

Turning Norwegian innovation into international standards

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Norwegian Maritime Authority – the preferred maritime administration

- The Norwegian Maritime Authority (NMA) is the administrative and supervisory authority in matters related to safety of life, health, material values and the environment on vessels flying the Norwegian flag and foreign ships in Norwegian waters.
- Highly competent expertise and excellent service
- Dedicated personnel to handle innovation projects and new challenging technology





Norway – a Maritime Superpower

The world's

- 4th largest fleet in terms of value
- 6th largest fleet measured in number of ships
- 8th largest fleet in terms of tonnage



International standards



International Labour
Organisation





How to make Norwegian innovation the international standard

- Stimulate innovative thinking
- Coordinate and facilitate
- Actively participate in international forums
- Invite the industry to participate in the NMA's international work
- Participate in research and development projects
- Cooperate with recognized organization and other administrations

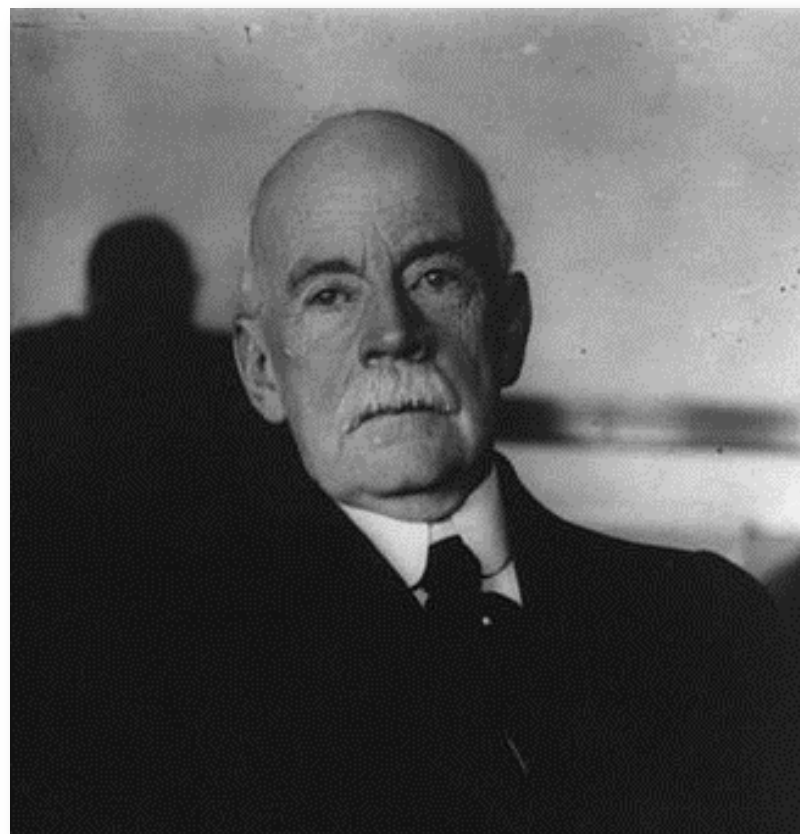




Charles Holland Duell

Leader of US Patent and trademark office, said in 1899:

“Everything that can be invented has been invented”





The future holds opportunities

- New and available technology will be used
 - if and when **economical achievable.**
- Norway is a global leading maritime nation, within
 - environmental design and solutions
 - equipment supply
 - research and development (RD)
 - shipyards
 - ship-owners
 - maritime authorities



Illustration DNVGL / RR / UIP - Project



New technology – new risks

- Rules and regulations
- Unproven technologies
- Introduction of new energy carriers
- Geographical gap
- Competence – Training
- New safety culture
- Cyber security and communication failures





Megatrends

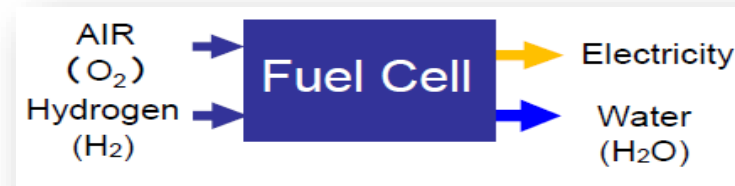
- **New technology**

- Automation and digitalization
- Unmanned ships
- Use of new alternative fuels
- Hybrid machinery systems



- **Increased environmental requirements to minimize footprints**

- Ballast water
- Energy Efficiency Design Index (EEDI)
- Green house gases
- NOx gasses (ECA)
- Sulphur (SECA)





Norway – a leading LNG nation

- 80% of worlds LNG-powered fleet under Norwegian flag
- Long experience
- Broad range of specialists
- Well developed distribution system
- Large fleet – 46 ships
- Several newbuildings
- International interest





Operational experience with LNG in Norway

- Viking Energy: 13 years operation without one hour off-hire caused by the gas system
- Gas mode in 97 % of total energy production time
- ~18% reduction in operation and maintenance cost
- Battery installed 2016, spinning reserve DP operation





Norway – a leading Battery nation

- First battery only powered ferry
- First battery powered fishing vessel
- Experience with large Li-Ion batteries since 2012
- Battery production in Trondheim
- Sales and technical offices in Norway
- Growing fleet
- Several newbuilding's
- International interest





Some Norwegian ships with large battery





Slik blir Color Lines nye milliardferge: Skal gå på batteri



VERDENS STØRSTE: Forslapig går hun under navnet «Color Hybrid». Når hun soler sin første tur mellom Sandefjord og Strømstad i 2020 skal deler av turen gå på batteri.
FOTO: COLOR LINE



Fremtidsrettet: Kleven skal bygge to nye hybridskip for Hurtigruten. Første skip skal leveres sommeren 2018 og gi en reduksjon i drivstofforbruket på 20 prosent sammenlignet med dagens skip. FOTO: HURTIGRUTEN NORGE

Hurtigruten bygger to nye hybridskip

Ved å satse på ny og miljøvennlig teknologi, vil Hurtigruten kutte drivstofforbruket med 20 prosent.



Norway – a leading Hydrogen nation





Ships with ground-breaking technology are flying the Norwegian flag

The brand new carriers Mari Jone and Lindanger are the worlds first ocean going ships capable of running on Methanol






Norway – leading within autonomous shipping

- Several research and development projects




Det skjer nå en rask utvikling av teknologien som trengs for å bygge større førerløse fartøyer som kan frakte folk eller gods.
Illustrasjon: Kongsberg Seaflex

Skal teste førerløse båter i Trondheimsfjorden

 -0,99% OSLO 710,4 OLJE 11,20 0,03% S&P 2115,87 EURO 0,97 DOLLAR 0,78 14.5 JAR 16 MRV

To lyspunkt i et bekmørkt offshoremarked

Samtidig som inntektene fortsetter å falle i offshore- og shippingmarkedet har Kongsberg Gruppen forsøkt å skape nye inntektskilder. På kort tid har selskapet sikret seg kontrakter på to nye fronter.



YARA BIRKELAND

Med batteri- utenkaptein: Yara og Kongsberg Gruppen skal bygge verdens første selvstyrede og utslippsfrie containerkip, kalt YARA BIRKELAND. Skipet skal i første omgang seile i Trondheimsfjorden. FOTO: KONGSBERG GRUPPEN / YARA

Markus Langeland



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The Norwegian Maritime Authority – the supporter of innovation, new technologies and environmental solutions



Questions?



Thank you!



31.05.2017



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