Slide #1: Zero emission in shipping - dream or reality?

New Technologies are ready to change Shipping, they can reduce the emissions, and when becoming available, they are leading the way towards this goal.

Our Company, is committed to fulfill our Purpose of supporting sustainable societies with smart technologies, and putting our focus on developing new and cleaner solutions.

Slide #2: Valley of Death – 1:6

But:
Pollution is today causing the death of 1 out of 6 people, and reducing quality of life for millions!

This week 6000 schools are closed in New Deli due to air pollution – children's health and lives are in danger.

Shipping is also in the focus: air pollution in busy Ports like Hong Kong and Rotterdam are imposing local regulation to emissions.

These challenges must become a first priority for Companies, Governments and the man in the street.

Slide #3: Climate Change

We all know that:

Greenhouse gasses threaten to heat up the planet and cause fatal damage to the life and the environment.

The consequences of sea level rise for heavy populated areas and also for small countries like our host Fiji are all catastrophic

Slide #4: Shipping - Germany

AND:
Shipping has its fair share of the responsibility for emissions to the atmosphere.
1 billon tons of CO2 is emitted every year, equaling to all emissions of the German nation.
This amount of CO2 may increase several (3) times the next 30 years if prognoses of transportation needs is accurate.

However, shipping associations are showing ambitions
The International Chamber of Shipping claimed here in Bonn:
“ a vision of zero CO2 emissions from shipping in the second half of the century.”

I hope this presentation will show you that the new technologies are not that far in the future and that many eager companies have amazing ideas, only the right incentives to the industry is in place.

Slide #5: Today's technology

What can we expect from today's technology?

IMO Green House Gas study shows:
Ships' energy consumption and CO2 emissions – can be reduced by 75% with today's technology

In our future concepts, batteries, clean energy production, improved efficiency and cleaner fuels make the difference!

Slide #6: EXERGO – battery powered ships

Imagine a ship only powered by batteries!

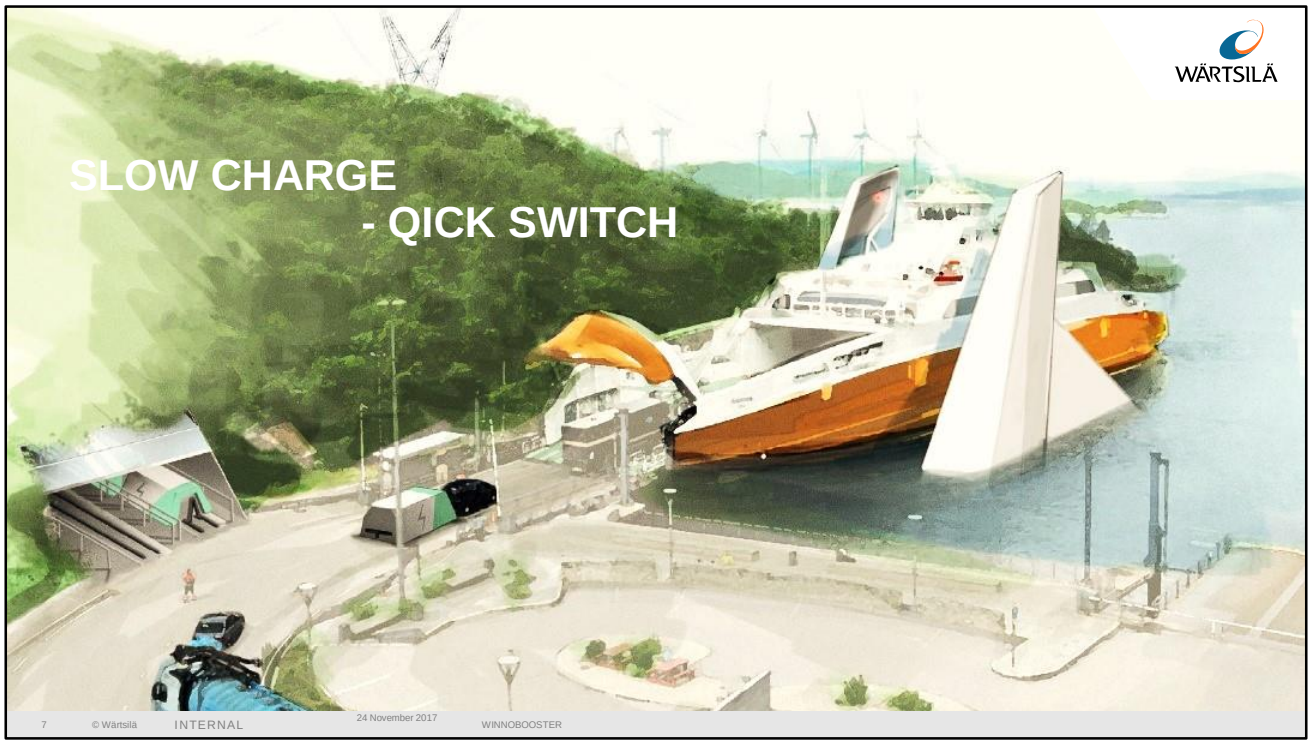
A real revolution is ongoing along the Norwegian coast. More than 30 Ferries for fjord crossings are contracted the last 2 years!

Also in the fleet of offshore support and construction vessel, Shipowners are installing batteries. The results are promising, 30% reduction in fuel consumption in manoeuvring operations and 5-10% in when the vessel is steaming.

We are exploring possibilities to optimise parallel operation between batteries and a new single Power Diesel engine.
Another 15-20% fuel reduction is possible.

Further development of battery powered vessels will take place. The prices will be reduced while energy density will increase. We will soon see installations 10 - 20 times the size of the present, and suddenly a voyage from Oslo to Kiel only on batteries is possible.

And We Norwegians surely want the Cruise ships to operate on batteries when they are visiting our Fjords.



Slide #7: SLOW CHARGE - QUICK SWITCH

These installations needs Onshore infrastructure!

To transfer large amounts of Energy form Shore to Ship will be more challenging as the number and size of battery powered ships are increasing.

We need a swift and safe solution to this challenge, as well as a sound economy of the charging process.

Maybe these batteries that are towed on board the ferry, will solve the problem?

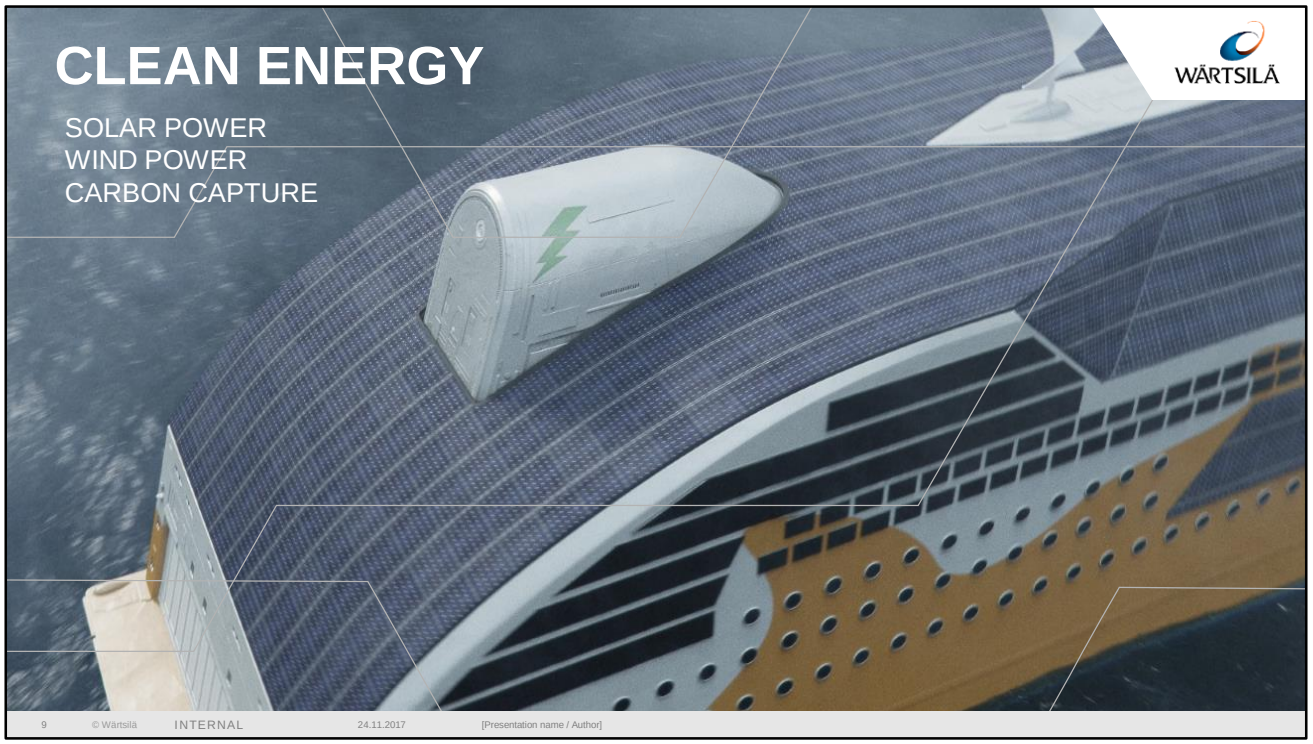
Slide #8: ZERO EMISSION IN PORTS
Also we have to focus on operations in ports

Imagine large merchant ships entering the busy ports without any Pollution from the engines?

No sooth, no Sox, no NOx or CO2? How good would that be for people's health in the area?

By utilising battery technology in the Drone Tugs, autonomously controlled like the self-driving cars, and coordinated operations like the flying Drone swarms you can watch on Youtube, we can ensure efficient and clean harbour operations.

Today this Idea is explored in our company, and We aim for clean and efficient operation of the big ships in the ports of the world.



Slide #9: CLEAN ENERGY PRODUCTION

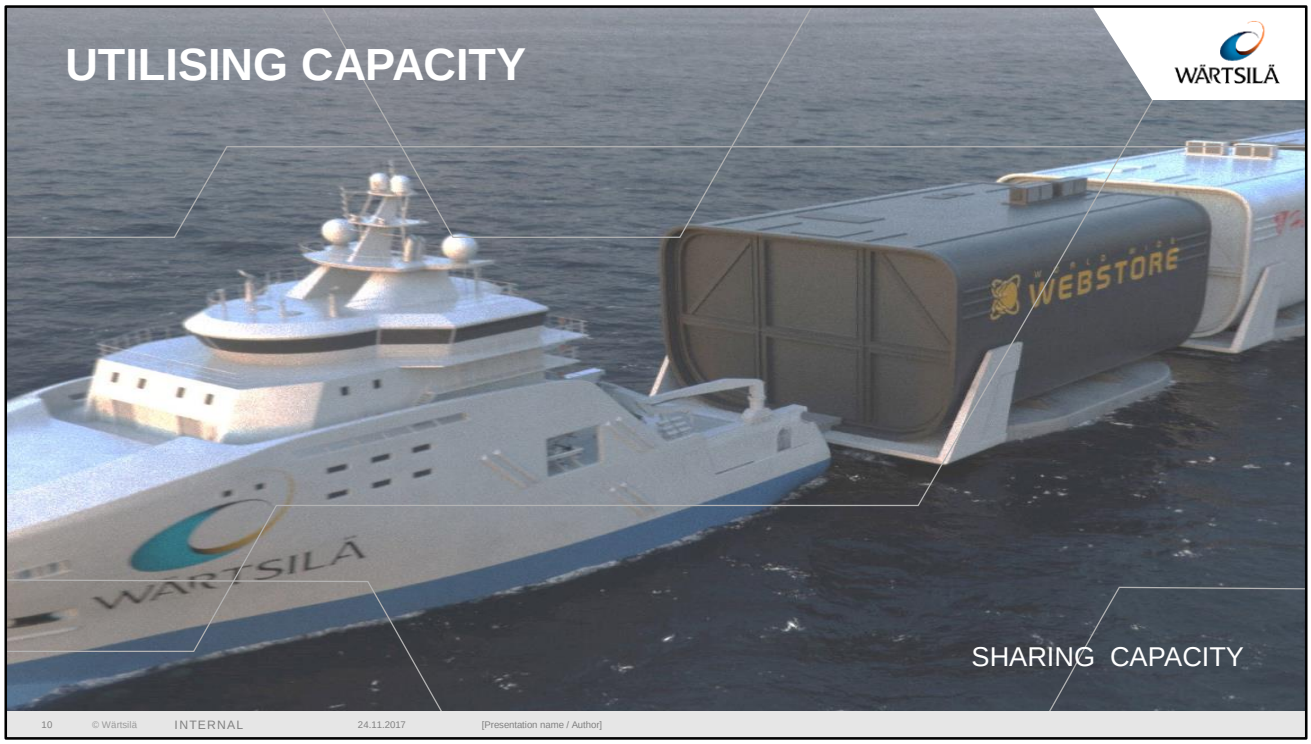
Also Clean Energy production is developing.

New ships must be designed with electric propulsion for ONE purpose: To be able to integrate and utilise clean energy production in Hybrid combination which will allow for installation of future clean energy inventions, surely to emerge.

Two main energy Consumptions in the Ship must be focussed on:
The vessels propulsion system and the hotel/auxiliary energy consumption.

Why must the big cruise ships produce many Megawatts to support the hotel, while carbon-neutral hotels exist onshore?

Energy efficiency throughout the whole ship enables clean energy supply from weaker sources like Solar panels or wind.



Slide #10: CAPACITY UTILISATION

Capacity of the fleet have to be better utilised, through connected ships and a transparent sharing transport system a utilisation improvement of 20-30% is foreseen .

Local 3D printing will also reduce the energy consumption of shipping about 20%.

Slide #11: UNDERWATER – NEW PROPULSION

Into the Future, but allready here:

New propulsion concepts have been demonstrated for these underwater vessels

A 95% reduction in energy demand can be achieved, and it might enable transat

Control systems for autonomous operation and reliable battery system is new te

Here we go!

Slide #12: CLEAN ENERGY HUBS

The ultimate goal must be clean transportation at sea!

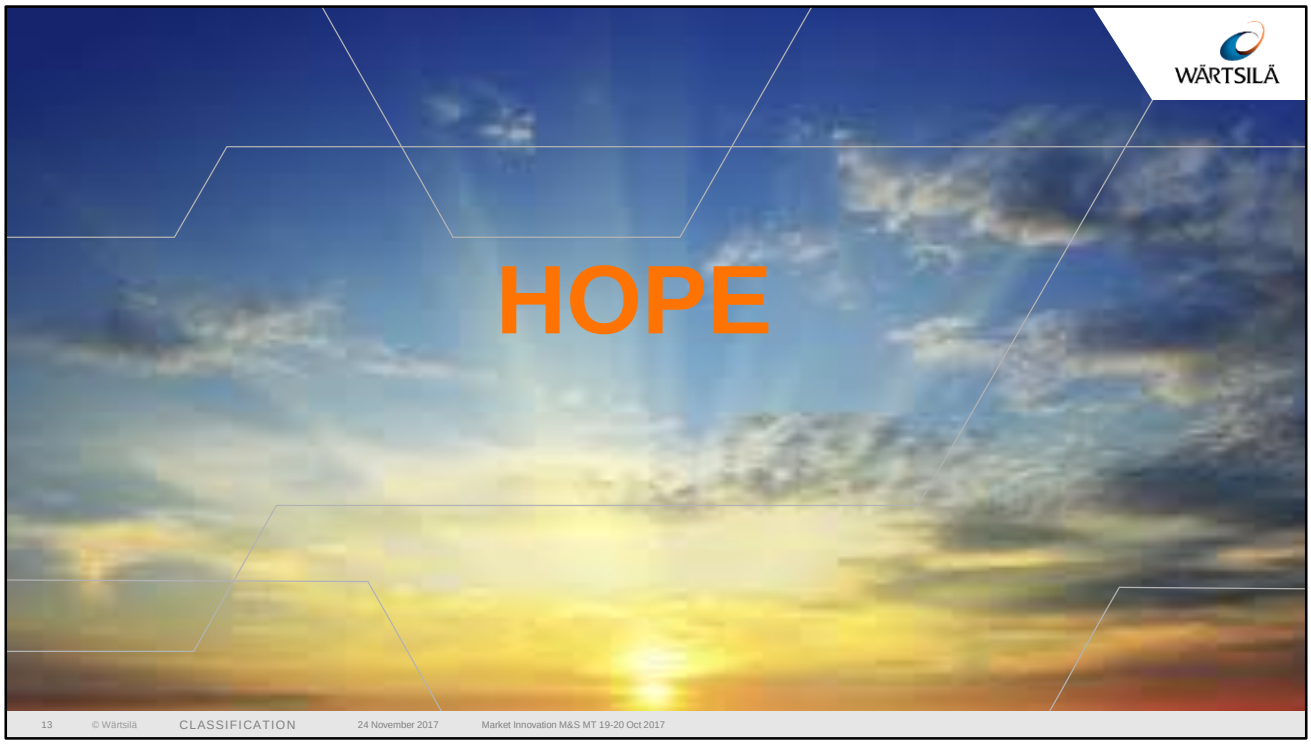
Located close to the main shipping routes, clean energy hubs are producing energy from Solar, Wind and Wave.

Storing the energy as Hydrogen or charging batteries for refuelling the ships.

Redistribution of goods from the ocean going vessels to battery driven shortsea ships is accommodating the shuttling to and from shore.

The clean energy hub can form part of a marine ecosystem that includes Energy to vessels like the offshore support, fish farming and coastal fishermen vessels

EVEN:
Could this be the new use of the currently discredited and unemployed drilling rigs?



Slide #13: Ending slide – Hope

We believe:

The basis for exponential growth in clean Shipping is the levy schemes, taxation on emissions and support for investments that enables clean technologies.

A profitable business going hand in hand with Governmental support is nurturing our HOPE for a Zero emission shipping.

Thank you very Much! And now to the film