



Sjøfartsdirektoratet
Norwegian Maritime Authority



On the Path to Zero-Emissions

Challenges and Opportunities

Recreational Craft Segment

26.04.2021

ACTION PLAN FOR GREEN SHIPPING

THE GOVERNMENT WILL

“Review emissions from recreational craft and the emission reduction potential, and consider policy instruments to promote zero- and low emission solutions“



PROMISING SOLUTIONS

THE ELECTRIC PROPULSION

FROM SIMPLER SOLUTIONS TO COMPLEX HYBRID INSTALLATIONS

SMALL OUTBOARD



Product in the XXL assortment

FULLY ELECTRIC



Electric Powertrain
Installation made by Evoy

HYBRID INSTALLATION



ENERGY OBSERVER
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- George Conty
(<https://www.energy-observer.org/>)

PROMISING SOLUTIONS

HYDROGEN INSTALLATIONS – A POSSIBLE FUTURE SOLUTION

RESEARCH



Low Temperature Electrolysis and fuel cell laboratory (SINTEF)

HYDROGEN PROJECTS



HYCRUISER – A prototype
In development by HYREX

MEETS TRADE PRESS & MEDIA



<https://www.metstrade.com/news/sustainability/hydrogen-future-recreational-boats/>

PROMISING SOLUTIONS

SOLAR POWER AND INNOVATIVE SAILS

HIGH PERFORMANCE SAILS



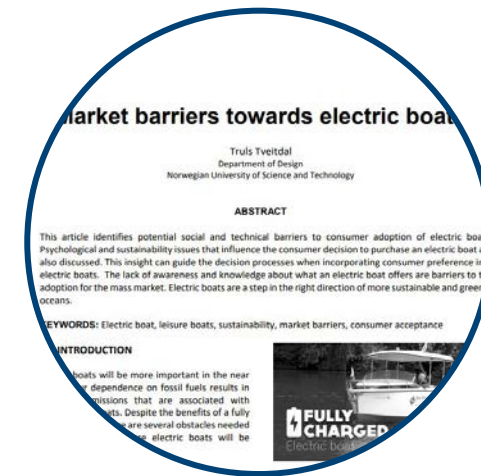
Wingsails in terms of speed and efficiency were proven in the 2010 America's Cup

SOLAR ENERGY



Flexible solar panels technological developments allow better efficiency

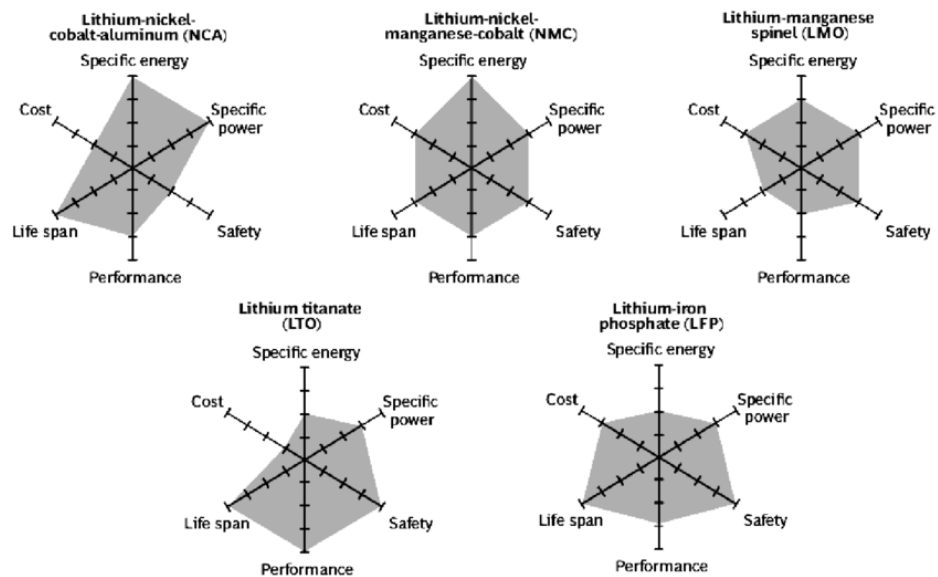
MEDIA AND SCIENCE PUBLICATIONS



Market barriers towards electric boats
Truls Tveitdal - NTNU

PROMISING SOLUTIONS

LITHIUM-ION BATTERIES A COMMON TECHNOLOGY FOR ELECTRIC PROPULSION SYSTEMS



DESIGN FOR DIFFERENT APPLICATIONS



BOAT BATTERY PACK 20 KW/H



SAFETY CONCERNS

DO WE HAVE
A SAFE AND SUSTAINABLE SOLUTION?

**BEFORE ANSWER IT
WE NEED A COMPREHENSIVE VIEW OF THE SEGMENT**

WE HAVE: A VAST AMOUNT OF BOATS

Boat Types	Motor boats without overnight facilities	42,4%	Almost 1 000 000
	Motor boats with overnight facilities	17,4%	
	Sailing-boats without overnight facilities	1,4%	
	Sailing-boats with overnight facilities	2,9%	
	Water scooters	1%	
	Dinghies and Rowing boats	17,4%	
	Canoes and kayaks	17,9%	
	Other new segments	-	

Reference: Båtlivsundersøkelsen 2018

WE HAVE: DIFFERENT NEEDS AND MOTIVATIONS

Boat Types	Consumer Segments					
	Gear Guys	Merry Mates	Luxurious Leisure	Water Weekenders	Seclusion Seekers	Nautical Natives
Motor boats without overnight facilities	Hobbies with specialized equipment	Family is at the core of their activities.	A boat is the achievement, which gives them a boost in status.	Planners who love to organize boating outings.	Are nature lovers.	It's a family tradition.
Motor boats with overnight facilities						
Sailing-boats without overnight facilities	Intrigued by the tech and the specs	They spend time on the water to have fun and enjoy the company of their loved ones.	Image-conscious and surround themselves with the finer things.	Owning a boat is driven by their desire to host friends and family	Getting away from the daily routine and connecting with nature on the water.	Believers in boating and everything it has to offer.
Sailing-boats with overnight facilities						
Water scooters	Crave details					
Dinghies and Rowing boats						
Canoes and kayaks						
Other new segments						

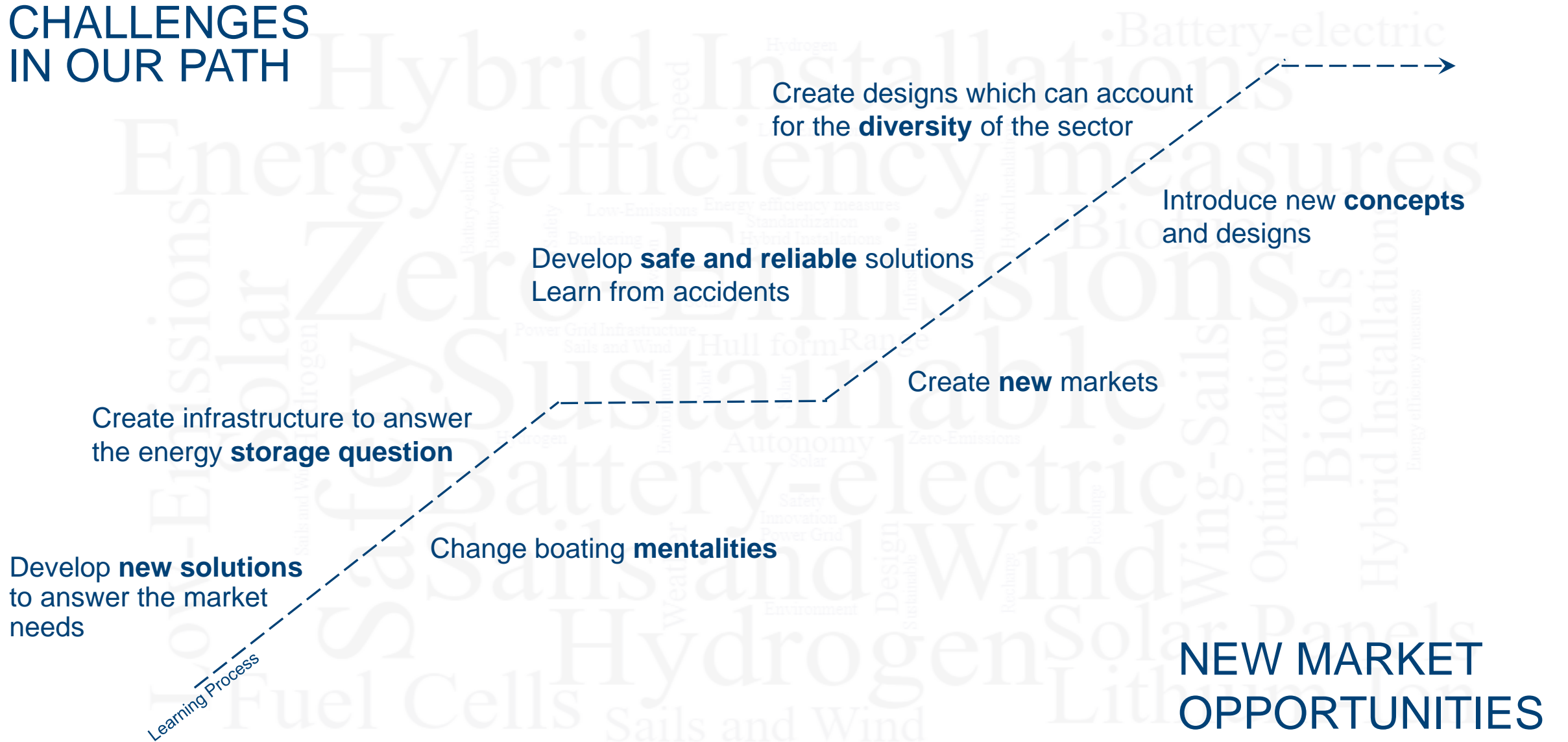
Reference: Tomorrow's boat owners findings from landmark research on first-time boat buyers Conducted for US. National Marine Manufacturers Association (NMMA) 2016

OUR SECTOR IS DRIVEN BY EMOTIONS

Boat Types	Consumer Segments					
	Gear Guys	Merry Mates	Luxurious Leisure	Water Weekenders	Seclusion Seekers	Nautical Natives
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Sailing-boats without overnight facilities						
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CHALLENGES IN OUR PATH

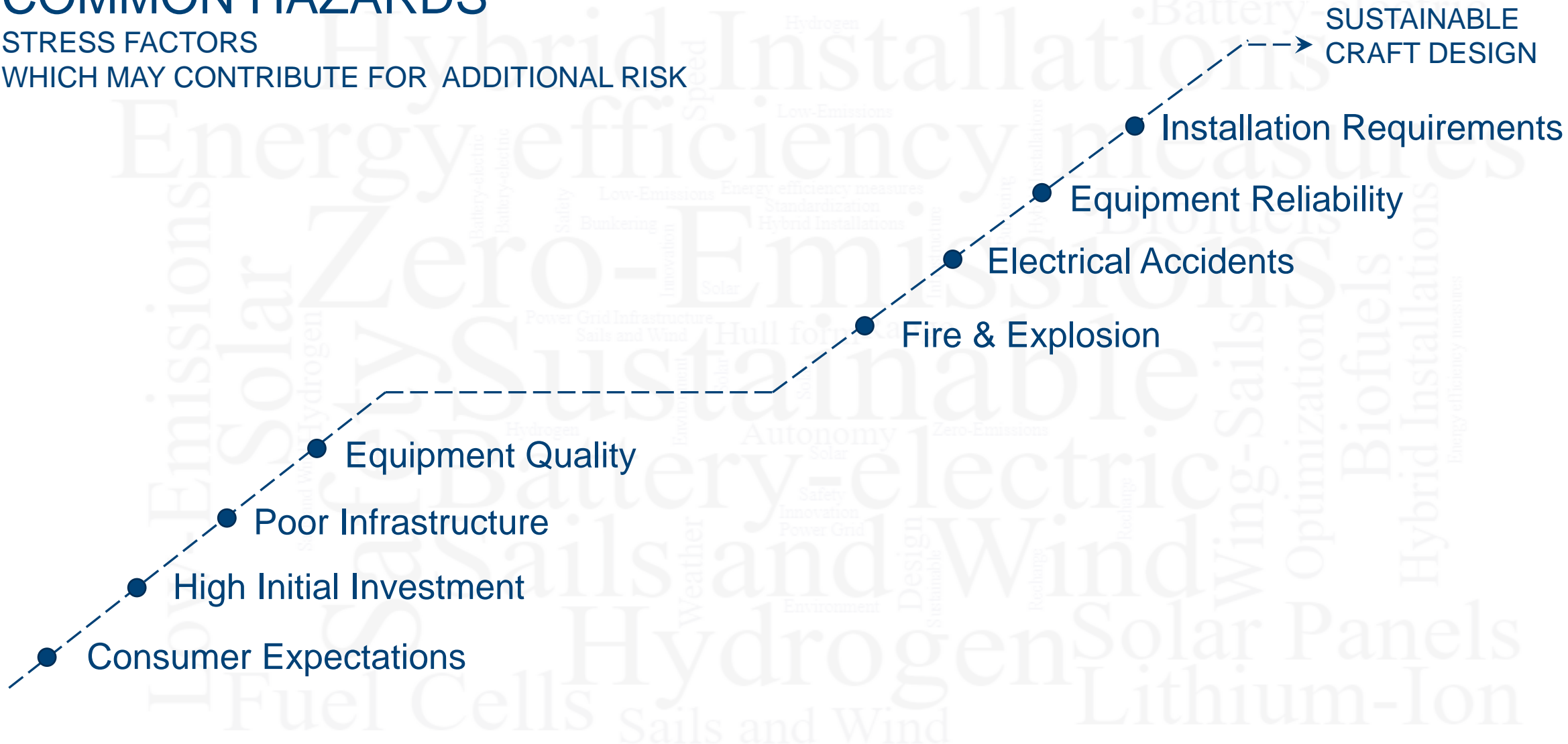


COMMON HAZARDS

STRESS FACTORS

WHICH MAY CONTRIBUTE FOR ADDITIONAL RISK

SUSTAINABLE
CRAFT DESIGN



SAFETY INSTRUMENTS & REGULATIONS

A MULTIDIMENSIONAL APPROACH

1

REGULATIONS
(CE-MARK)

Regulations of 15 January 2016 No. 35 on the manufacturing and the placing on the market of recreational craft and personal watercraft

2

STANDARDS
(SMALL-CRAFT)

The ISO Technical Committee 188 on Small Crafts is responsible for the development of standards which shall serve as support of the regulations

3

RISK
ANALYSES

Use of a structured and systematic methodology to enhance the protection of life, health, the marine environment and property



FURTHER DEVELOPMENT IS NECESSARY
TO KEEP REDUCING EMISSIONS

ONLY THE ENGAGEMENT OF ALL
WILL ALLOW TO ACHIEVE
BETTER AND SAFER BOAT
DESIGNS

OUR SPEAKERS

WE WILL CONTINUE OUR DISCUSSIONS WITH



Klimagassutslipp fra fritidsbåter
Frank Melum



Er elektrisk fremdrift fremtiden?
Muligheter og utfordringer
Leif A Stavøstrand



Elektrisk drift kombinert med hydrogen - et
prototypeprosjekt
Henrik Torgersen



Hvordan ser fremtidens fritidsbåt ut?
Håkon Ingvaldsen



Elektrifisering av bransjen, hva er
utfordringene?
Thomas Nicolai Bjønnes



Hva kan gå galt med batteridrift? Om litium-ion
batterier og medførende fareaspekter for fritidsfartøy
Torleif Lian



Guidelines for batteribruk i fritidsbåt
Torgeir Bråtane



Sjøfartsdirektoratet
Norwegian Maritime Authority

Thank You

JOSE VENTURA

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www.sdir.no/fritidsbat/

The preferred maritime administration

26.04.2021