Sustainable technologies for the cruise industry

Beniamino Maltese, SVP and CFO Costa Group
• Costa Group is committed to a **zero emission future**, as is the entire cruise and maritime sector.

• The **cruise sector** only represents less than **1% of shipping**, but it is a **front runner** in progressing towards this goal

  - We are a consumer business and as such we need to respond to growing concerns
  - It is the right thing to do
Our commitment to emission reduction

The context: ambitious IMO objectives 2030 and 2050

Costa Group objective: 40% reduction in CO2 emissions by 40% by 2020 to reach zero emissions in the long term

How: € 50 million investment to
• Increase efficiency of the fleet improving its environmental performance
• Invest in responsible innovation and new sustainable technologies in new builds

Our efforts are concentrated on

- Scrubbers
- Shore power
- LNG
Advanced Air Quality Systems

- AAQSs play a crucial role in working towards the IMO reduction targets for 2030 and 2050 and vital for the industry to comply with IMO 2020 Sulphur cap
  - best solution for air emission control and scientific evidence show that their performance is even better than with typical MGOs
  - about 75% of the total PM is captured by the scrubber

- Carnival Corporation has been testing and operating AAQS systems since 2006
- Of its current 106 ship fleet, 74 are fitted with open-loop AAQS for
- Total investment of about 1 billion USD

**Scrubbers**

Emission factors for PM, PN and SO2 in comparison with an MGO. PM: particulate mass; PN: number of particle; MGO: marine gas oil.
Shore power

• 14 of the 28 ships in Costa Group fleet are either already fitted with a shore power connection or technically prepared

• In Hamburg Altona our AIDAsol has been supplied with green power via a shore power facility since April 2017

HOWEVER:

• There is an infrastructure issue, given the high quantity of power needed by a ship in port
• There is not one connecting standard system used everywhere
• In order to effectively cut emissions, shore-side power must come from clean, efficient sources and must be convenient compared to other sources
Why LNG

- The world’s cleanest fossil fuel
- High environmental performance

- Reduction in CO2 emissions: 25%
- Reduction in particulates: 95%
- Reduction in NOx: 85%
- Reduction in sulphur emissions: 100%
The evolution: New generation ships

AIDA

Costa

LNG fuelled
Pioneering LNG

- **AIDAnova** is the world’s first LNG cruise ship, delivered in December 2018

- **Costa Smeralda**, expected by 2019 and destined to the Mediterranean, and other 3 ships between 2020 and 2023