



TOWARDS A ZERO-EMISSION SMART MARINE ECOSYSTEM

Roger Holm, President, Wärtsilä Marine & Executive Vice President

Global leader
in sustainable power
for the marine and
energy markets

Turnover
5 174 MEUR

Offices in
+ 90 countries





WÄRTSILÄ
2018

Order intake
6 307 MEUR

Operating
result
577 MEUR




+ 19 000
staff

+ 130
nationalities



ENABLING SUSTAINABLE SOCIETIES WITH SMART TECHNOLOGY



ENERGY BUSINESS

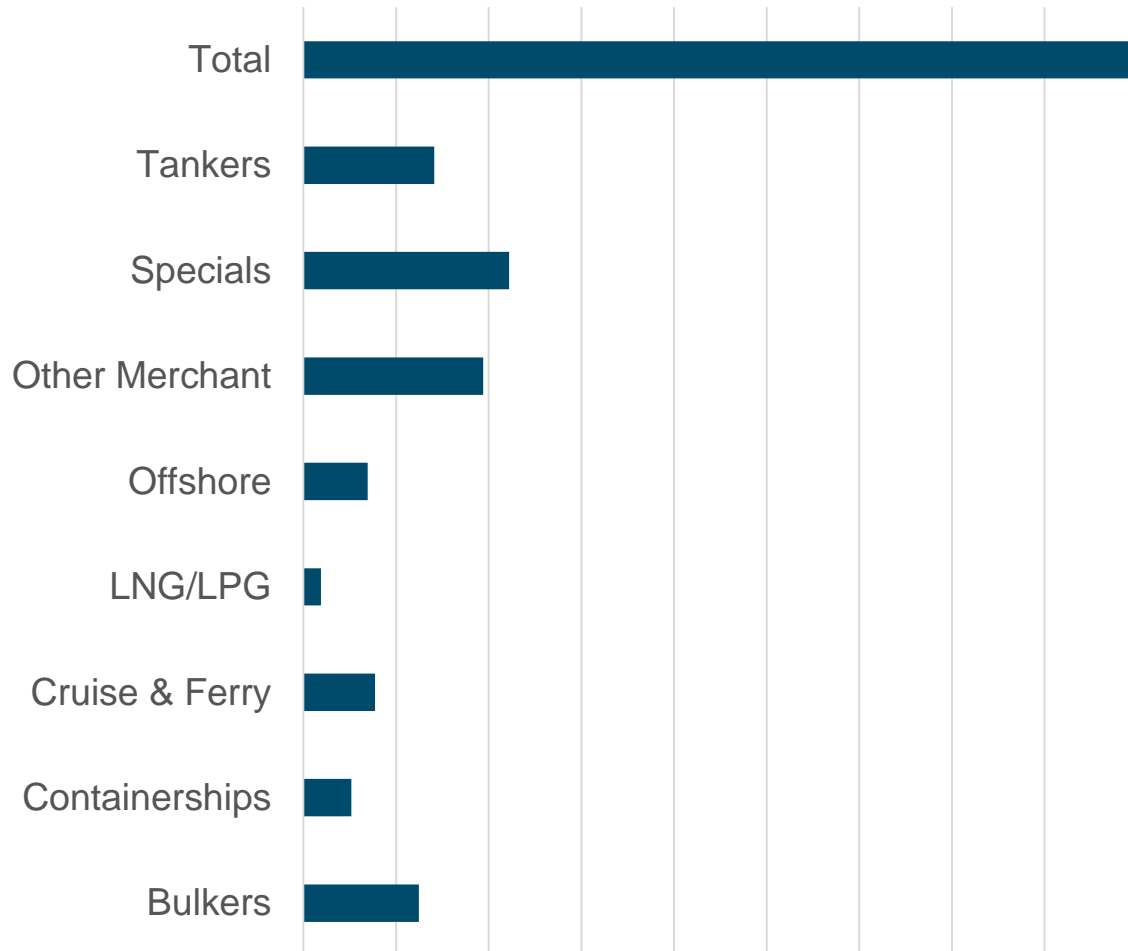
Towards 100% Renewable Energy



MARINE BUSINESS

Smart Marine Ecosystem

MAIN SHIP TYPES



90% of world trade



Global shipping fuel bill around
\$100 BILLION

+ 2 000

Amount of **NEW VESSELS**
built yearly



Main **SHIPYARD** countries:
Japan / China / South Korea



Main ship **OWNER** countries
Greece / Japan / China

Sources: Clarkson's, Wood Mackenzie, Bloomberg, Wärtsilä internal analysis

SHIPPING IS THE WORLD'S MOST EFFICIENT MODE OF TRANSPORTATION

90% WORLD TRADE

BUT... \$30 BN
INEFFICIENCY

GLOBALLY SET INDUSTRY TARGETS

2020

0.5%
SO_x

2030

40%
GHG



2050

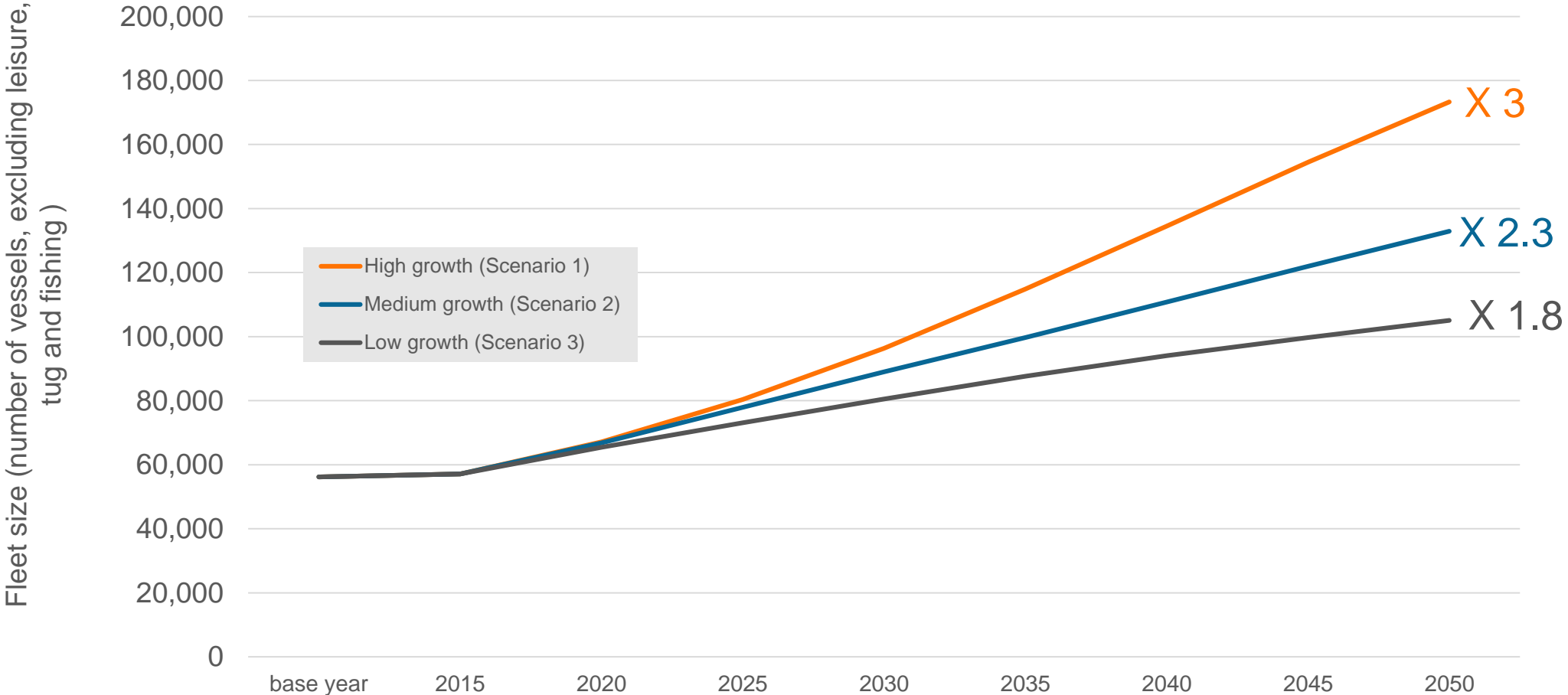
50%
GHG



70%
GHG



GLOBAL FLEET IS SET TO GROW



Source: In-house modeling based on CE-delft data as used by the IMO

**WE CAN'T DO
THIS ALONE.
NOBODY CAN.**





SMART MARINE IN ACTION





Blockchain



Simulation



Artificial intelligence



Big data



Cloud computing



Advanced robotics



Augmented reality



System integration



Internet of things



Cybersecurity



Predictive analytics



Additive manufacturing

**TURNING
TECHNOLOGY
INTO SOLUTIONS**

 **Aker**Solutions

 **DFDS**



equinor

KVÆRNER™

 **GRIEG STAR**



WÄRTSILÄ



 **ZEEDS**

 Zero
Emission
Energy
Distribution
at Sea

THE WORLD'S FIRST COMMERCIALY AVAILABLE AUTO-DOCKING SYSTEM



INTELLITUG

IN PARTNERSHIP WITH MPA, PSA MARINE,
LLOYD'S REGISTER, &
TCOMS

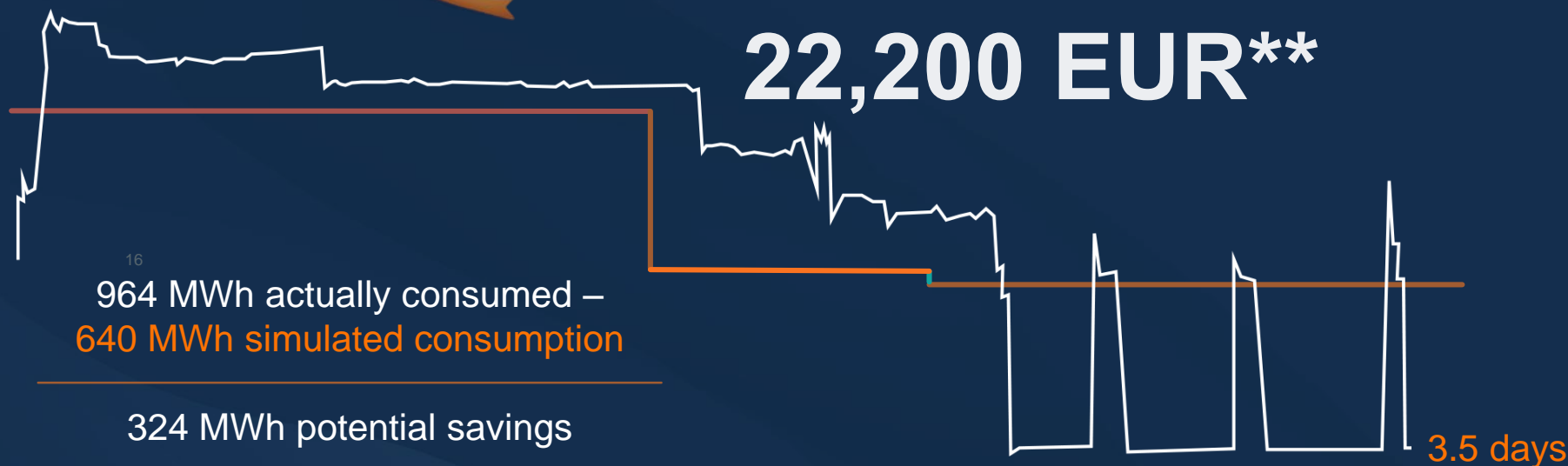


“VILJA”
WÄRTSILÄ HY TUG LAUNCHED IN
THE PORT OF LULEÅ



Saving per voyage with just-in-time arrival:

74.5 TONS OF FUEL*
22,200 EUR**



CASE:
5,500 TEU Containership
Distance: 1,150 Nautical Miles

* Assuming average SFOC : 230 g/kwh

** Assuming fuel price: 300 EUR/t

JUST-IN-TIME ARRIVAL AT PORT OF SINGAPORE



1 600 000 T
CO2 emissions cut



540 000 T
fuel reduction



160 000 000 €
fuel bill savings



SAFETY
thanks to reduced
congestion

**MARITIME
CAN BE THE
CATALYST
OF A BETTER
TOMORROW**







THANK YOU