



**INTERTANKO**

Platts 3<sup>rd</sup> Annual Tanker  
Economics Conference  
London 5<sup>th</sup> Dec 2011

**Greener Shipping:  
The Environmental  
Agenda Today**

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INTERTANKO



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**International Association of Independent  
Tanker Owners**

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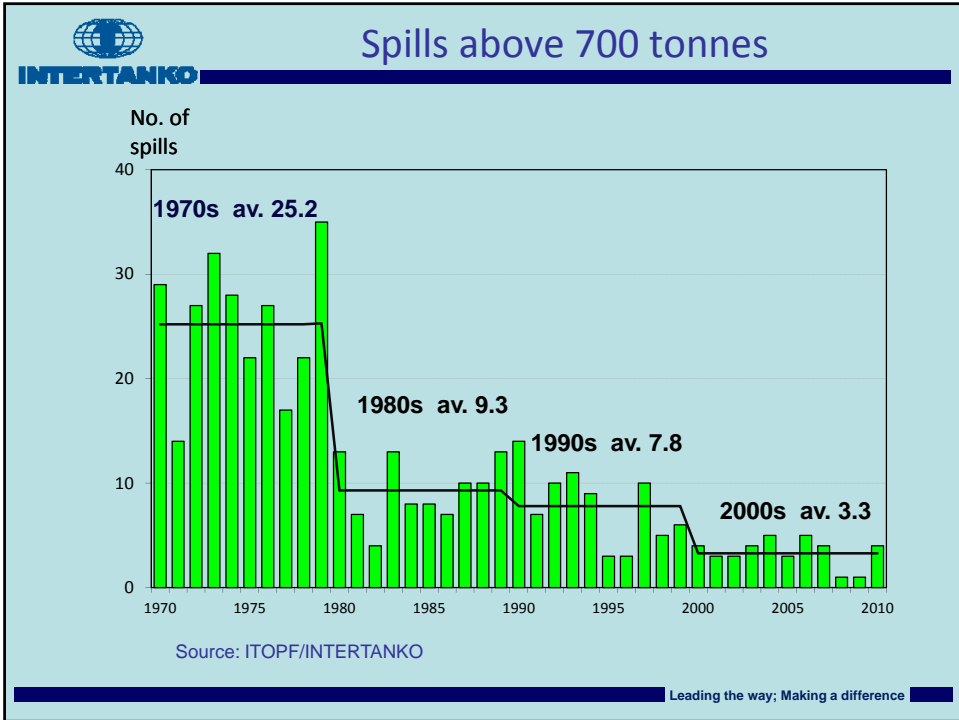
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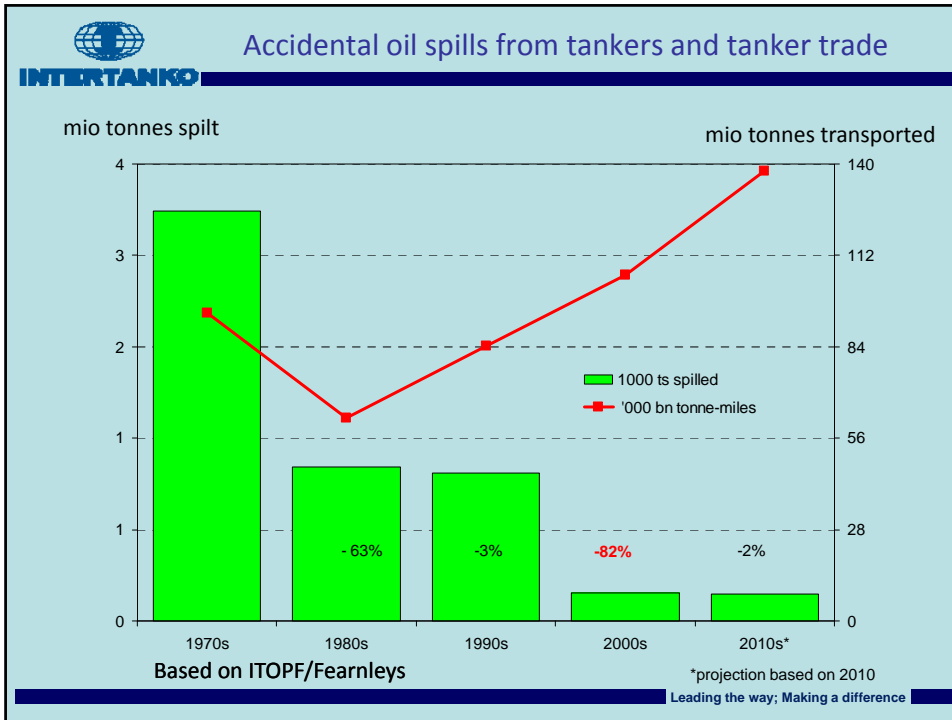


**Our Environment – Our Responsibility**

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**Environmental Challenges..**

- ODS = Ozone Depleting Substances (coolants)
- VOC = Volatile Organic Compounds
- Noise
- Biofouling
- Toxic Antifouling
- Garbage
- Sewage
- Slops
- Ballast water
- Cetacean strikes
- Accidental oil pollution
- Life cycle: Building to Decommissioning/ Recycling

## Ballast water – how big a problem ?

3 to 10 billion tonnes per year ?  
7,000 species being transported ??

=> International Convention for  
the Control and Management of  
Ship's Ballast Water and Sediment



Entry into force 12 months after  
ratification by 30 States with 35%  
world merchant tonnage

## Ballast Water Treatment

Different treatment principles (active substances/ UV/ Filters etc.)

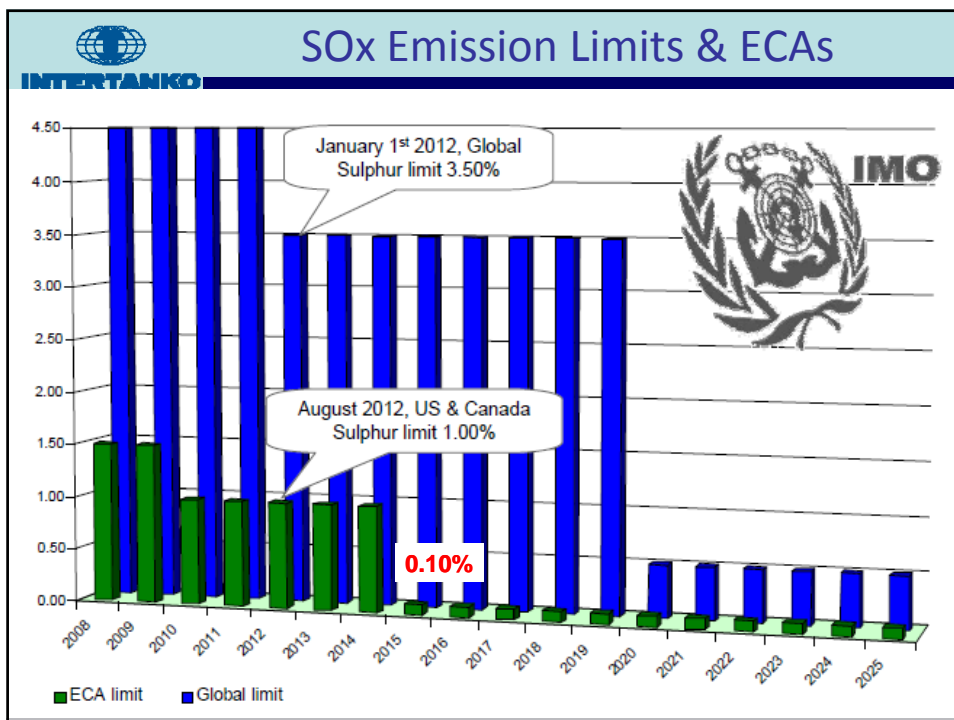
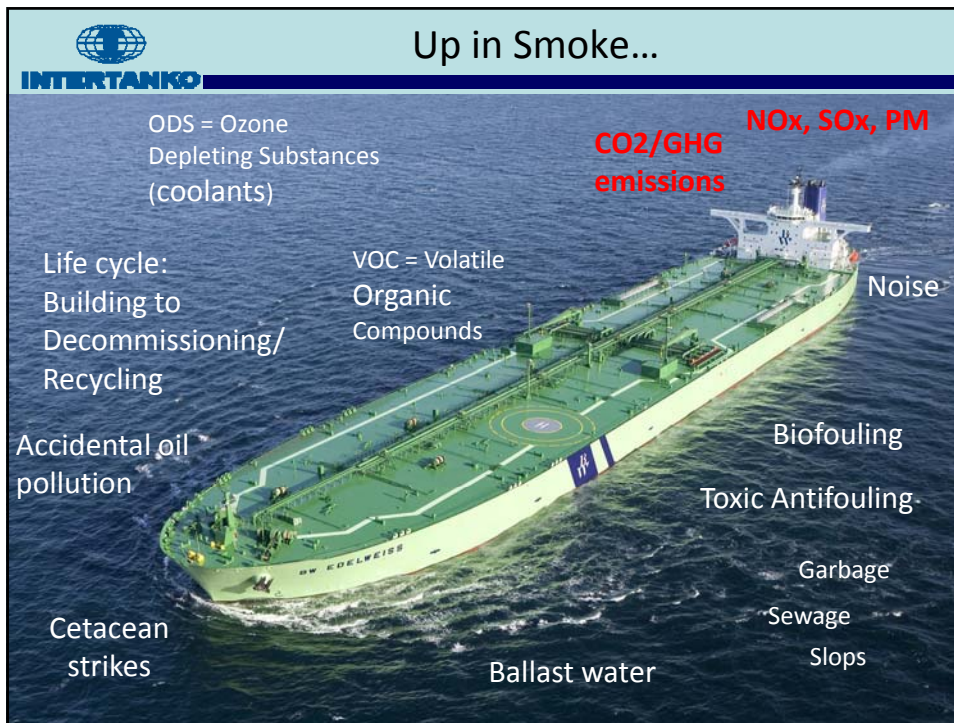
Example for 5000m<sup>3</sup>/hr system:

CapEx 1.5-2.5 mio US\$ (+delivery, +installation, + commissioning)

OpEx 20-50k US\$/yr (power, consumables, parts) dep. on principle

Power requirement (dep. on treatment principle) up to 600kW

=> Additional fuel consumption & CO<sub>2</sub> emissions





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## Emission Control Areas

### NORTH AMERICA



### NORTH SEA & BALTIC SEA

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## Compliance Options: Fuel

### Low Sulphur fuel (0.10% MGO)

- Rel. easy but expensive
- additional storage capacity for MGO
- total segregation between MGO and HFO fuel systems
- High price premium (currently ~US\$ 350/t)
- potential availability issues

### Liquid Natural Gas (LNG) as main fuel

- High costs for retrofit & new building
- Supply network to be built
- Methane slip

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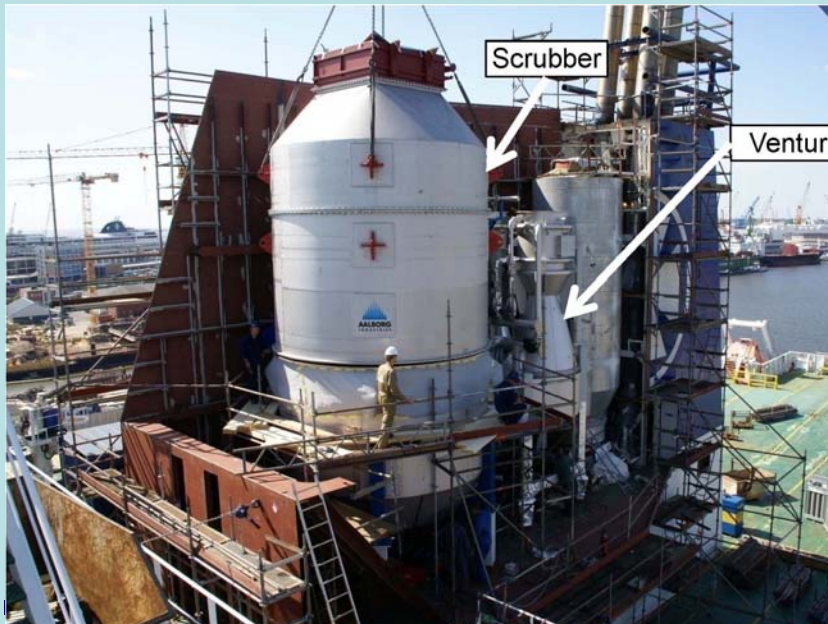
### Exhaust Gas Cleaning Systems



- Maturity
- Availability
- Performance reliability

One scrubber for each main engine or up to 3 auxiliary engines

Time needed for retrofit:  
2-3 weeks planning installation  
7-10 days off hire  
2 weeks testing for certification



ALTERNATIVE	CAPEX	OPEX
MGO	low	premium US\$ 350/t but up to 4% fuel saving
SCRUBBERS	US\$5 m or more/ship	2-3% fuel penalty in use increased CO <sub>2</sub> emissions
LNG	> US\$20 m/ship	up to 20% fuel saving

Cost efficiency is related to time spent in ECAs

Incoming regulations:  
BWT, NOx/SOx Scrubbers  
addl. energy demand  
=> up to **8%** of daily fuel  
consumption

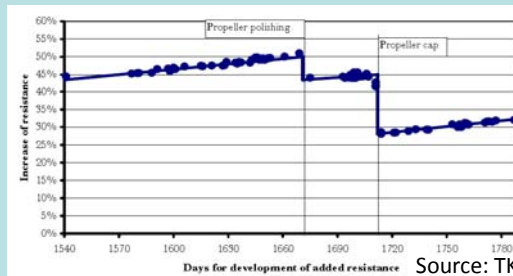
**VS**

**Operational Savings**



## Reducing CO<sub>2</sub>: Propeller Boss Cap Fin

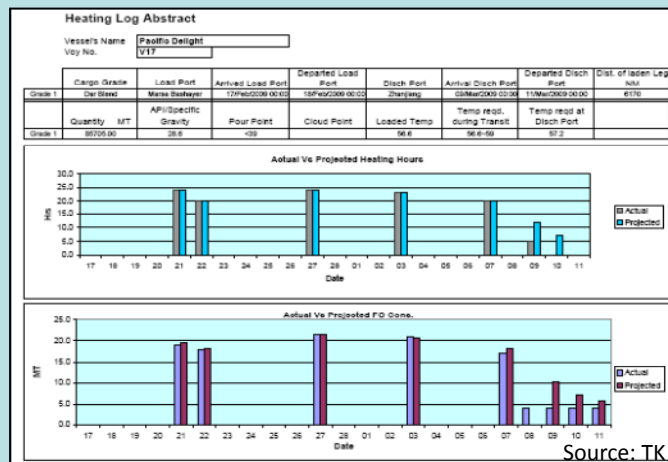
Model test: 4% savings @14kts  
 Validated savings made: 5%  
 More ships to be fitted



Source: TK

## Reducing CO<sub>2</sub>: Cargo Heating

Optimized boiler operation based on projected heat loss and cargo temperatures  
 Avg daily fuel consumption for cargo heating 8 MT => 5.5 MT



Source: TK

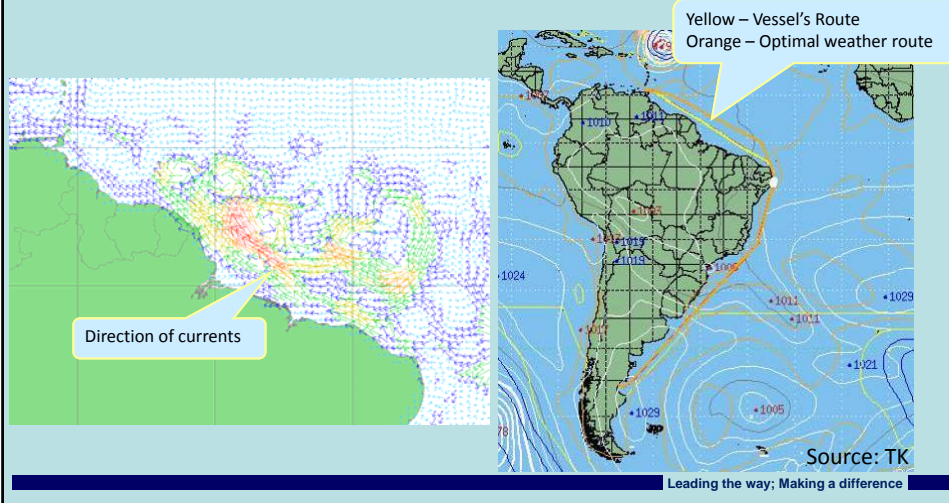


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## Reducing CO<sub>2</sub>: Optimum Weather Routing

Safety: avoid weather damage

Savings: up to 3% fuel and time savings & avoids weather delays



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## Potential Emissions Reduction

		Fuel Savings / Applicable Voyage	Yearly Fleet Potential	Combined	Potential Emissions Reduction		
<b>SHIP RESISTANCE</b>							
	Hull / Propeller Optimization (CASPER)	1.5 %	0.9%	<b>10%</b>	<b>~140,000 tonnes of Fuel</b>  <b>~420,000 tonnes of CO<sub>2</sub></b>		
<b>PROPULSION</b>							
	Propeller Boss Cap Fin	5% (laden passage)	2.5%				
	Engine Optimization	2%	1.2%				
<b>OPERATIONS</b>							
	Cargo Heating	20% where applicable	1.0%				
	Trim Optimization	1% (specific voyages)	0.2%				
	Optimum Weather Routing	2% (trans-oceanic voyages)	1.0%				
	Speed Optimization	20% (Slow steaming on select voyages)	1 - 4%				

Source: TK

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# Initiatives to reduce emissions



## Virtual Arrival

Optimising voyage management and reducing vessel emissions



To obtain your copy of the Virtual Arrival manual, please contact OCIMF/INTERTANKO (see back cover)

## Virtual Arrival

- Method to reduce emissions by adapting vessel speed to terminal slots
- Takes advantage of inefficiencies in the market, but does not affect the market
- Reduces port congestion and contributes to improve safety

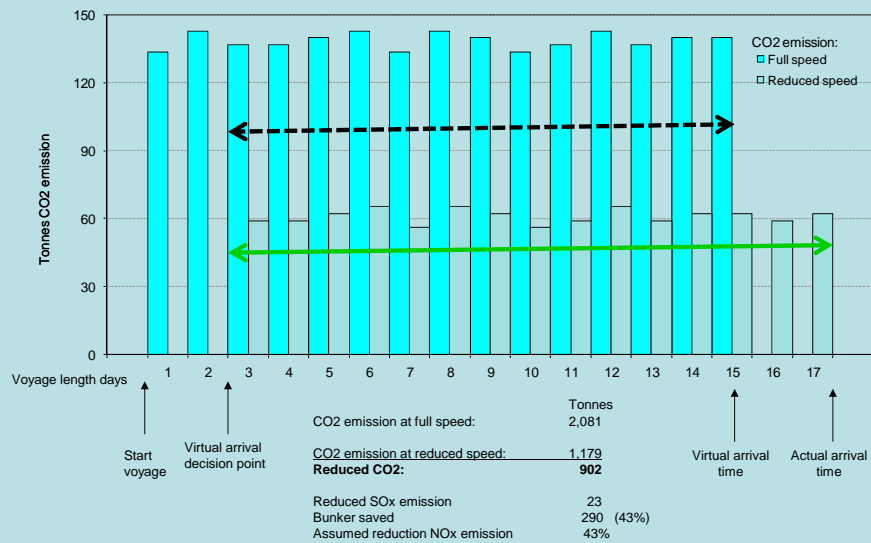
Co-operation between OCIMF and INTERTANKO

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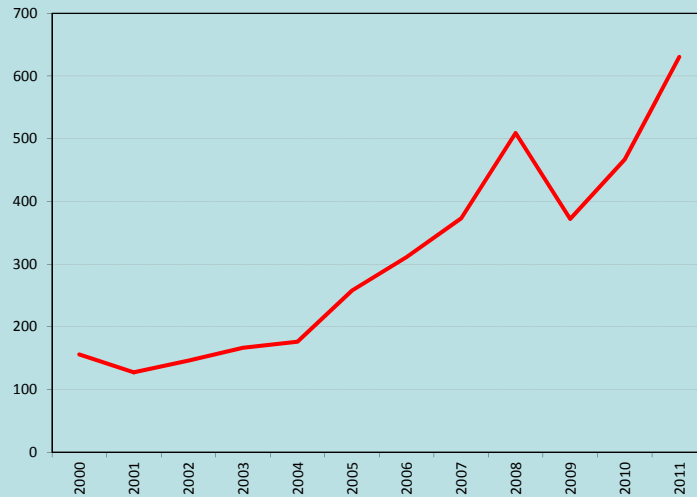
# How Virtual Arrival reduces GHG emission



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Average Annual fuel oil price - \$/tonne

Reducing fuel consumption  
= most cost effective emission reduction initiative any owner can take today !



## Carbon Trading..

Financial Times - November 24, 2011:

- The price of carbon permits has fallen to an all-time low, prompting bankers and traders to question the future of the European Union and United Nations' cap-and-trade scheme.
- "The carbon scheme isn't working," [...] "The [carbon] price is already too low to have any significant environmental impact," Per Lekander, analyst at Swiss bank UBS
- UN-backed certificates of emission reductions (CER), which polluters buy to offset their output of greenhouse gases, down more than 50% since June
- European allowances (EUA) hit €7.80, below the previous low of €8.05 set in February 2009. EUA prices fell 15% in a week
- "We do not expect the pricing outlook to improve materially in the foreseeable future," Isabelle Curien, Deutsche Bank Paris
- The low price for carbon permits is raising questions about the effectiveness of the cap-and-trade scheme in forcing companies to adopt greener technologies.
- In January, the EU authorities said that "cyber-thieves" stole as much as €30m in carbon allowances from the region's emissions trading system, forcing exchanges across Europe to halt briefly trading in carbon allowances



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# Thank You

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