkajerne ejes af By & Havn I/S. Kajerne er udlejet til Copenhagen Malmö Port AB (CMP) på en langtidslejekontrakt, hvorfor det er CMP, som varetager administrationen af krydstogtanløb.*

*Skibsanløb i havne er reguleret gennem internationale bestemmelser gennem FNs søfartsorganisation, nærmere betegnet IMO (International Maritime Organisation). Ifølge denne kan havnen ikke afvise skibe, som lever op til de internationale bestemmelser. På miljøområdet har IMO blandt andet bestemmelser om skibenes anvendelse af fuel. Her bestemmes, at skibene i Østersøen og Nordsøen skal anvende fuel med max 0,1 % svovlindhold (SO<sub>2</sub>) eller alternativt anvende røgrensningsanlæg, som nedbringer emissionerne til et tilsvarende niveau. Tilsvarende har IMO regler for skibenes udledning af kvælstofilter NO<sub>2</sub> (max grænser). Så længe et skib overholder disse regler har havnene ikke mulighed for at afvise skibet. IMO har ikke besluttet regler for landstrøm, og skibene er derfor ikke forpligtet til at anvende landstrøm i havnene, selv om der måtte eksistere et landstrømsudstyr. Som følge af det internationale regelsæt har Københavns Kommune ikke mulighed for at pålægge krydstogtskibene at benytte landstrøm i København. En havneejer kan beslutte om man vil have den pågældende aktivitet i havnen,*

### Team Mobilitet

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*eksempelvis om man vil have krydstogtforretningen eller ikke. Det gælder i så fald hele forretningen og ikke bestemte skibe. De fleste krydstogtskibe anvender røgrensningsanlæg, både når de ligger i havn og når de sejler til søs. I de kommende år vil krydstogtindustrien introducere nye skibe med LNG (flydende naturgas) som fuel. Når skibene anvender LNG udledes ingen svovldioxid, kvælstofoxid reduceres med ca. 85 % og kulstofemissionerne (CO<sub>2</sub>) reduceres med ca. 25 %. Samtidig er der en reduktion på 95-100 % af partikler (Kilde: Seatrade).”*

CMP har efterfølgende bekræftet, at der ikke kan stilles yderligere myndighedskrav vedrørende differentierede takster og krav til emissioner ud over hvad IMO og EU måtte lovgive om.

Økonomiforvaltningen har vedlagt den nævnte kilde (Seatrade).

Spørgsmål 2: Hvor mange krydstogtskibe, som i dag lægger til kaj i København, har i dag de teknologiske muligheder for at benytte landstrøm?


Copenhagen Malmö Port har oplyst følgende:

*”På verdensplan anslås det, at ca. 10 % af krydstogtskibene har mulighed for at benytte landstrøm. De fleste af disse skibe sejler primært langs USA’s og Canadas kyster. Københavns kommune, By & Havn og CMP gennemførte i 2014 og 2015 en undersøgelse af muligheden for at etablere landstrøm i København. I undersøgelsen indgik blandt andet optælling af anløb af krydstogtskibe, som kan benytte landstrøm. Det fremgik heraf, at ca. 20 % af skibsanløbene ved terminalerne i Nordhavn kunne modtage landstrøm. I 2014 kunne fire krydstogtskibe med i alt 26 anløb benytte landstrøm i Nordhavn. Cirka 70 forskellige krydstogtskibe benytter København som krydstogtdestination. Der skiftes 4 til 6 af disse skibe ud hvert år. Dette indebærer, at der kan være stor variation i antallet af krydstogtskibe, som kan benytte landstrøm ved anløb i København.*

*Den seneste opgørelse (juni 2018) af bestilling af nye krydstogtskibe viser, at der er ca. 90 krydstogtskibe i ordrebøgerne. Heraf er ca. 20 % bestilt med LNG. De øvrige krydstogtskibe bliver bygget til almindelig fuel. Typisk vil disse blive leveret med et røgrensningsanlæg, så de både kan anvende miljødiesel med max 0,1 % svovl eller heavy fuel, som nedbringer forureningen tilsvarende. Krydstogtrederierne anser landstrøm som en teknologi, der er på vej ud. Der er således kun få af de ny-kontraherede krydstogtskibe, som bliver udstyret til at kunne benytte landstrøm, så det kan ikke forventes, at andelen af krydstogtskibe, som benytter København som destination og som kan benytte landstrøm, vil øges. I Europa kan*

*Hamborg Havn tilbyde landstrøm. Anlægget er delvis finansieret af Hamborg by og blev kun benyttet 9 gang i 2017.”*

Med venlig hilsen



Jeppe Grønholt-Pedersen  
Kontorchef

**Vedlagt**

- Seatrade Cruise Global: What is the Future of Green Technology?, November 2017



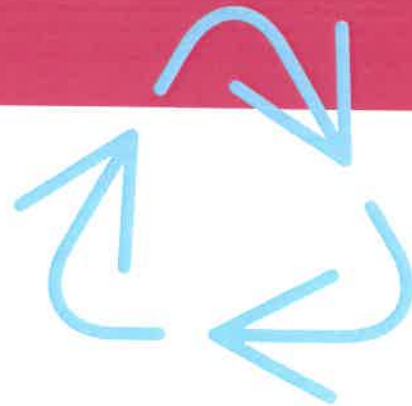
**Seatrade  
Cruise**  
Global

# | What is the Future of | Green Technology?

By: Fran Golden



## What is the Future of Green Technology?



As cruise lines race to meet new environmental regulations aimed at cutting greenhouse gas emissions globally by 2020, September was a historically important month.

Two Carnival Corporation & plc events signaled that the world is getting closer to welcoming the first cruise ship fully powered with liquefied natural gas (LNG), the cleanest-burning fossil fuel.

First there was keel-laying at Meyer Werft in Papenburg, Germany, for AIDA Cruises' AIDAnova, which will usher in the age of LNG cruise ships – the event so significant it was streamed live at Seatrade Europe. Then a week later, a steel-cutting ceremony at Finland's Meyer Turku signaled the beginning of construction of Costa Cruises' Costa Smeralda, the world's second fully LNG ship.

These ships will set new standards for the industry in terms of green technology. But no one is ready to say yet that LNG is the be all and end all in the carbon abatement realm. Not even Carnival Corporation is putting all its eggs in one basket.

For now, deciding on how to comply with the International Maritime Organization's Marpol Annex VI global sulfur cap of 0.5%, which begins in less than three years, means focusing on a limited number of options – namely, swapping out heavy fuel oil for more expensive low-sulfur marine fuel oil, installing exhaust gas cleaning systems (commonly known as scrubbers) to improve air emissions, and developing new ships to run on LNG dual engines.

But as cruise companies scramble to find the most economical and long-term way to reduce sulfur emissions, there are also other ideas in the pipeline.

**“It's an opportunity. A lot of people are trying to look for options that are viable and that are greener,” said Elaine Heldewier, Sustainability Director at Carnival Corporation.**

That the collective industry is still looking for the next best thing was evidenced when weeks after the LNG ship ceremonies a rumor made headlines: Viking Ocean Cruises had developed a fuel cell technology that would enable the line to power ships with clean liquid hydrogen – also known as rocket fuel. In addition to being highly explosive, liquid hydrogen has not been used as a marine fuel.

Viking, which celebrated the keel laying for its sixth ship in October, isn't saying anything for the record; a spokesman declined comment. The current fleet runs on “energy-efficient hybrid engines.”

The coming of LNG is more certain. AIDA Cruises paved the way with the AIDAprima and AIDAPERLA, both with dual-fuel engines that can be powered by LNG while in port – both ships switch to LNG while in selected ports in Europe, with LNG supplied by trucks on the pier.

The AIDAnova (fall 2018) and Costa Smeralda (fall 2019) are the first of seven Carnival Corporation ships that will operate on LNG in port and at sea. North America will get its first LNG-powered ship, for the Carnival Cruise Line brand, in 2020. Additional next-generation ships have been ordered up for P&O Cruises (in 2020), Costa and AIDA (in 2021) and Carnival (in 2022).



Other brands too are readying next-generation LNG ships. Royal Caribbean Cruises Ltd. ordered two “Icon” class ships that will be powered by LNG, augmented by fuel cell technology, to debut in 2022 and 2024. Royal Caribbean was to begin this year some testing on its existing fleet of the fuel cell technology, which would represent a dramatic step forward – the fuel cells create electricity by chemical reaction.

#### CHART OF LNG SHIP ORDERS

Cruise Ship	Shipyard	Size of Vessel
AIDAnova 2018	Meyer Werft	180,000gt
Costa Smeralda 2019	Meyer Turku	180,000gt
Carnival Cruise Line 2020	Meyer Turku	180,000gt
P&O Cruises 2020	Meyer Werft	180,000gt
AIDA Cruises 2021	Meyer Werft	180,000gt
Costa Cruises 2021	Meyer Turku	180,000gt
Disney Cruise Line 2021	Meyer Werft	135,000gt
Carnival Cruise Line 2022	Meyer Turku	180,000gt
MSC Cruises 2022	STX France	200,000gt
Disney Cruise Line 2022	Meyer Werft	135,000gt
Royal Caribbean 2022	Meyer Turku	200,000gt
Disney Cruise Line 2023	Meyer Werft	135,000gt
Royal Caribbean 2024	Meyer Turku	200,000gt
MSC Cruises 2024	STX France	200,000gt

MSC Cruises is building two LNG-fueled ships (with plans for more) and Disney Cruise Line is expanding its fleet with three ships, all to operate on LNG.

Of 76 new ocean-going ships currently on the books for delivery by 2025, only 14 will be powered by LNG. Still, there are signs that after the initial round of LNG ships other orders may follow quickly. At Seatrade Cruise Global 2017 in Fort Lauderdale, a Wartsila executive predicted 80% of ship orders place by 2025 would be for LNG powered.

As the collective cruise industry seeks to be a more environmentally friendly world citizen, options being explored also include everything from solar and wind power to biofuels and electric ships.

There have been some early claims of success. Hurtigruten, for instance, is developing hybrid electric-powered ships, the first, the Roald Amundsen, currently under construction, is set to debut in July 2018, equipped with dual engines for “periods of completely emission-free sailing,” according to the line. A second ship is scheduled to be equipped with a full hybrid electric-powered engine.

At the same time there are efforts in the energy reduction realm – projects focused on ships reducing their carbon footprint by using less fuel. An example is Royal Caribbean’s Air Lubrication System, which creates a curtain of tiny bubbles on the ship’s hull to reduce drag.

“Anything you can do to reduce the volume of fuel is a plus,” said Heldewier.

Partnerships of note include the first-of-its-kind deal between GE Power and Fincantieri to co-develop a Shipboard Pollutant Removal System compliant with the MARPOL limits. GE Power, with its expertise in treating industrial pollutants for power, is defining the features needed for the system.



None of the carbon reduction projects or systems to improve the quality of emissions released into the air are taken lightly. Implementation involves not just time but multi-million dollar investments, Heldewier noted.

"It needs to make sense financially and it needs to make sense long term as well," she said. "Whatever we do moving forward, represents significant investments. It takes a lot of thinking, a lot of planning, and you're looking at, 'Okay, what's my return?'"

#### LNG Challenges

While LNG is a preferred long-term solution there are still supply and infrastructure challenges.

As part of its launch of the world's first LNG ships, Carnival Corporation has partnered with Shell Western LNG B.V. to be its fuel supplier. The whole industry will benefit from Carnival's landmark work in creating an infrastructure, Heldewier said.

"You need to have it where your ships are going to go and in the volumes that you need to complete your itinerary. With our partnership with Shell the infrastructure will come together," she said.

All stakeholders including the ports are working for the arrival of LNG-powered ships, Heldewier said.

According to SEA/LNG, the 28-member industry coalition working to facilitate and accelerate the widespread adoption of LNG as a marine fuel, the majority of the world's top 10 bunkering ports offer LNG bunkering, or at least have firm plans to do so by 2020.

#### The numbers game

Another challenge as cruise companies set goals is how reductions in emissions are measured.

Carnival Corporation's Tom Strang, head of Cruise Lines International Association Europe's Environment, Safety & Security Committee, said at Seatrade Europe that a 50% reduction in cruising's carbon footprint is realistic in the near future.

The big players, Carnival Corporation and Royal Caribbean Cruises earlier set goals of a 25% reduction in carbon emissions (based on a 2005 baseline) and later said they would meet their goals well before 2020 (Carnival Corporation most likely by the end of this year).

Royal Caribbean last year upped its target to 35% (in an announcement made with its new partner, the World Wildlife Fund), but also changed the way it calculates its reduction in greenhouse gas emissions – it now gets its numbers by measuring the number of passengers carried and distance traveled instead of according to the passengers carried and number of days sailed on a cruise.

Different calculations can be confusing to investors. There are calls for standardization.

"As we get closer to 2020, IMO is proposing some more standardized calculations. We have to move in that direction," Heldewier said.

### Looking into the future

In the future, don't look to standardization in mitigation efforts, said Heldewier.

Big ships will have space allotted for dual engines and extra tanks for LNG. Older ships will continue to be retrofitted with scrubbers – Carnival Corporation is on track to have scrubbers on more than 85 vessels through 2020.

As for other options, time will tell. "That's the journey. Step by step we are moving along," Heldewier said.

Outside expertise will continue to be called in to help, she predicted.

"We cannot do it alone. We need the right partners. It's an alignment of what creative minds inside and outside of maritime can develop new or from the retrofit perspective," she said.

The research and development team at Carnival Corporation is looking at both fuel and the more efficient use of fuel, she added. Other cruise companies are doing the same.

**"What the future holds is a combination of what's being developed outside the maritime industry, partnerships with other companies and the ideas from the in-house R&D groups," she said. "We have the will to continue to move forward and when there is a will there is a way. That is why we are pioneering the use of LNG for the cruise industry."**

### The air emission benefits in using LNG, according to Carnival Corporation, include:

