Green Transition and Innovations in Maritime Transport
Initiatives and Experience from the Cruise Industry in Marseille

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BIG PICTURE – THE GREEN TRANSITION OF CRUISING

Energy innovations

• **Liquified Natural Gas (LNG)**
  Elimination of PM, -25% of CO₂
• **Scrubbers**
  Reduction in sulphur emissions
• **Sail**-powered cruise ships
• **Hybrid propulsion** (auxiliary battery)

60Hz shoreside power
(cold ironing)

• Mitigation of air pollution and noise disturbance during cruise calls (direct impact on the quality of the port environment and residents)
• Available in about 15 ports worldwide today for cruise ships

Optimization of sailing

• Reduction of friction (air lubrication, painting)
• Route management
• **Lower speed**
• Manoeuvring with MGO

Life onboard & destination stewardship

• **Green means of transportation ashore:**
  seaborne shuttles, electric buses, segways ...
• **Flow regulation**
• Elimination of single-use plastics
• Waste management
• Water management

Source: Oxford Economics, Environmental commitment, innovation, and results of the cruise industry (2020)
#1 – THE MARSEILLE PROVENCE CRUISE BLUE CHARTER

- **Goals**: To mitigate the emission of GHG and air pollutants, to accelerate the energy transition of cruise ships calling in Marseille and to preserve the local environment.

- **Tool**: A binding agreement signed by cruise lines calling at Marseille, which includes more stringent rules than the current regulation and anticipates the creation of the SECAMed zone.

- **Rules of the charter**: 4 commitments to follow while calling at Marseille =

  1. **Use of Maritime Gas Oil with 0,1% of sulphur** (or equivalent means: LNG, scrubbers...) upon entry into the port’s regulatory zone.

  2. **Imperative use of shorepower** when available.

  3. Scheduling of LNG-powered ships cruise calls and support of the development of a local service.

  4. **Low-speed manoeuvring** (10 knots max.) within the pilot zone.

- **Enforcement**: Constant monitoring by the Harbour’s Master and the Pilots. Any breach of the rules must be reported to the Maritime Affairs.
1st signatures during the Blue Maritime Summit (Marseille, 17th October 2019)
CENAQ program = Connexion Electrique des Navires A Quai, supported by the French State and local authorities

Goals: to cut down the emissions of air pollutants and GHG + to reduce noise disturbance for people living near the port area

From ferries to cruise ships: shore power system already operative for ferries since 2017. Innovation needed to scale up the technology to cruise ships: higher demand in power + frequency conversion required (50Hz → 60Hz)

Marseille = among the 1st ports in the Mediterranean to offer shorepower solutions to cruise ships. About 15 ports only feature shorepower connection worldwide

Green electricity: partnership with ENEDIS + development of a photovoltaic plant within the port area
#2 – SHOREPOWER IN MARSEILLE

- **2017**
  - 1st ferry berths equipped with shore power

- **2022-23**
  - Shore power system for new ferry terminal

- **2025**
  - 2 cruise berths equipped with shore power

- **2027**
  - 2 additional cruise berths connected to shore power system

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CRUISE

FERRY

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#3 – PROMOTING MARSEILLE AS A LNG HUB

- **LNG terminals of Fos Cavaou et Fos Tonkin**: LNG-bunkering service. Construction of a bunker barge by Total Energies for CMA CGM-owned container ships

- **Trajectory of cruising towards LNG in Marseille**:  
  - Handling of the first newbuild LNG-powered cruise ships upon their maiden voyage (*Costa Smeralda* and *AIDAnova*)
  - From 9% of passengers handled by LNG-powered ships in 2019...up to 20% in 2021
  - 2 LNG-bunkering ship-to-ship operations of *Costa Smeralda* (4th May and 15th June 2020)
  - Agreement for LNG supply between Total Energies and MSC Cruises (2021)

- **Reducing the environmental footprint of cruise calls**:  
  - Elimination of nearly all SO\textsubscript{x} and PM emissions
  - 20-25% decline in CO\textsubscript{2} emissions
  - 80% decline in NO\textsubscript{x} emissions
#4 – MAPPING & MONITORING CRUISE-RELATED AIR POLLUTION

- Long-term partnership for data exchange between the Port authority (GPMM) and AtmoSud (association recognized by the local authorities for air pollution monitoring)

- SCIPPER EU program (Shipping Contributions to Inland Pollution Push for the Enforcement of Regulations)
  - Improving methods to measure and monitor ship emissions and to model the spread of smoke plumes
  - Measure campaigns at the exit of chimneys, with remote "sniffer" drones and on-board systems
  - Assessment of the contribution of cruise ships to the overall air pollution + compliance with regulation
  - 2 out of 5 campaigns conducted in Marseille, in 2019 and 2021

- "Port Vert" project carried out with the Marseille-Fos Maritime & River Association (UMF) to develop new environmental KPI
• Event co-organized by: Marseille Provence Cruise Club, the Marseille Fos Maritime and River Association, the Port of Marseille Fos and the Marseille shipowners committee

• Main goals:
  - Follow up of the commitments undertaken with the signature of the Blue Charter
  - Definition of an annual reduction cap of cruise ships’ emissions until 2025 (implementation of cold ironing for cruise ships in Marseille)
  - Signing of a new Blue Charter, more restrictive, with a West Mediterranean scope + extended to biodiversity issues. Charter to be co-written by the French State, institutions, Marseille Provence Cruise Club and private operators. Expected starting date = January 2023.

• Program: conferences and workshops about green port strategy, biodiversity, regulatory frameworks, operators’ initiatives...

• Languages: English/French