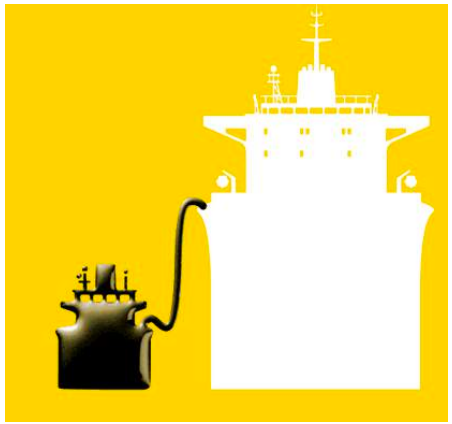
BUNKER 2016



A.Deniz ERAYDIN

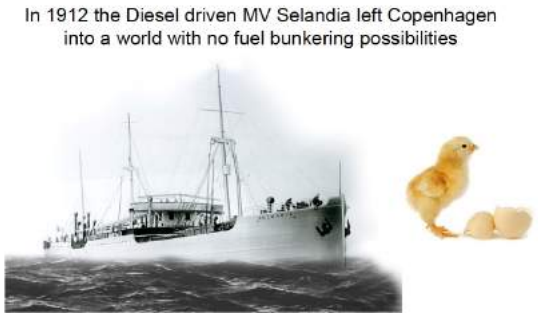
02 Şubat 2016 - İMEAK DTO Meclis Salonu

BUNKER 2016

GENEL GÖRÜNÜM

DÜNYA'DA BUNKER

- Gemi Yakıt İkmali = İhrakiye Teslimi = BUNKER İkmali
- 100 yılda bir yeni yakıt teknolojileri



BUNKER 2016

GENEL GÖRÜNÜM

DÜNYA'DA BUNKER

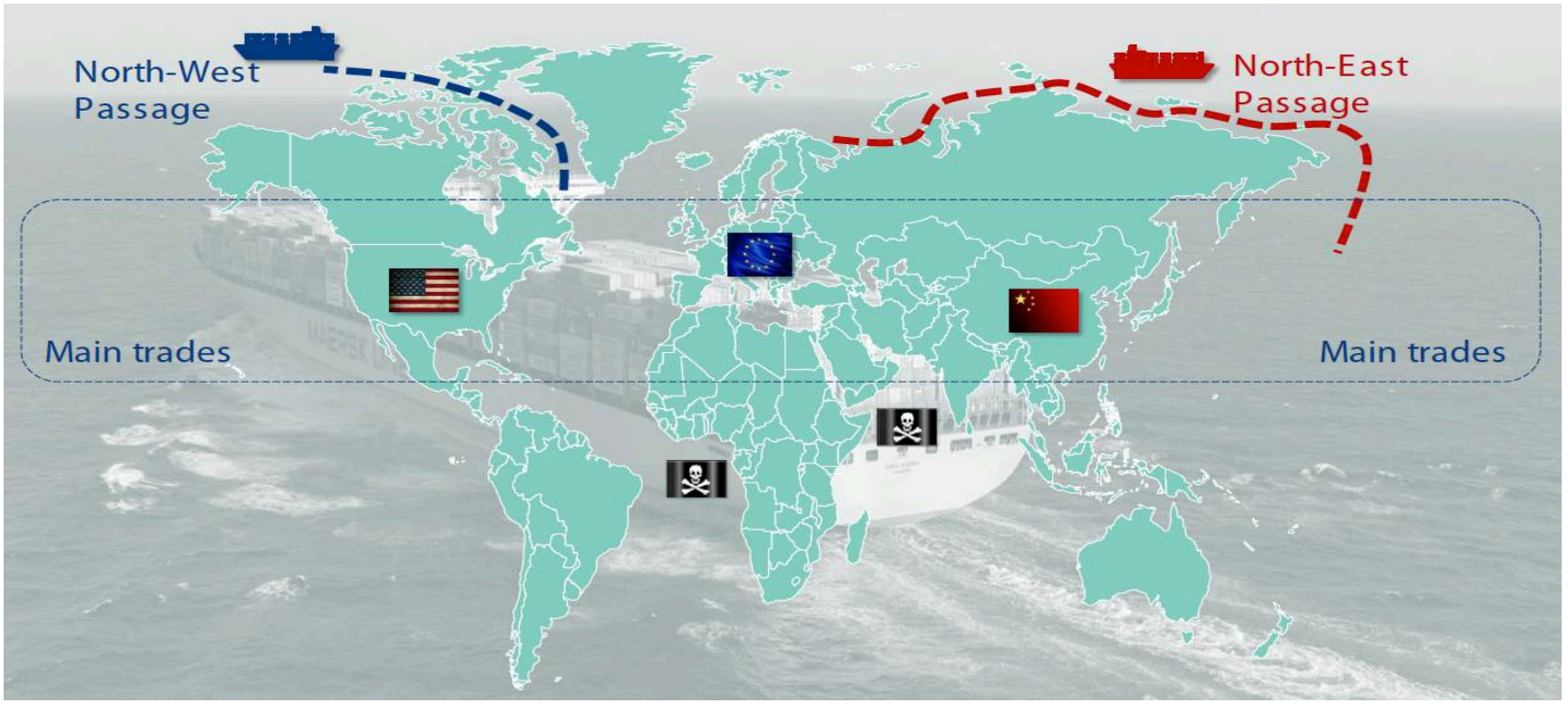
- Ticari yollar, Ülke ekonomileri ve Dar Boğazlar Belirleyici.
- Dünyadaki 8 stratejik dar boğazın 2' si Türkiye'de.
- Ana denizcilik yakıtı Fueloil ve Gasoil

BUNKER 2016

GENEL GÖRÜNÜM

DÜNYA'DA BUNKER

- 10.5 milyar MT taşıma
- 59 000 ticari gemi (uluslararası çalışan)
- 350 milyon MT bunker ürünü
- 280 milyon MT fueloil
- 70 milyon MT gasoil

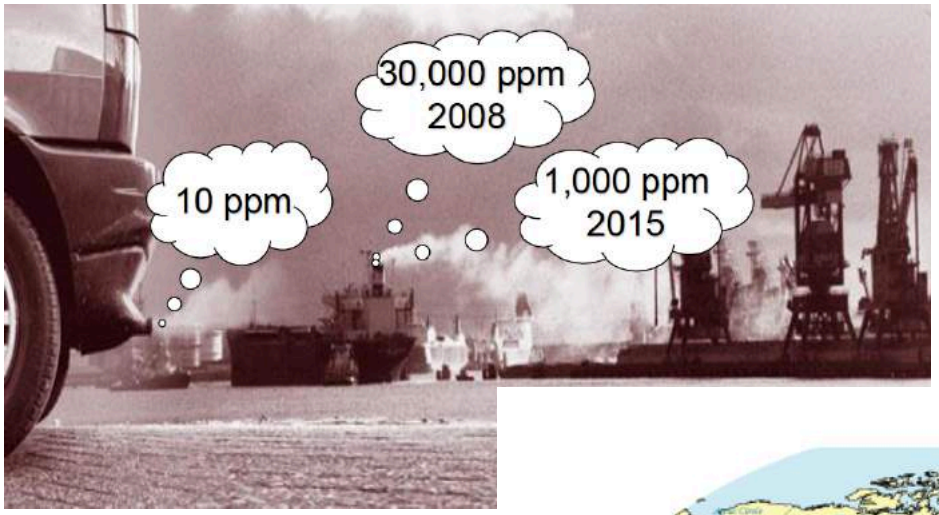


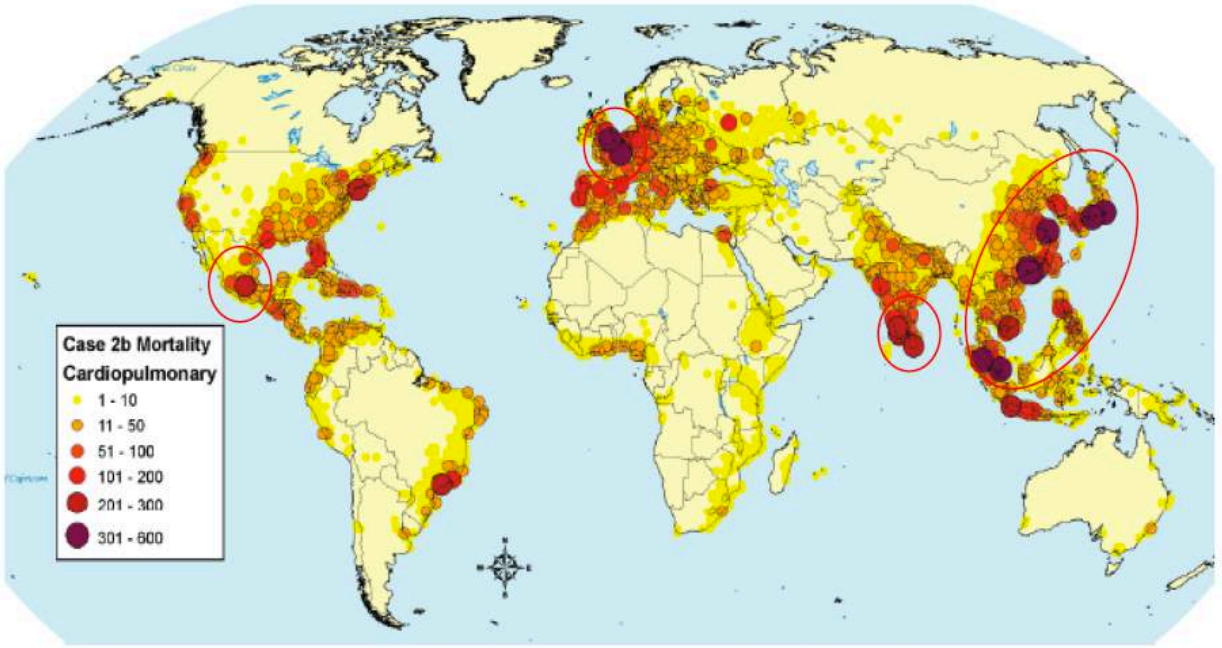
BUNKER 2016

GENEL GÖRÜNÜM

DÜNYA'DA BUNKER

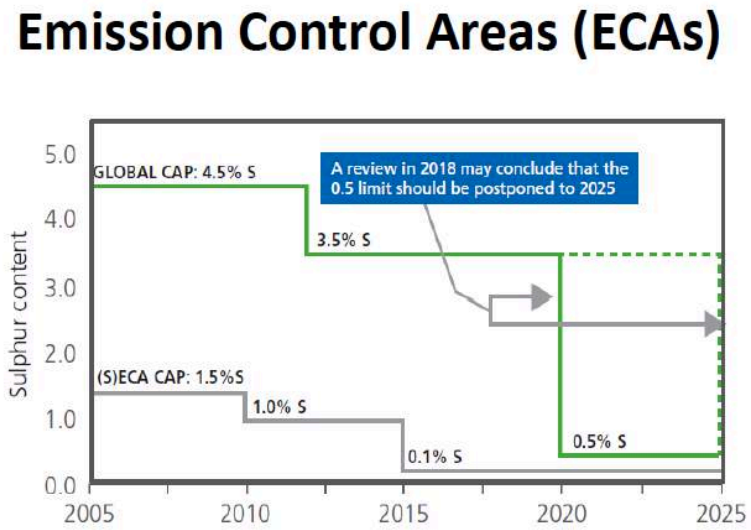
- **Gemi kaynaklı emisyon rakamlarında ciddi düşüş hedefleniyor.**

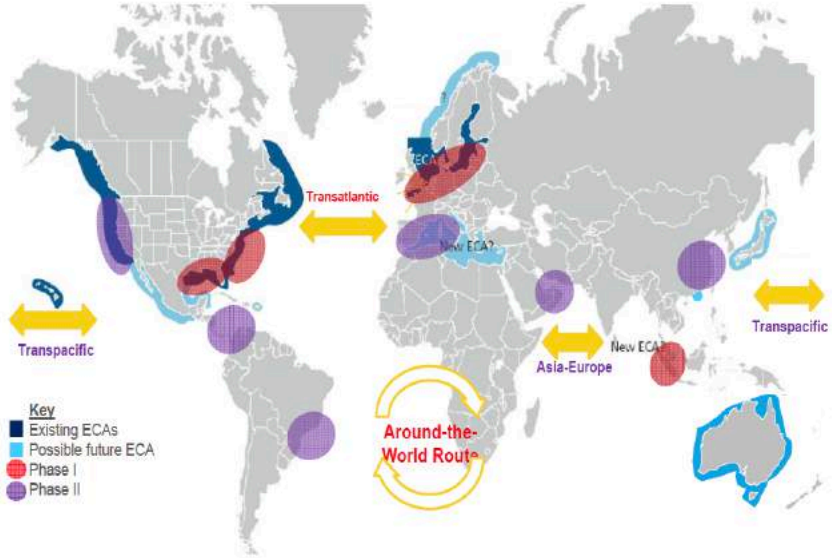


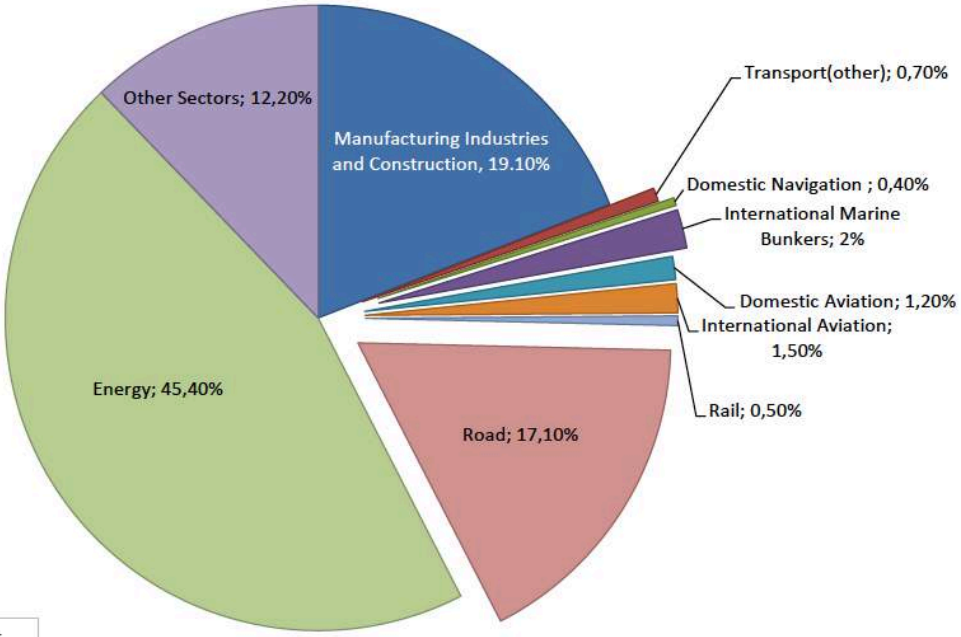


BUNKER 2016

DÜNYA'DA BUNKER







2005, OECD/ITF

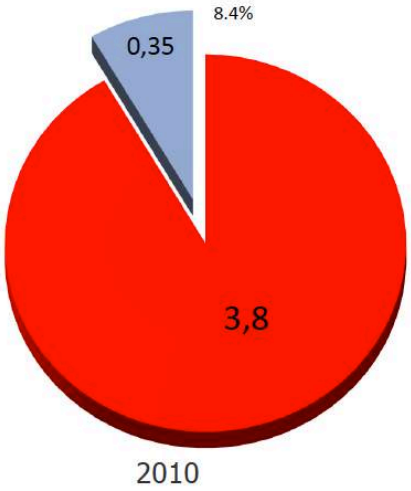
Emisyonu oluşturan sektörlerin dağılımı

Bunker = 2.4%

BUNKER 2016
GENEL GÖRÜNÜM
DÜNYA'DA BUNKER

Dünya Petrol Tüketimi = 4.15 milyar MT

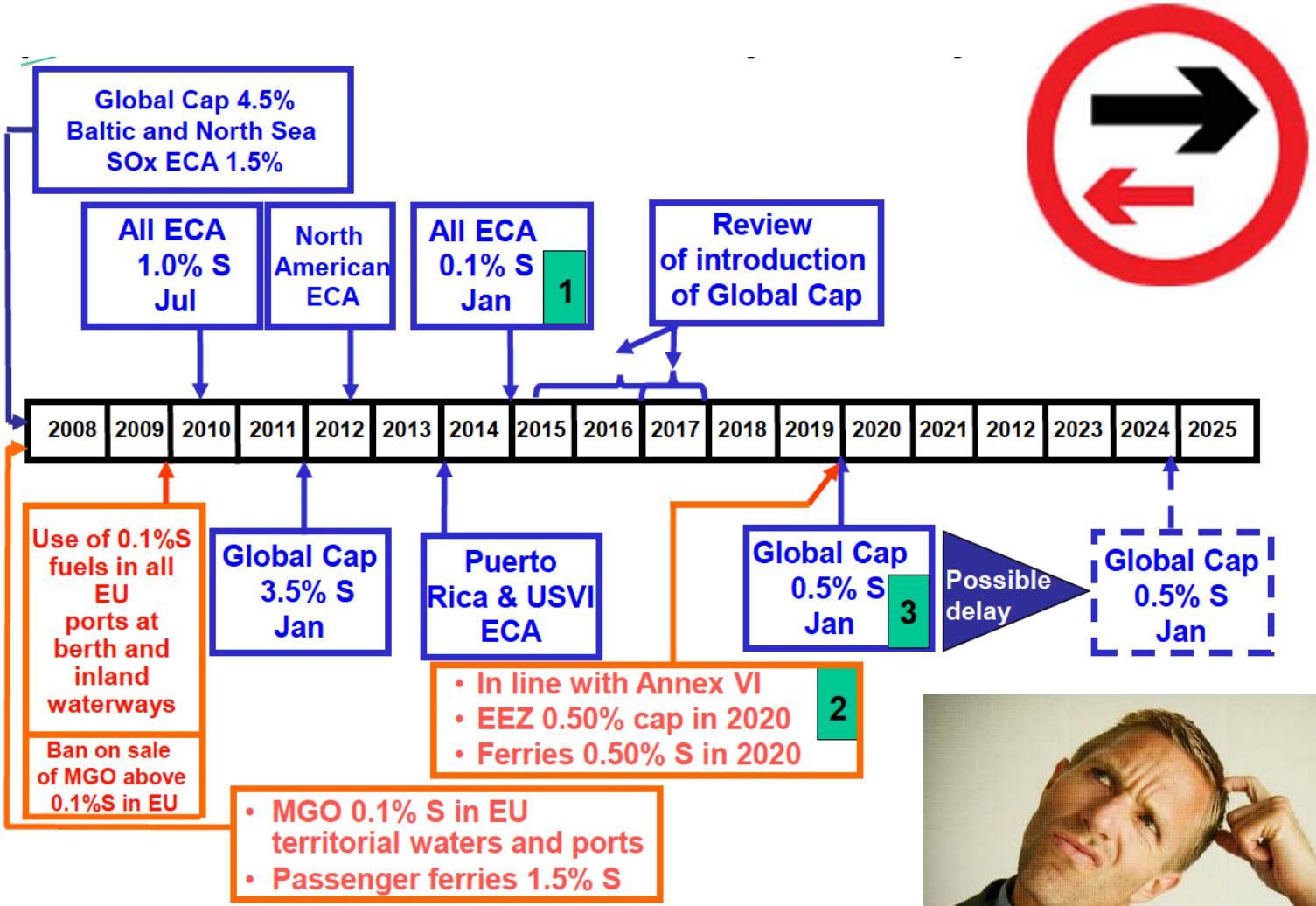
Bunker = 350 milyon MT = %8.4



Source:
Report for the UK Dept of Energy and Climate Change by Purvin & Gertz
June 2011 (Now part of IHS)

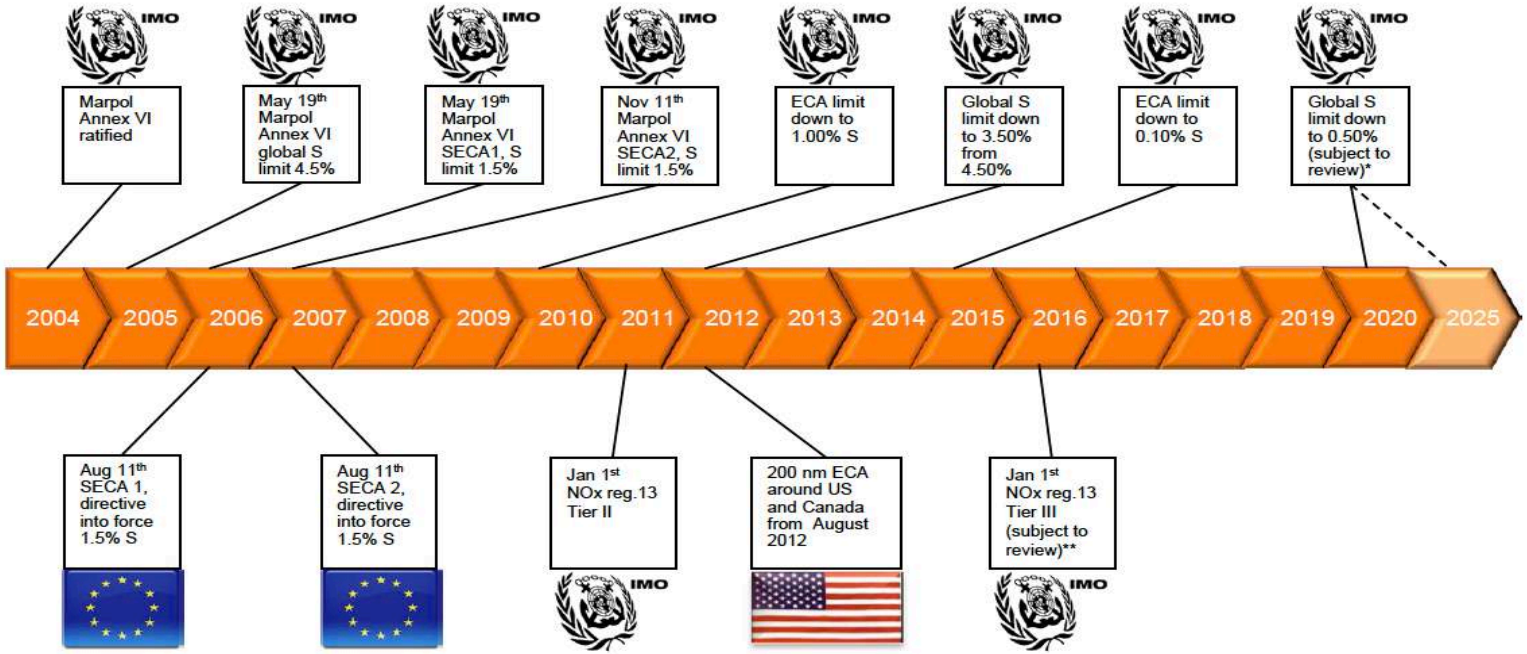
BUNKER 2016

ÖNÜMÜZDEKİ 10 YILDA KARŞILAŞACAĞIMIZ GELİŞMELER



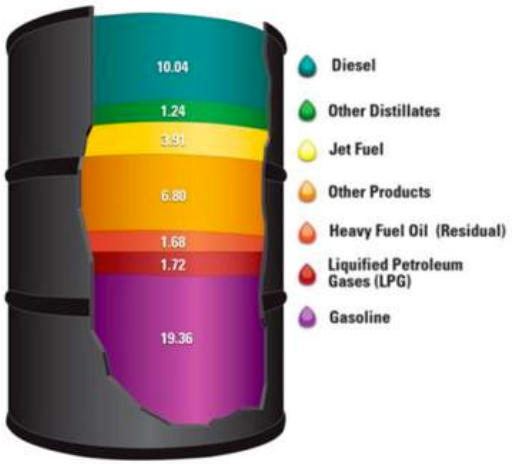
BUNKER 2016

ÖNÜMÜZDEKİ 10 YILDA KARŞILAŞACAĞIMIZ GELİŞMELER



BUNKER 2016
DEĞİŞİM RÜZGARLARI

- Düşük fiyatlar
- Daha çevreci uygulamalar
- Ciddi yaptırımlar
- Yeni yakıtlar
- Artan verimlilik uygulamaları
- Daha fazla rekabet



- Ekonomik ve siyasi belirsizlik ortamında risk yönetiminin önemi artıyor.

BUNKER 2016

ECA & SECA

mevcut

BUNKER 2016

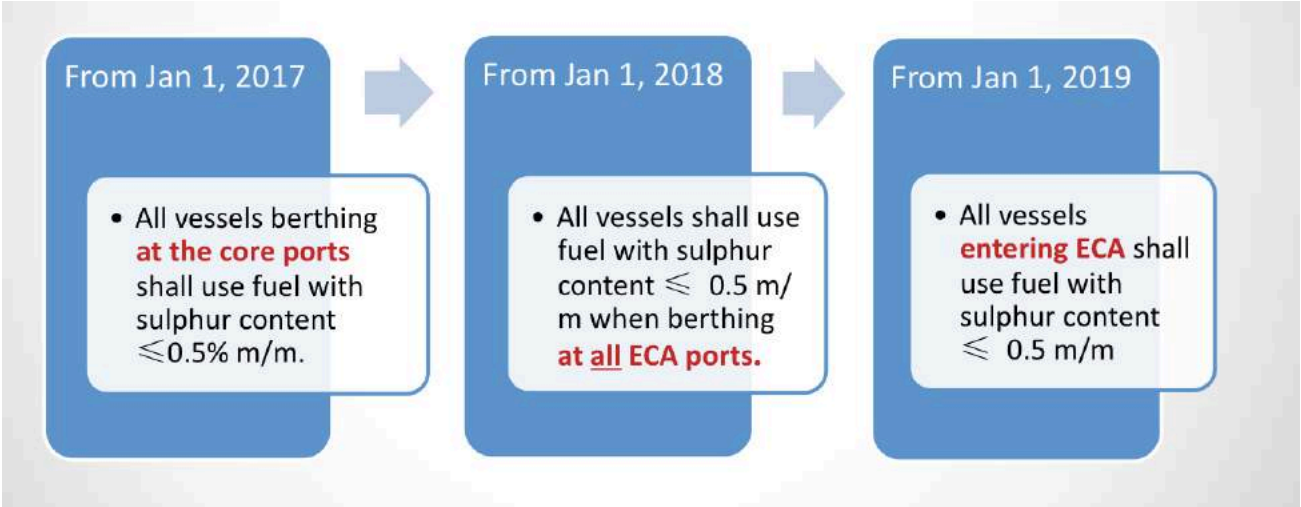
İlave ECA & SECA

YENİ = ÇİN

BUNKER 2016

İlave ECA & SECA

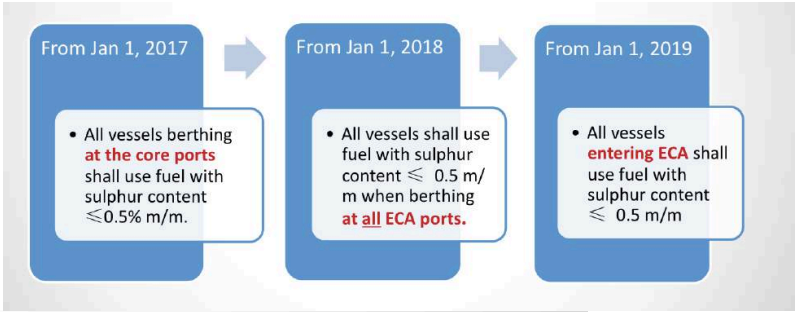
YENİ = ÇİN



BUNKER 2016

ECA & SECA

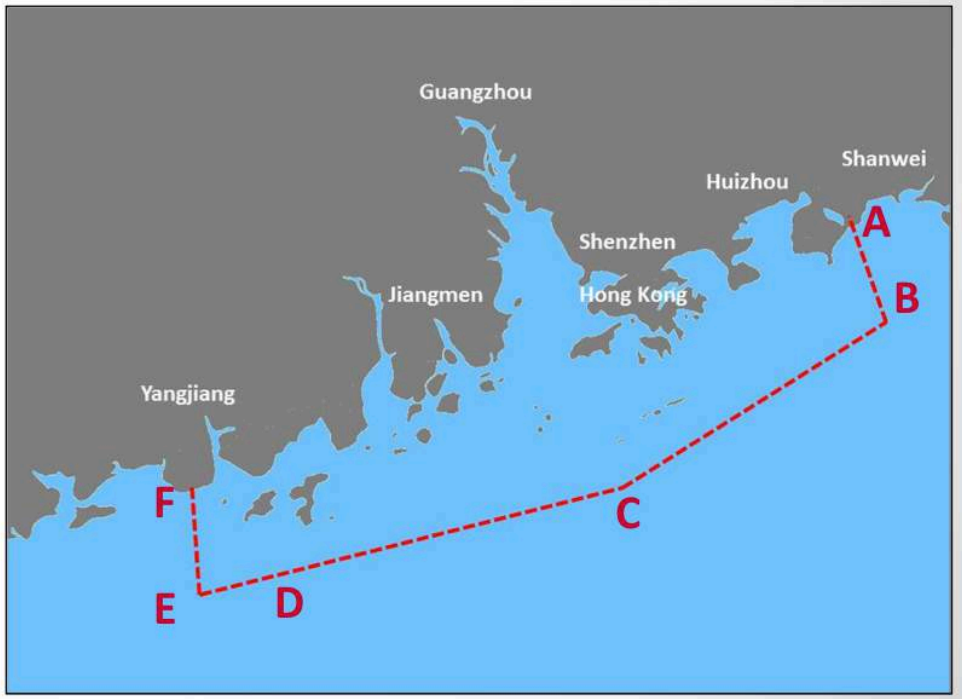
YENİ = ÇİN



1. Pearl Delta:

Sea waters connected by points A - F (excluding waters of HK and Macao)

A. Coastline junction point of Huizhou and Shanwei
B. 12NM off Zhentouyan
C. 12NM off Jiapeng Islands
D. 12NM off Weijia Island
E. 12NM off Dafanshi Island
F. Coastline junction point of Jiangmen and Yangjiang



Inner water range:
The inner water rivers administered by Guangzhou, Dongguan, Huizhou, Shenzhen, Zhuhai, Zhongshan, Foshan, Jiangmen, and Zhaoqing

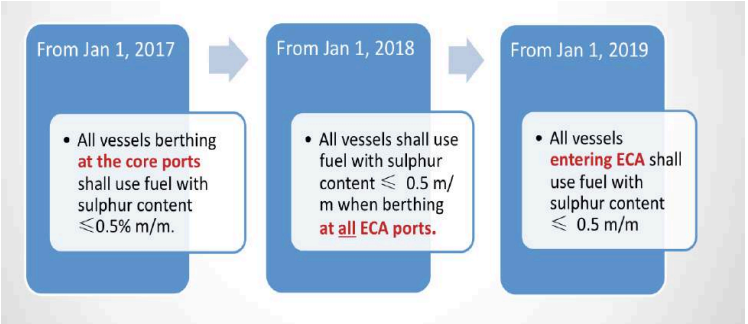
Core Ports:
Guangzhou, Shenzhen, Zhuhai

Main bunker ports:
Guangzhou, Shenzhen (Yantian, Chiwan)

BUNKER 2016

ECA & SECA

YENİ = ÇİN



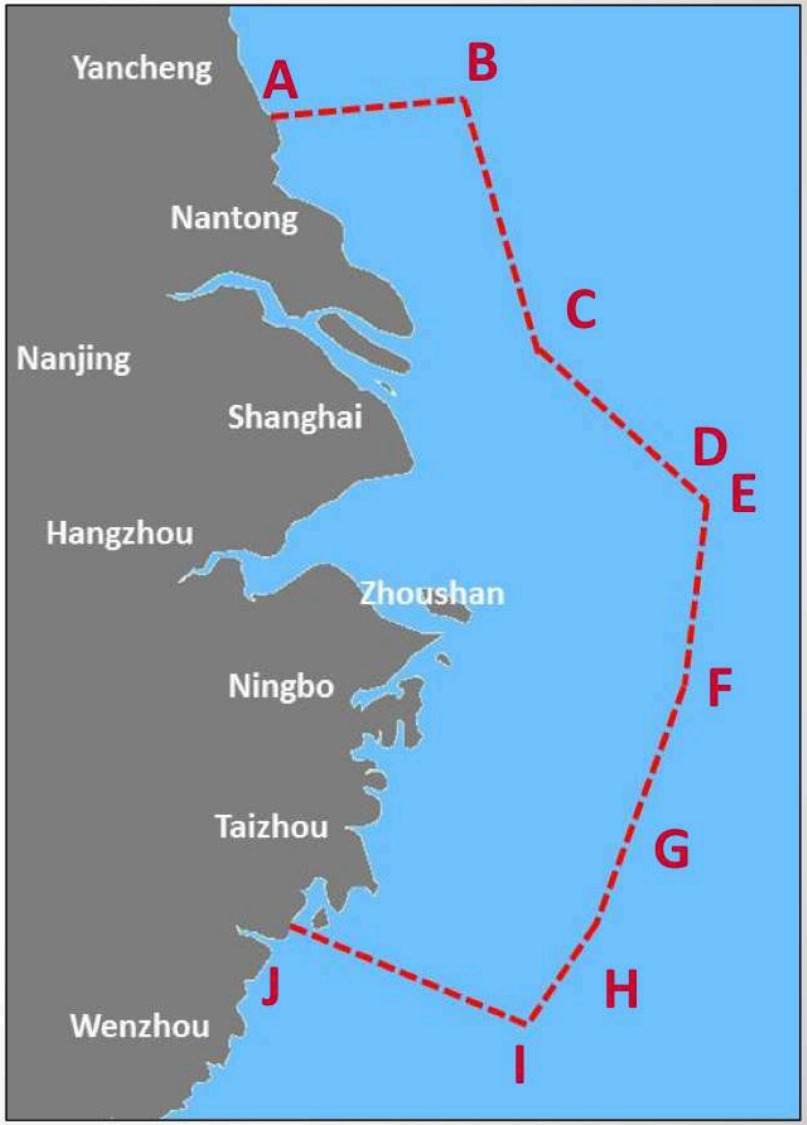
2. Yangtze River Delta

A. Coastline junction point of Nantong and Yancheng
B. 12NM off Waikejiao Island
C. 12NM off Sheshan Island
D. 12NM off Haijiao Reef
E. 12NM off Dongnan Reef
F. 12NM off Liangxiongdi Rock
G. 12NM off Yushan Islands
H. 12NM off Taizhou Islands
I. 12NM off from the coastline junction point of Taizhou and Wenzhou
J. The coastline junction point of Taizhou and Wenzhou

Inner water range:
Nanjing, Zhenjiang, Yangzhou, Taizhou, Nantong, Changzhou, Wuxi, Suzhou, Shanghai, Jiaxing, Huzhou, Hangzhou, Shaoxing, Ningbo, Zhoushan, and Taizhou

Core Ports:
Shanghai, Ningbo, Zhoushan, Suzhou, Nantong

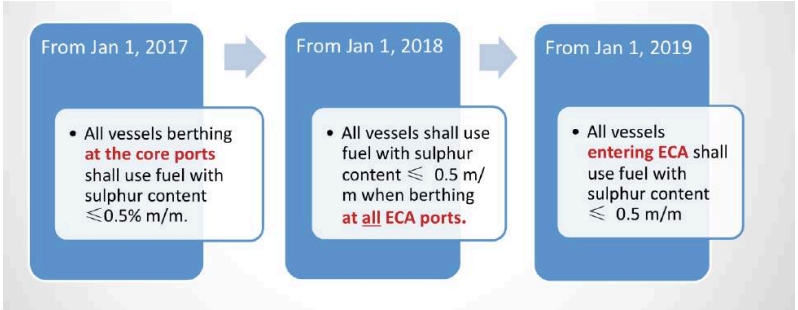
Main bunker ports:
Shanghai, Ningbo, Zhoushan, Nanjing, Taicang, Zhangjiagang, Changshu, and Zhenjiang.



BUNKER 2016

ECA & SECA

YENİ = ÇİN



3. Bohai Sea Waters:

The sea water inside the line of two points: coastline junction point of Dalian and Dandong; coastline junction point of Yantai and Weihai)

Inner water range

Dalian, Yingkou, Jinzhou, Huludao, Qinhuangdao, Tangshan, Tianjin, Cangzhou, Binzhou, Dongyin, Weifang, and Yantai.

Core Ports:

Tianjin, Qinhuangdao, Tangshan, Huanghua

Main bunker ports:

Tianjin, Caofeidian, Jingtang, Qinhuangdao, Dalian, Huanghua, and Yantai.

BUNKER 2016

ECA & SECA da kullanılan yakıtlar

Characteristic	Limit	Distillate		Vacuum Gasoil	Fuel Oil
		DMA 0.1%	DMB 0.1%		RMB 0.1%
Kinematic viscosity, mm2/sb	min.				
- at 40°C	max.	5.466	4.339	-	-
- at 50°C	max.	-	-	12	9-15
Density at 15°C, kg/m3	max.	888.0	899.8	833.1	899-906
Sulphur, % (m/m)	max.	0.098	0.055	0.0137	0.085-0.1
Flash point, °C	min.	86	70	169	85
Pour point (upper), °C					
- winter quality	max.	-6	-9	27	0-15
- summer quality	max.	0	6	27	0-15

BUNKER 2016

ECA & SECA da kullanılan yakıtlar

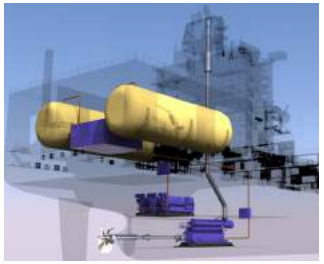
Specifications

Characteristic	Limit	0.1% Fuel Oil	Distillate		Vacuum Gasoil
		RMA 10 With Revisions	DMA 0.1% Sulphur	DMB 0.1% Sulphur	HDME 50
Kinematic viscosity, mm^2/sb	min.		2.00	2.00	
- at 40°C	max.		6.00	11.00	40-75
- at 50°C	max.	10.00			
Density at 15°C, kg/m^3	max.	920.0	890.0	900.0	895.0-915.0
CCAI	max.	850			795-810
Cetane index	min.	-	40	35	-
Sulphur, % (m/m)	max.	0.10	0.10	0.10	0.10
Flash point, °C	min.	60.0	60.0	60.0	>70
Hydrogen sulfide, mg/kg	max.	2.00	2.00	2.00	<1
Acid number, mg KOH/g	max.	2.5	0.5	0.5	<0.1
Total sediment aged, % (m/m)	max.	0.10			0.01
Total sediment hot filtration, % (m/m)	max.				
Oxidation stability, g/m^3	max.		25	25	
Carbon residue, % (m/m)	max.	3.50		0.30	<0.30
- 10% volume distillation	max.		0.30		
Pour point (upper), °C					15-30
- winter quality	max.	21	-6	0	
- summer quality	max.	21	0	6	
Water, % (V/V)	max.	0.30		0.3	0.05
Ash, % (m/m)	max.	0.040	0.01	0.01	<0.01
Vanadium, mg/kg	max.	50			<1
Sodium, mg/kg	max.	50			<1
Aluminium plus silicon, mg/kg	max.	25			<0.3
Lubricity, corrected wsd 1,4) @ 60°C	max.		520	520	<320
Used lubricating oil (ULO), mg/kg		Fuel shall be free of ULO. Fuel is considered to contain ULO when either:			
- Calcium and Zinc	-	Calcium > 30 and Zinc > 15; OR			Calcium<1 Zinc<1
- Calcium and Phosphorus	-	Calcium > 30 and Phosphorus > 15			

BUNKER 2016

Gasoil 0.1 V ULSFO

LNG V SCRUBBERS



Dual & Triple Engines ?
Methanol ?

BUNKER 2016

YENİ YAKITLARLA İLGİLİ MALİYET BEKLENTİLER

Hangi yakıt ?

Hangi ana makina ?

Nerede ?

Ne zaman ?

BUNKER 2016

Yeni standartlar = çevre + insan sağlığı + verimlilik

BUNKER 2015

VERİMLİLİK

SHIP EFFICIENCY

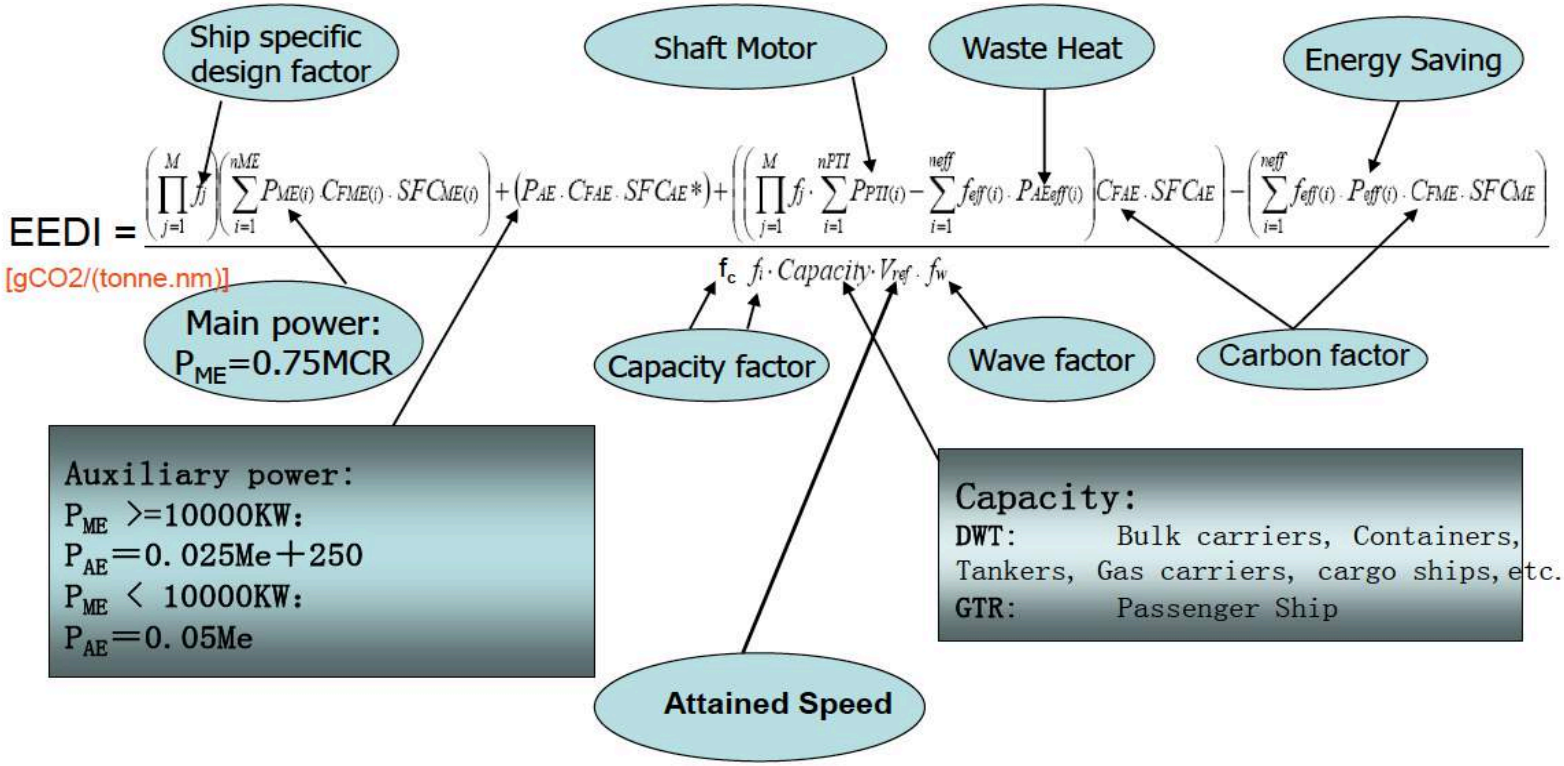
- EEDI (gCO2/tonne.mile) =

$$\frac{\left(\prod_{j=1}^{n} f_j\right)\left(\sum_{i=1}^{nME} P_{ME(i)} \cdot C_{FME(i)} \cdot SFC_{ME(i)}\right) + \left(P_{AE} \cdot C_{FAE} \cdot SFC_{AE}*\right) + \left(\left(\prod_{j=1}^{n} f_j \cdot \sum_{i=1}^{nPTI} P_{PTI(i)} - \sum_{i=1}^{neff} f_{eff(i)} \cdot P_{AEeff(i)}\right) C_{FAE} \cdot SFC_{AE}\right) - \left(\sum_{i=1}^{neff} f_{eff(i)} \cdot P_{eff(i)} \cdot C_{FME} \cdot SFC_{ME}**\right)}{f_i \cdot f_c \cdot Capacity \cdot f_w \cdot V_{ref}}$$

BUNKER 2015

VERİMLİLİK

SHIP EFFICIENCY



BUNKER 2015

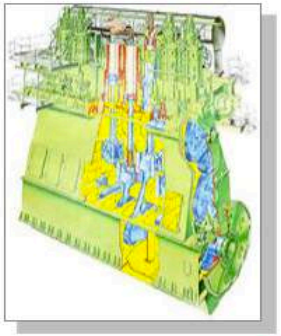
VERİMLİLİK

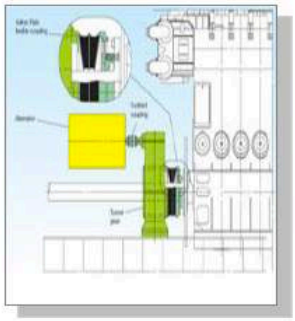
SHIP EFFICIENCY

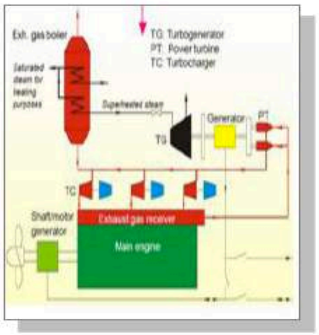
Main Engine(s)	Aux Engine(s)	Innovative Energy Eff. Power Gen. Technologies	Innovative Energy Eff. Propulsion

$$EEDI = \frac{\left(\prod_{j=1}^{M} f_j\right)\left(\sum_{i=1}^{nME} P_{ME(i)} \cdot C_{FME(i)} \cdot SFC_{ME(i)}\right) + \left(P_{AE} \cdot C_{FAE} \cdot SFC_{AE}\right) + \left(\left(\prod_{j=1}^{M} f_j \cdot \sum_{i=1}^{nPTI} P_{PTI(i)} - \sum_{i=1}^{neff} f_{eff(i)} \cdot P_{AEeff(i)}\right) C_{FAE} \cdot SFC_{AE}\right) - \left(\sum_{i=1}^{neff} f_{eff(i)} \cdot P_{eff(i)} \cdot C_{FME} \cdot SFC_{ME}\right)}{f_c \cdot f_i \cdot Capacity \cdot V_{ref} \cdot f_w}$$

[gCO2/(tonne.nm)]





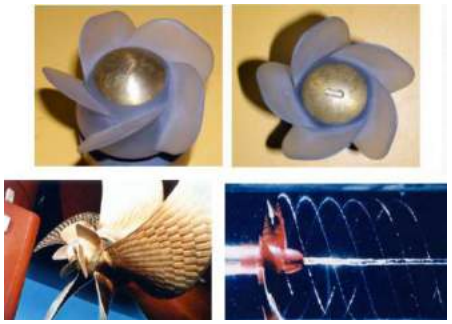


Boilers are excluded from EEDI

BUNKER 2016

VERİMLİLİK

SHIP EFFICIENCY



EEDI = DESIGN INDEX

EEDI indicates the efficiency that is expected for a ship to achieve, based on the ship specifications, calculated by *Engine power*, *SFC*, *DWT* and *Speed*.

$$EEDI = \frac{\text{Engine power} \times SFC \times C_F}{DWT \times \text{speed}} \quad (gCO_2/\text{ton-mile})$$

$$EEDI = \frac{\text{Impact to environment}}{\text{Benefit to society}} = \frac{\text{Power} \times \text{fuel consumption} \times CO_2 \text{ emission factor}}{\text{Capacity} \times \text{ship speed}}$$

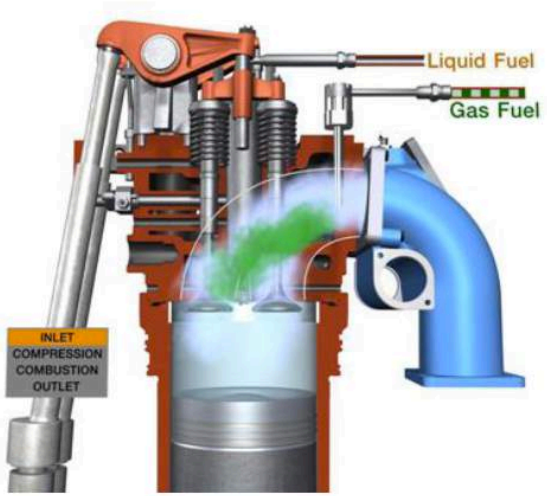
(transportation work)

BUNKER 2016

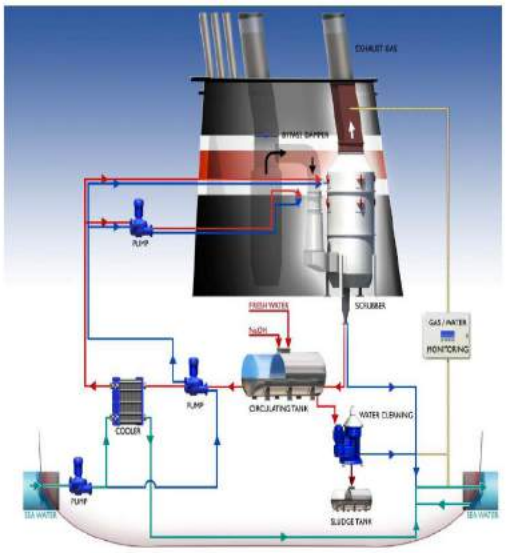
ALTERNATİF BUNKER ÜRÜNLERİNE GEÇİŞ

Source: Rolls Royse (Bergen K-GE)

- Mevcut yakıtlardan çok hızlı vazgeçmiyoruz.
- Mevcut yakıtlara ilave yeni yakıtlar ekleniyor = **LNG**
- Mevcut yakıtlarla yeni yakıtları beraber kullanma imkanları geliyor = **DUAL/TRIPLE ENGINES**
- Mevcut yakıtları kullanmaya devam etmek için ilave aparatlar gerekecek = **SCRUBBERS**



Source: Wartsilla



Source: Forse Technology, 2012

See: http://www.youtube.com/watch?v=J8_D7ASh0_g

BUNKER 2016

ALTERNATİF BUNKER ÜRÜNLERİNE GEÇİŞ

LNG

- Ürün olarak en temiz ve uzun vade de ucuz seçenek.

- Eski gemiler = çok pahalı (scrubber çok daha uygun)
- Yeni inşa = %20 -%40 + maliyet.
- Yaygın ikmal imkanı yok.
- İleride fiyatı ne olur belirsiz.
- İkmal prosedürü tam olgunlaşmadı = uygun gemi adamı zorluğu
- 1. nesil LNG ana makina = yüksek arıza oranı = RİSK
- LNG tankları = hacim problemi = daha az yük taşıma

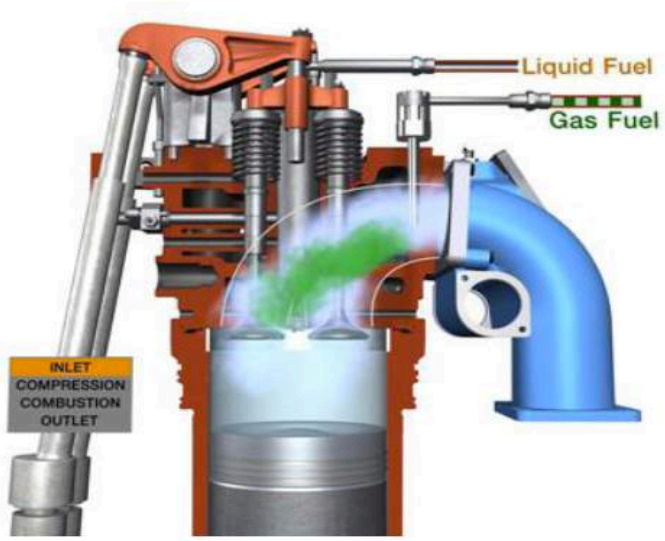
- Petrol/Bunker Şirketleri: depo + barç yatırımı
- Armatör: Yeni inşa yatırımı
- Yatırım yapılan geminin, yatırım yapılan limanlara gitmesi gerekiyor.

BUNKER 2016

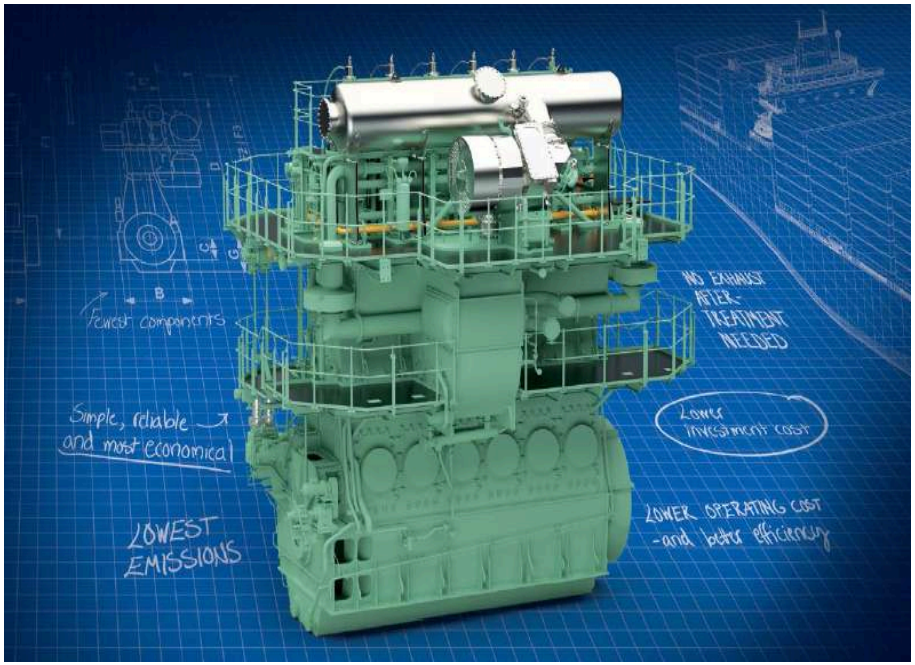
ALTERNATİF BUNKER ÜRÜNLERİNE GEÇİŞ

DUAL/TRIPLE ENGINES

- FO/LNG veya FO/GO/LNG kullanan ana makinalar
- **Dünyanın her yerinde kullanılabilir.**
- Eski gemiler = çok yüksek maliyet (scrubber tercih)
- Yeni gemiler = hala yüksek maliyet.
- 2-3 çeşit bunker ürün depolama zorluğu = hacim problemi
- **Personel yeterliliği ???...**

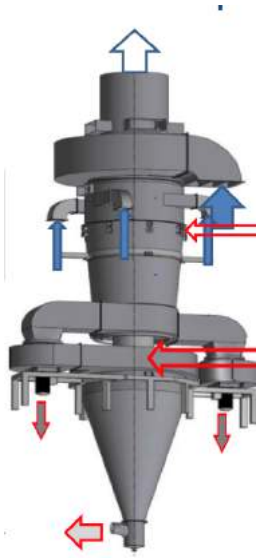


Source: Wartsilla



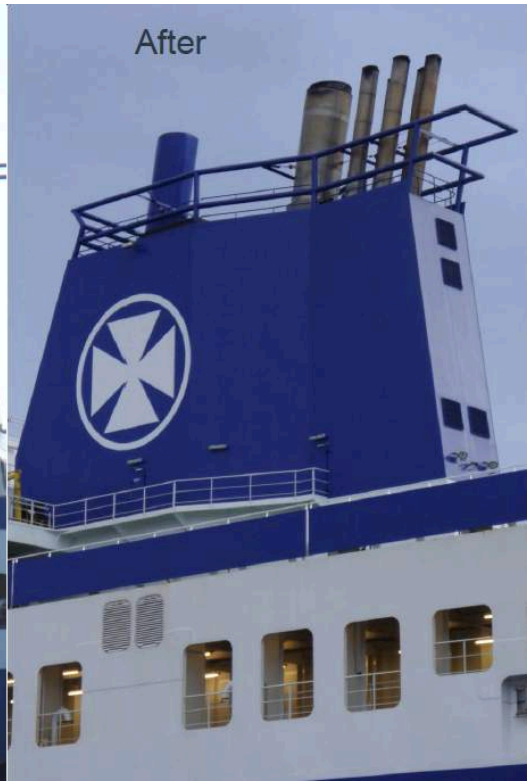
BUNKER 2016

ALTERNATİF BUNKER ÜRÜNLERİNE GEÇİŞ

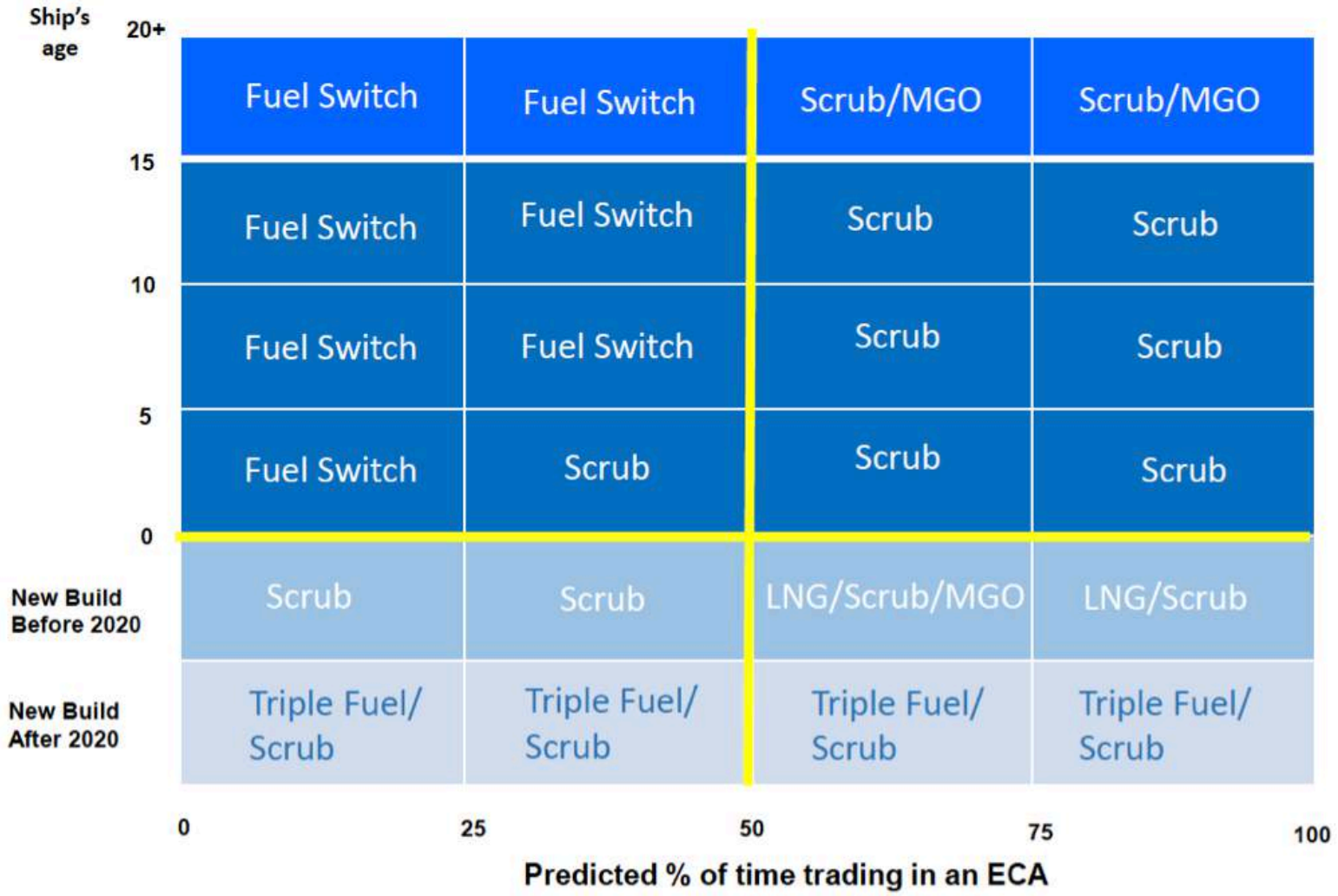


SCRUBBERS

- **Dünyanın her yerinde kabul gören standart ve sertifikalı ürünler mevcut.**
- **Emisyon kontrolleri için yeterli.**
- **Eski gemiler = retrofit = yüksek maliyet**
- **Yeni gemiler = çok daha az maliyet**
- **Atık problemi olabilir (open/close system)**
- **işletme için harcanan enerji hesaba katılmalı.**

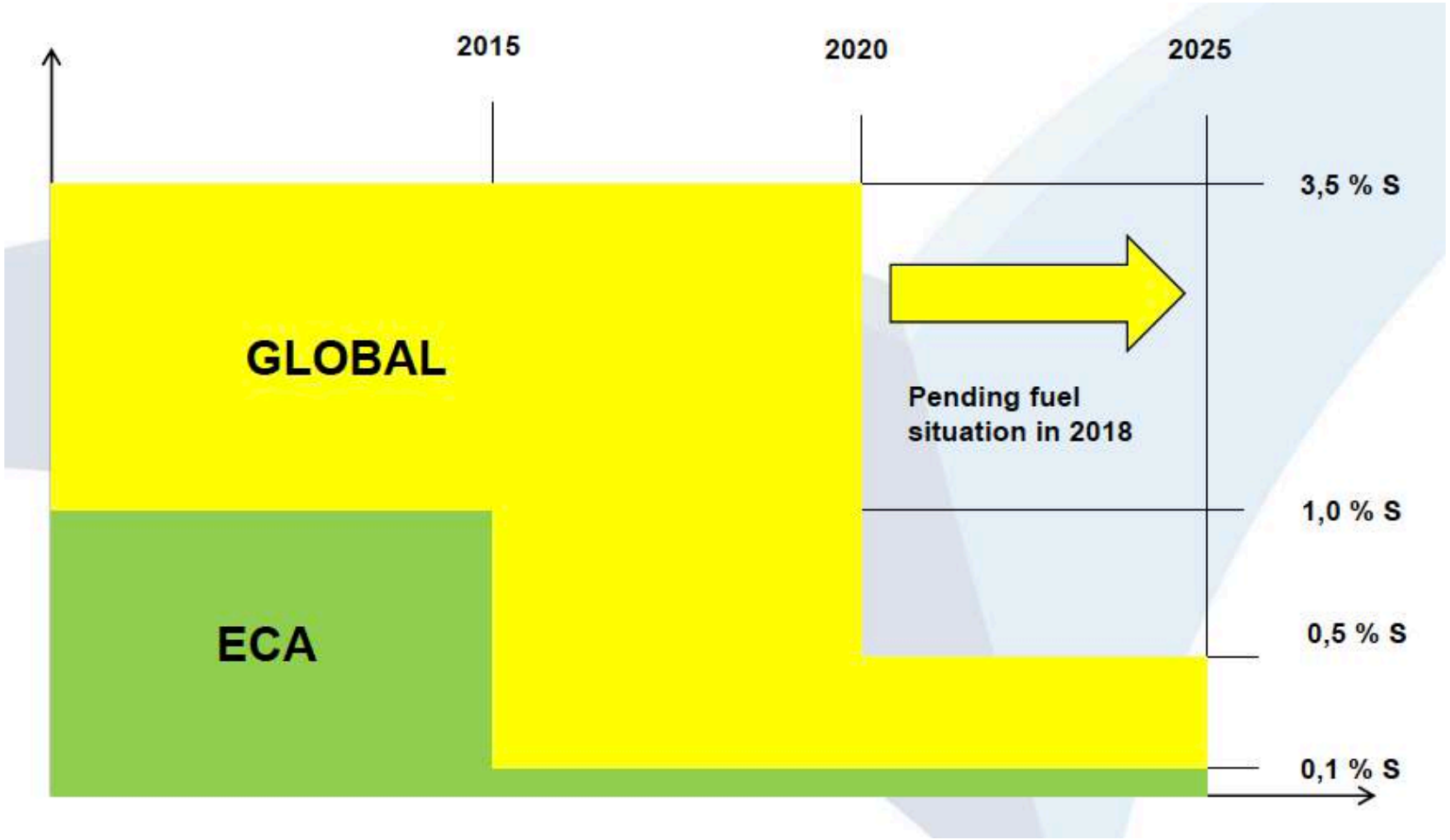


BUNKER 2016


Ship's age
20+
15
10
5
0
Fuel Switch
Fuel Switch
Scrub/MGO
Scrub/MGO
Fuel Switch
Fuel Switch
Scrub
Scrub
Fuel Switch
Fuel Switch
Scrub
Scrub
Fuel Switch
Scrub
Scrub
Scrub
New Build Before 2020
Scrub
Scrub
LNG/Scrub/MGO
LNG/Scrub
New Build After 2020
Triple Fuel/ Scrub
Triple Fuel/ Scrub
Triple Fuel/ Scrub
Triple Fuel/ Scrub
0
25
50
75
100
Predicted % of time trading in an ECA

BUNKER 2016

ÖNÜMÜZDEKİ 10 YILDA KARŞILAŞACAĞIMIZ GELİŞMELER



BUNKER 2016

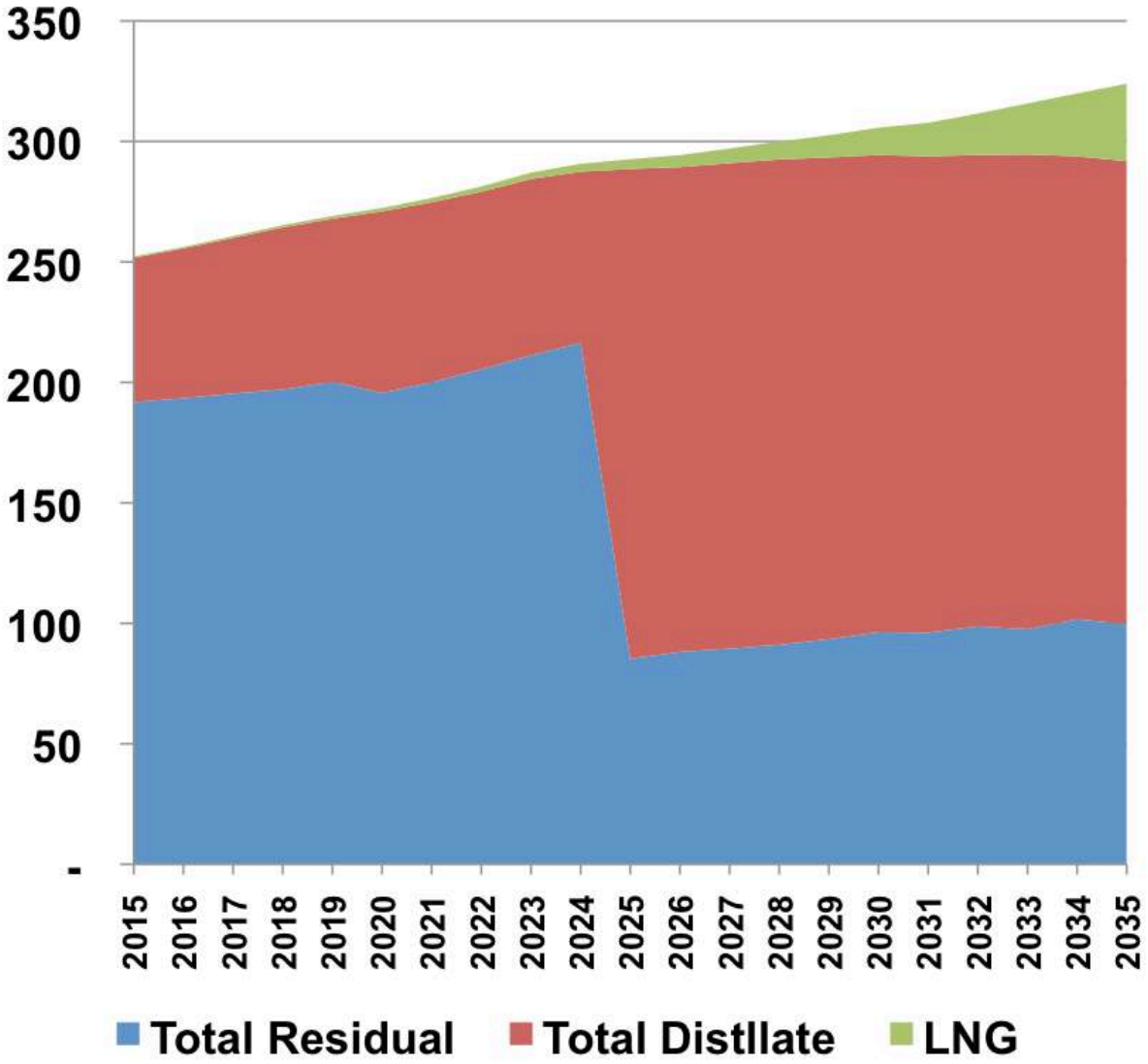
ECA & SECA da kullanılan yakıtlar
Değişim göstergeleri

	2013				2015 Straight Conversion			
	TOTAL	LSFO	HSFO	MGO	TOTAL	LSFO	HSFO	MGO
Rotterdam	10,400,000	2,156,933	7,693,067	550,000	10,409,871	0	7,800,000	2,609,871
Antwerp	7,020,000	1,229,780	4,386,220	1,404,000	6,978,440	0	4,400,000	2,578,440
Amsterdam	650,000	150,000	450,000	50,000	743,250	0	550,000	193,250
Zeebrugge	650,000	150,000	450,000	50,000	743,250	0	550,000	193,250
Gibraltar, Ceuta & Algeciras	4,100,000	984,000	2,296,000	820,000	4,059,720	0	2,300,000	1,759,720
Hamburg	1,400,000	616,000	693,000	91,000	1,379,280	0	700,000	679,280
Le Havre & Cherbourg	50,000	5000	40000	5,000	49,775	0	40,000	9,775
Gothenburg / Copenhagen	1,500,000	660,000	740,000	100,000	1,480,300	0	750,000	730,300
Thames	320,000	140,000	150,000	30,000	507,600	0	160,000	347,600
Falmouth	250,000	120,000	120,000	10,000	82,000	0	80,000	2,000
Portland	125,000	60,000	60,000	5,000	21,000	0	20,000	1,000
Immingham	240,000	60,000	144,000	36,000	189,000	0	144,000	45,000
Dunkirk	178,770	37,830	136,440	4,500	180,628	0	140,000	40,628
St Petersburg	2,000,000	418,248	1,491,752	90,000	1,989,427	0	1,500,000	489,427
Las Palmas	2,100,000	315,000	1,365,000	420,000	2,220,825	0	1,500,000	720,825
Periphery Ports	1,033,300	219,000	289,500	1,524,800	1,033,945	0	300,000	1,733,945
TOTAL	**33,017,070**	**7,321,792**	**20,504,978**	**5,190,300**	**33,068,311**	**0**	**20,934,000**	**12,134,311**
							Increase	↑6,944,011

Speed Increase	Consumption	Increase
10%	20%	8,332,813
30%	50%	10,416,017

BUNKER 2016

ÖNÜMÜZDEKİ 20 YILDA KARŞILAŞACAĞIMIZ DEĞİŞİM



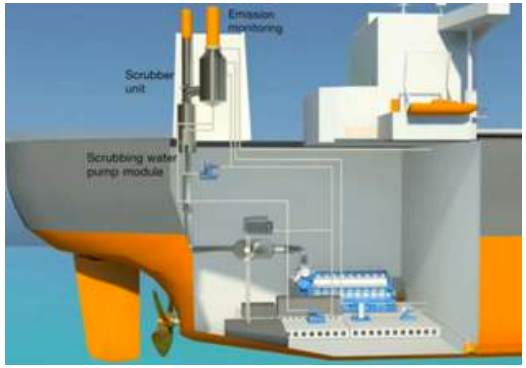
BUNKER 2016

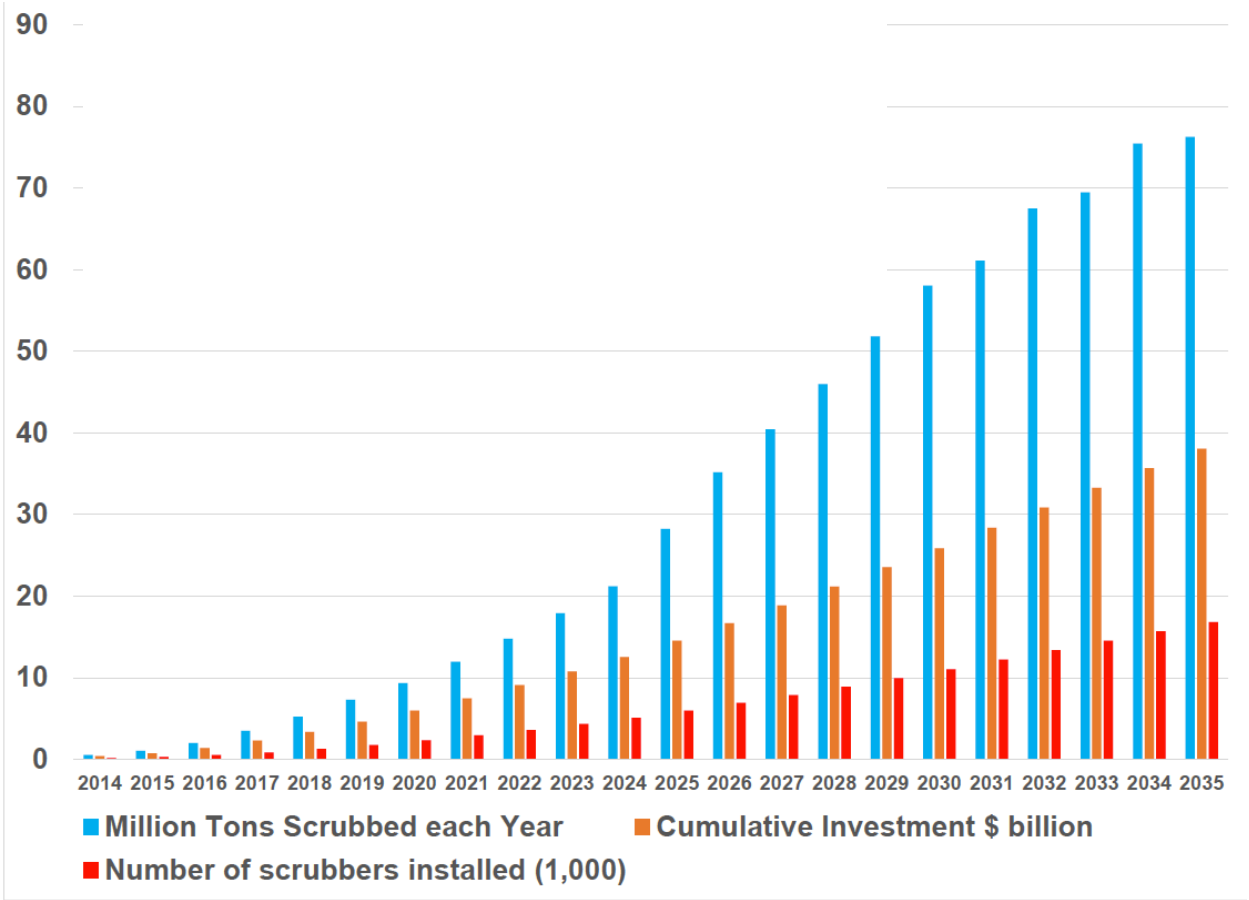
ALTERNATİF BUNKER ÜRÜNLERİNE GEÇİŞ

SCRUBBERS

- 2025 = 6 000 scrubber kullanan gemi.
- 2035 = 12 000 scrubber kullanan gemi.

- USD 15 milyar yatırım





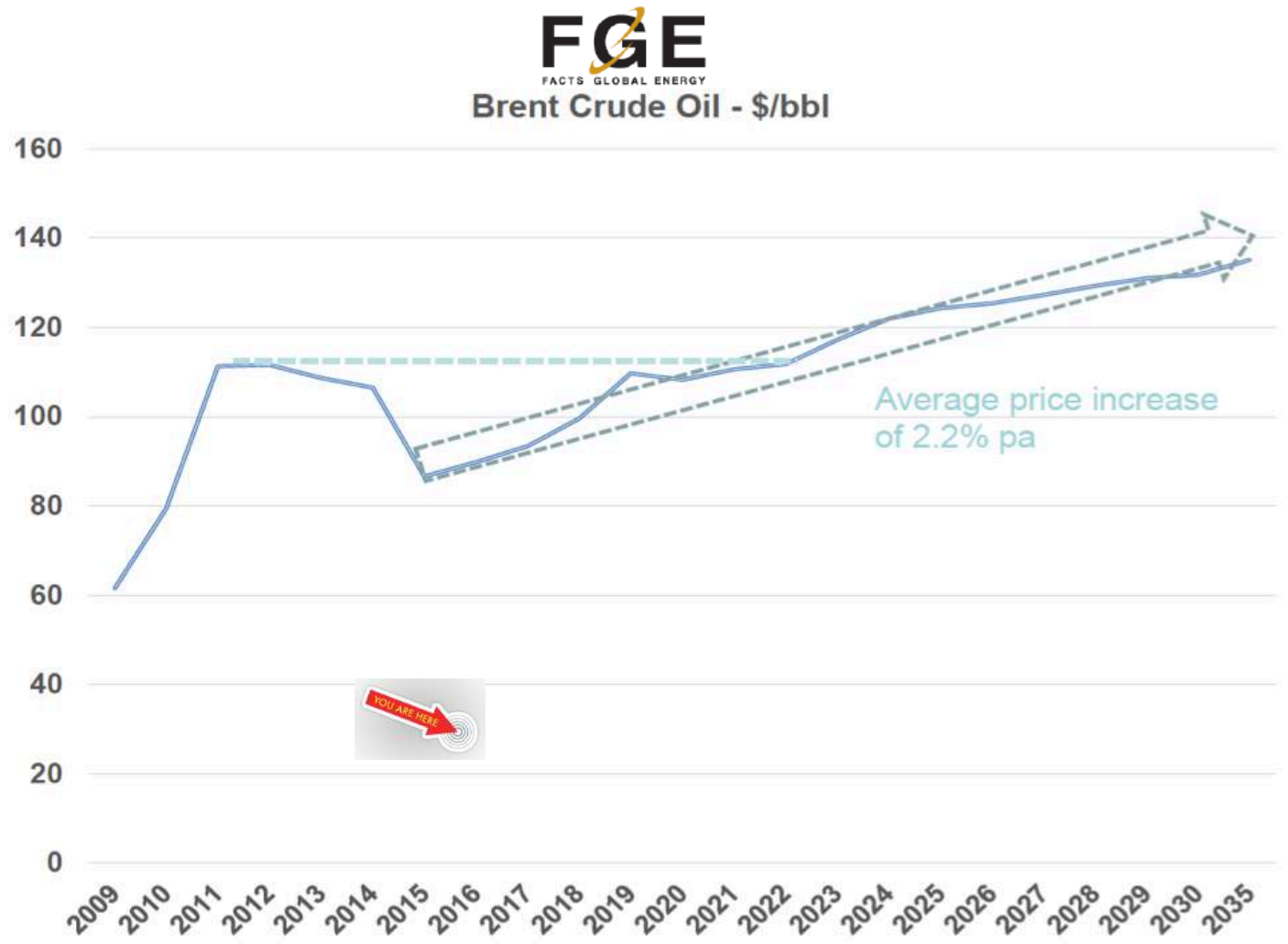
BUNKER 2016

PETROL FİYATLARI - BEKLENTİLER

- **BP - önümüzdeki 3 yıl fiyatların düşük kalacağını ön görüyor.**
- **ENI – önümüzdeki 4 - 5 yıl düşük fiyat, sonra USD 200/bbl.**
- **Goldman Sachs – Düşük fiyatlar uzun süre kalacak.**
- **Bank of America Merrill Lynch – 2016 da ortalama USD 62/bbl.**

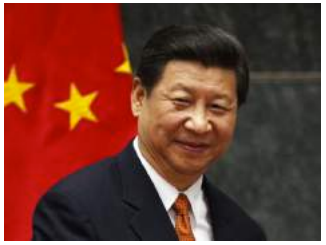
BUNKER 2016

2013 de yapılan tahmin



BUNKER 2016

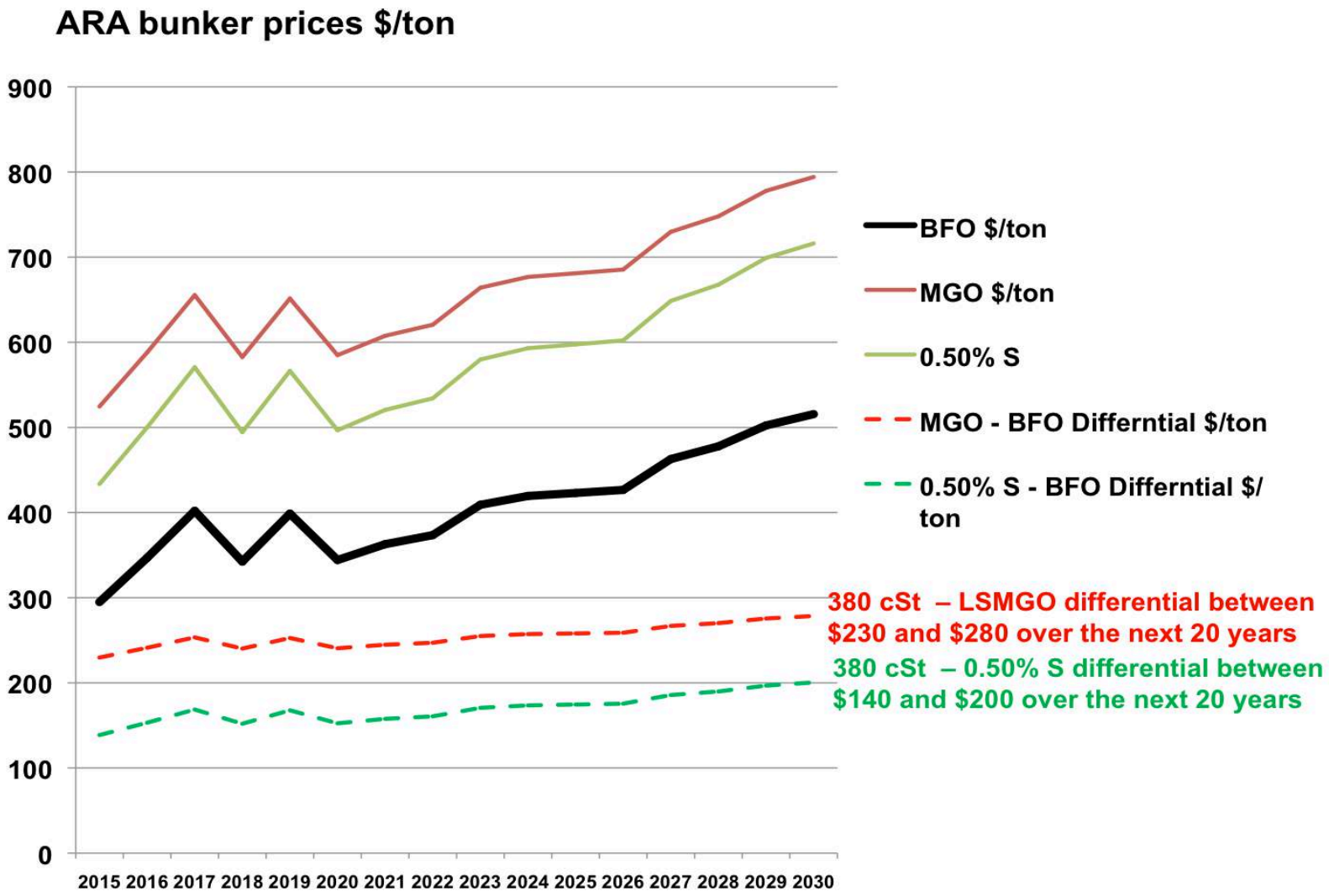
PETROL FİYATLARI - BEKLENTİLER



Predictions of spot annual average Brent $/bbl

BUNKER 2016

PETROL FİYATLARI - BEKLENTİLER



BUNKER 2016

BUNKER SATIN ALMA DETAYLARI

- KALİTE
- MİKTAR
- FİYAT
- ÖDEME TEYİDİ

BUNKER 2016

BUNKER SATIN ALMA DETAYLARI

KALİTE

- Yakıt talebi yapılırken yakıtın teknik ismi kullanılmalıdır
  (RME 180, RMG 380, MGO DMA …)

- Yakıtın hangi standartlar çerçevesinde olması gerektiği belirtilmelidir.
  (ISO 8217:2005, ISO 8217:2012 …)

- Gemiye, ana makinaya, çalışılan bölgeye göre ilave limitler talep edilmelidir.
  (max density 0.95 veya sulphur %3.00 (max)…)

- ISO 8217:2005 ve sonrasında çıkan kalite çerçevesi esas alınmalıdır:

ISO 8217:2005
ISO 8217:2010
ISO 8217:2012(E)

ÖRNEK:

100 MT RME 180 (ISO 8217:2010) max sulphur %3.00
50 MT MGO DMA (ISO 8217:2005) max sulphur %0.1 , max density 0.86

BUNKER 2015

BUNKER SATIN ALMA DETAYLARI

ÖRNEK INQUIRY

Please kindly quote your best for our following inquiry:

Vessel :
IMO:
Dwt/Grt/Loa:
Flag:
Supply Port :
ETA:
Quantity&Fuels: 500 Mtons - HS/LS IFO 380 CST (RMG380 - Max. Sulph. 3,5 pct.)
50 Mtons - LS MGO DMA (Max. Sg. 0,86 - Max. Sulph. 0,1 pct.)

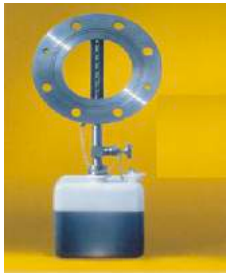
Fuel Specs: In compliance with the requirements of ISO 8217:2010 for petroleum products (Marine Fuel)
For Vanadium content above 200 mg/kg,
Sodium content must be max 30 pct. of Vanadium content

Buyer Account:
Payment terms:
Agent :

Prices to be quoted per metric ton with applicable charges specified (barging, wharfage, overtime, tax etc.) if any.
Additional charges such as barging, wharfage, overtime and tax shall be specified.

The following parameters to be advised in your quotation:

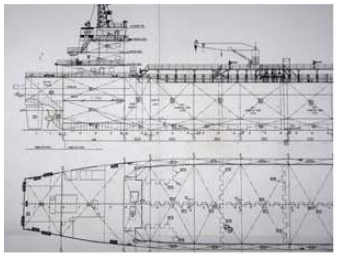
- **Density at 15 deg. C, kg/m3**
- **Water content, pct (v/v)**
- **Sulphur content, pct (m/m)**
- **Ash content, pct (m/m)**



BUNKER 2016

BUNKER SATIN ALMA DETAYLARI

MİKTAR



- "MARPOL Annex VI bunker supply procedures"

- MARPOL Annex VI Procedures:
  - Yakıt Miktarı = "bunker barcının" ölçüleri esastır.
  - Damlama usulü numune = "yakıt alan gemin" manifoltu.

Eğer Yakıt alacak geminin, yakıt manifoltunda "damlama usulü numune alma aparatı" yok ise, numunenin "bunker barç manifoltundan" alınması için talep "satın alma" aşamasında bildirilmelidir.

- Bunker Barcı = Liman veya klas kurumundan güncel kalibrasyon cetveli.

Six annexes:
- Annex I (oil) - mandatory
- Annex II (chemicals) - mandatory
- Annex III (packaged dangerous goods)
- Annex IV (sewage)
- Annex V (garbage)
- Annex VI (air pollution / energy efficiency)

BUNKER 2016

BUNKER SATIN ALMA DETAYLARI

FİYAT

- Piyasadan *"günlük fiyat"* veya,
- Platts ve benzeri kurumların yayınladığı fiyat seviyelerine göre *"formül"*.

- Yakıt ikmalinden en az 4-5 iş günü önce bağlamak ideal.
- Spekülatif son güne bırakmak = RİSK

- **USD 10.00/MT daha ucuz = dünyanın en pahalı yakıtı ???...**

- En ucuz yakıt size pahalıya mal olabileceği gibi,

"En pahalı yakıt da en kaliteli yakıttır" anlamına gelmeyebilir.

- **En ucuz yakıt = güncel standartlarda, piyasa fiyatına, eksiksiz alınmış yakıttır.**

Firm filed for Chapter 11 in Denmark on Friday

Bunker

BUNKER 2016

OYUNUN KURALLARINI DEĞİŞTİREN GELİŞME

Ekim 2014

Global debts could top $1.5 billion.

OW owes industry players 'at least $730 million'

18th November 2014 12:35 GMT

OW Bunker issues profit warning

7th October 2014 15:35 GMT

OW Bunker: Investor speaks of 'breach of trust'

24th October 2014 15:59 GMT

OW Bunker to undergo restructuring procedure

6th November 2014 07:15 GMT

OW Bunker: More details emerge on fraud allegations

6th November 2014 13:00 GMT

> 125 million dollars is a lot to hide.

ARA market: 'Everyone affected' by OW non-payments

11th November 2014 17:30 GMT

Denmark's bunkering industry 'can get over image loss'

13th November 2014 15:55 GMT

Denmark's bunkering industry 'can get over image loss'

13th November 2014 15:55 GMT

Lawyer: Senior staff had every opportunity to track Singapore events

27th November 2014 17:15 GMT

OW Bunker files for bankruptcy

7th November 2014 22:32 GMT

OW's Singapore subsidiary executives seen as scapegoats

10th November 2014 00:10 GMT

Danish bunkering sector has suffered a loss of image

Suppliers challenge OW receivers' right to unpaid bunkers

1st December 2014 14:05 GMT

OW Bunker case under review by serious crime office

4th December 2014 13:07 GMT

Report: US investors gunning for OW backers

4th December 2014 11:00 GMT

BUNKER 2016

BUNKER SATIN ALMA DETAYLARI
ÖDEME TEYİDİ

- **Güven zincirinine ilave halka = Ödeme Teyidi**

- **Armatörler, *"bunker trader"* aracılığı ile alınan yakıtların faturası ödenmeden önce, *"physical bunker supplier"* dan bunker ikmali ile ilgili borç kalmadığına dair yazılı teyit isteyebilirler.**

- **Bunker Trader = finansör**
- **Armatör = finansı kullanan**

BUNKER 2016

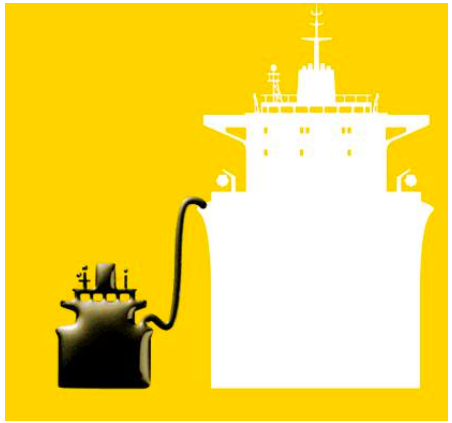
BUNKER İKMALİ
İKMAL ÖNCESİ

MÜMKÜNSE HER İKMALDE,
EN BAŞTAN
TARAFSIZ SURVEY KULLANINIZ !

MARPOL 73/78 ANNEX VI
PROSEDÜRLERİ VE DÖKÜMANTASYONU ESAS ALINMALIDIR.

BUNKER BARCI TARAFINDAN HAZIR BULUNDURULMASI GEREKENLER:

BUNKER ÜRÜNÜNÜN YÜKLEME BELGELERİ (MİKTAR VE CİNS)
ÜRÜN KALİTE BELGESİ
MSDS FORMLARI
TESLİMAT ÖNCESİ DURUM TESPİT TUTANAKLARI
1 BÜYÜK + EN AZ 3 ADET NUMUNE ŞİŞESİ
NUMUNE MÜHÜRLERİ
BDN (BUNKER DELIVERY NOTE)
MANİFOLT DAN DAMLAMA USULÜ NUMUNE ALMA APARATI

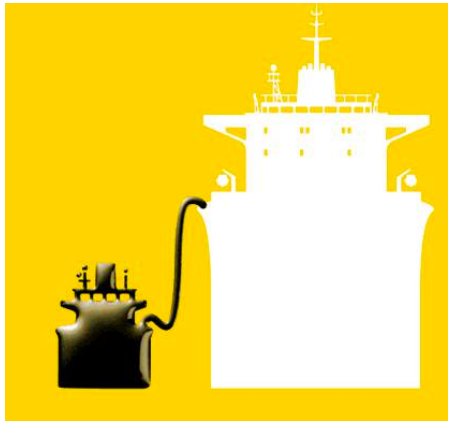


BUNKER 2016

BUNKER İKMALİ
İKMAL ÖNCESİ

- Gemi acentasından ikmal detayları teyit.
- Bunker Barcı yükleme
- Yakıt alacak gemiye yanaşma (mühürlü tanklar)
- MSDS formları
- **Bunker Barcı Kalibrasyon cetveli**
- Mühürlerin sökülmesi
- Bunker Barç tanklarında ölçüm.
- **Teslimat Öncesi Durum Tespit Tutanağı + Check List**
- Hortum Bağlantısı
- **Damlama Usulü Numune alma aparatı gemide yoksa bunker barcından alınacağının teyidi.**

MÜMKÜNSE HER İKMALDE,
EN BAŞTAN
TARAFSIZ SURVEY KULLANINIZ !

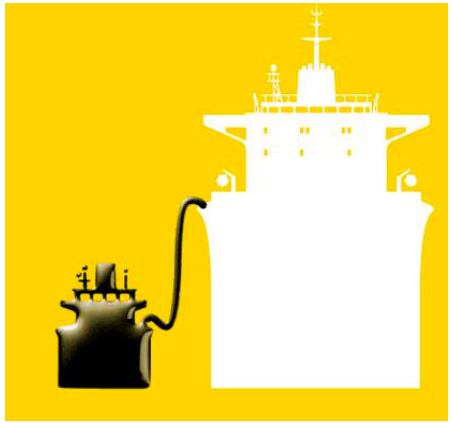


BUNKER 2016

BUNKER İKMALİ
İKMAL SIRASINDA

- Numune alım gözlemi = Bunker Barç Temsilcisi + Gemi Temsilcisi
- Numune alım = ikmal boyunca (damlama) + 1 büyük kap
- Numune Kapları = etiket + numune numaraları + mühürler + kaşe

MÜMKÜNSE HER İKMALDE,
EN BAŞTAN
TARAFSIZ SURVEY KULLANINIZ !



BUNKER 2016

BUNKER İKMALİ
İKMAL BİTİMİ

- Bunker barç tanklarında ölçüm = Bunker Barç temsilcisi + Gemi Temsilcisi
- BDN (Bunker Delivery Note) doldurulur.
- Numune mühür numaraları BDN'e kaydedilir.
- 1 numune (min) yakıt alan gemiye,
- 1 numune MARPOL numunesi olarak yakıt alan gemiye,
- 1 numune (min) bunker barcına verilir.

MÜMKÜNSE HER İKMALDE,
EN BAŞTAN
TARAFSIZ SURVEY KULLANINIZ !

- İkmal sonunda kalkış için yakıt alan geminin kaptanından izin istenir.

ALLAH SELAMET VERSİN

BUNKER 2016

TÜRK BUNKER SEKTÖRÜ

DÜŞÜK KÜKÜRT UYGULAMASI

2012 de Limanlarımızda düşük kükürt (%1.5) uygulamasına geçildi

ISTANBUL & MARMARA, AEGEAN, MEDITERRANEAN, BLACKSEA REGIONS
CHAMBER OF SHIPPING

[illegible] :

Our Reference : 3528 21.09.2011

Subject : **About Quality of Fuel**

Circular No: 517 / 2011

Reference: 07.09.2011 dated and 25903 numbered letter of Prime Ministry, Undersecretariat of Maritime Affairs, General Directorate of Marine Transport.

It is enclosed herewith the Reference letter containing that vessels coming to ports of our country can not use marine diesel whose Sulphur content exceeds 0.1% by mass as of 01.01.2012 and also, vessels with Turkish Flag shall not use marine fuels whose sulphur content exceeds 1,5% in SOx Emission Detection Fields determined by IMO in accordance with Marpol Annex-VI.

Likewise, Passenger Vessels sailing in our country's marine jurisdictions can not use marine fuels whose Sulphur content exceeds 1.5% by mass.

Respectfully submitted,

Yours Faithfully,

Signature
Murat TUNCER
General Secretary

ANNEXES:
ANNEX-1: Reference letter (2 pages)

DISTRIBUTION:
Due:
- To All Members (in Web page)
- Turkish Shipowners Association
- S/S Ship Owners Motor Carriers Coop.
- Maritime Association of Shipowners and Agents
- IMEAK DTO 14 and 30 Numbered Prof. Com. Chair.
- Association of Ship Fuel Suppliers
- S/S Sea Tankers Fuel Oil Transport Coop.

Information:
- Y/K Chairman and Members
- IMEAK DTO Environment Commission

REPUBLIC OF TURKEY, PRIME MINISTRY, UNDERSECRETARIAT OF MARITIME AFFAIRS
General Directorate of Marine Transport

Number : B.02.01.DNM.0.06.14.01.143.01/25903 07/09/2011

Subject : Quality of Fuel

TO ISTANBUL & MARMARA, AEGEAN, MEDITERRANEAN, BLACKSEA REGIONS
CHAMBER OF SHIPPING
(Meclisi Mebusan Cad. No: 22 Findikli / ISTANBUL)

Reference: a) 04.08.2011 dated and 1116 numbered your letter,
b) 21.06.2011 dated and 2480 numbered letter of IMEAK Chamber of Shipping addressed to your Ministry,
c) "Regulation on Reduction of Sulphur Rate in Some Types of Fuel Oils", which has entered into force by being published in 6 October 2009 dated and 27368 numbered Official Gazette,
d) "Regulation about Making Amendment in the Regulation on Reduction of Sulphur Rate in Some Types of Fuel Oils", which has entered into force by being published in 31 December 2009 dated and 27448 numbered Official Gazette,

It is stated that it is requested to continue using the normal marine fuels in the reference (b) letter by IMEAK (Istanbul & Marmara, Aegean, Mediterranean, Blacksea Regions) Chamber of Shipping on account of the fact that any emission detection field has not been declined in our country yet by stating with your reference (a) letter that vessels coming to ports of our country as of 2012 can not use marine diesel whose sulphur content exceeds 0,1 % under the scope of "Regulation on Reduction of Sulphur Rate in Some Types of Fuel Oils", which has entered into force with 29.09.2009 dated and 2009/15478 numbered Council of Ministers' Decision; it can not be understood how to make the application for the fossil fuels. In the continuation of letter, it is requested to assess the reference (b) letter sent in the attachment of letter with reference to the works conducted by our Undersecretariat in connection with marine fuels and to inform its result to your Ministry.

As it is known, reference (c) regulation, enacted in coordination with your Ministry for harmonization with European Union Directives before "Environment Section" negotiated within the scope of harmonization works conducted in European Union membership process, has replaced with reference (d) regulation.

When reference (b) letter is inspected, it is understood that reference (c) and (d) regulations are interpreted as "vessels coming to ports of our country can not use marine diesel whose sulphur content exceeds 0.1% by mass as of 01.01.2012". Before aforementioned regulation is enacted and subsequently, meetings have been organized by the sector representatives regarding the subject with the participation of Energy Market Regulatory Board (EPDK), Association of Ship Fuel Suppliers and Chamber of Shipping and such developments have been mentioned in the aforementioned meetings.

In this respect, marine fuels have been determined by the regulations enacted by EPDK and while fuels which are commonly defined as gas oil or diesel in the marine language, are called as Group I marine diesel and Group II marine diesel in the relevant regulations, fuels which are commonly defined as fuel oil in the marine language, are called as marine fuel in the relevant regulations. These fuels are produced and supplied to the market according to TS ISO 8217 standard in our country.

REPUBLIC OF TURKEY, PRIME MINISTRY, UNDERSECRETARIAT OF MARITIME AFFAIRS
General Directorate of Marine Transport

Number : B.02.01.DNM.0.06.14.01.143.01 .../.../2011

Subject : Quality of Fuel

It is resolved in 7th article of reference (c) regulation amended with reference (d) that marine fuels whose sulphur content exceeds 0,1 % by mass can not be used as of 01.01.2012 in the inland vessels and in the vessels on the quay. It has been resolved according to the communiqué enacted by EPDK and published in 11 October 2009 dated and 27373 numbered Official Gazette (Bunker Fuel Serial No: 3) that from among marine fuels supplied to the market or circulating as of 31.12.2011, Group I marine diesel can contain maximum 0,1 % sulphur and Group II marine diesel can contain maximum 1,5 % sulphur and this situation is supportive to the provision of aforementioned regulation.

Although it is also stated according to 5th article of reference (c) regulation amended with reference (d) that marine fuels, whose sulphur content exceeds 1,5 %, is not used in SOx Emission Detection Fields in our country's marine jurisdictions, there is not any SOx Emission Detection Field determined in our country yet. However, it has been also resolved in this article that vessels with Turkish flag can not use marine fuels whose sulphur content exceeds 1,5% in accordance with MARPOL Annex 6 in SOx Emission Detection Fields defined by International Maritime Organization. Additionally, it has been also resolved in this article that all passenger vessels providing regular service should use marine fuels whose sulphur content does not exceed 1,5 % while they are sailing in our country's marine jurisdiction.

Consequently, marine fuels have been regulated with the aforementioned regulations and there is not any additional regulation made by our Undersecretariat.

I kindly request you to be informed and to take necessary actions.

Signature

Dr. Özkan POYRAZ
On behalf of Undersecretary
General Manager

DISTRIBUTION
Due:
To Ministry of Environment and Urban Planning
(General Directorate of Environment Management)

Information:
IMEAK Chamber of Shipping

BUNKER 2016

TÜRK BUNKER SEKTÖRÜ
TİCARİ YAKITLAR
(ÖTV'si sıfırlanmış yakıtlar)

- 9 000 deniz aracı ÖTV si sıfırlanmış akaryakıt kullanıyor.

- 350 000 MT/yıl civarı yakıt satılıyor.

- ÖTVsi sıfırlanmış yakıta karşı çıkanlar:
  1- Sektörü tanımayanlar
  2- Rant sisteminden çıkarları olanlar.

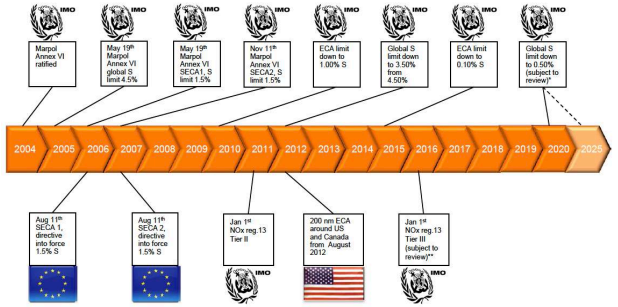
- Suistimal var, oran çok düşük.

- Suistimalleri yapanların genelde Denizcilik sektörünün tanımadığı, gerçek ihtiyaç sahipleri olmadığı göze çarpmaktadır.

- Gerçek ihtiyaç sahipleri kontrol mekanizmalarını destekliyorlar.

- Sektör oyuncularının seslerini daha çok duyurup, Devletin ve Denizciliğimizin kazançlarını rakamlarla anlatmaları gerekiyor.

BUNKER 2016
SONUÇ



- **01.01.2015 den itibaren yürürlüğe giren emisyon kısıtlamalarına dikkat.**

- **LNG, Dual/Triple Engines ve Scrubber = şirketlere özel kararlar.**
- **Ship Efficiency = EEDI = yeni tasarımlar ve yatırımlar.**

- **Düşük Petrol Fiyatları = siyasi geçici aşırı düşüş**
- **OW Bunker = güven zinciri kırıldı = güven halkası eklenmeli.**

- **Daha teknik satın alma = standartlar ve kaliteler detaylandırılmalı.**

- **MARPOL ANNEX VI = alınan numune herkesi bağlar = titiz numune alımı.**
- **MARPOL ANNEX VI = ikmal prosedürleri = ikmal öncesi, ikmal ve sonrası kayıt edilmeli.**

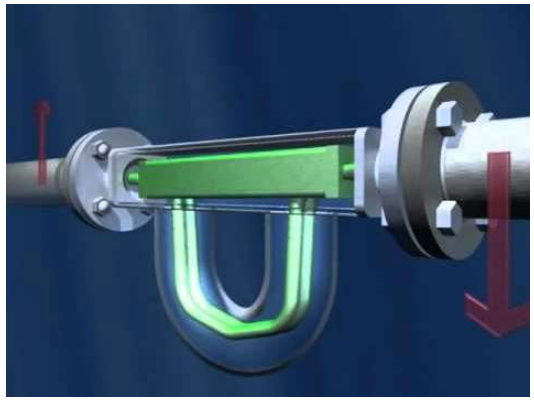
BUNKER 2016

TEŞEKKÜRLER

A.Deniz ERAYDIN

13 ve 28 Numaralı Meslek Komiteleri Sunumu
02 Şubat 2016 - IMEAK DTO Meclis Salonu

EMERSON CORIOLIS MASS FLOW METERS



EMERSON™

EMERSON CORIOLIS MASS FLOW METERS

İkmal sırasında anlık sunulan veriler:

- Kesafet (density)
- Sıcaklık
- Litre karşılığı Metrik Ton
- Su miktarı
- Hava miktarı

EMERSON CORIOLIS MASS FLOW METERS

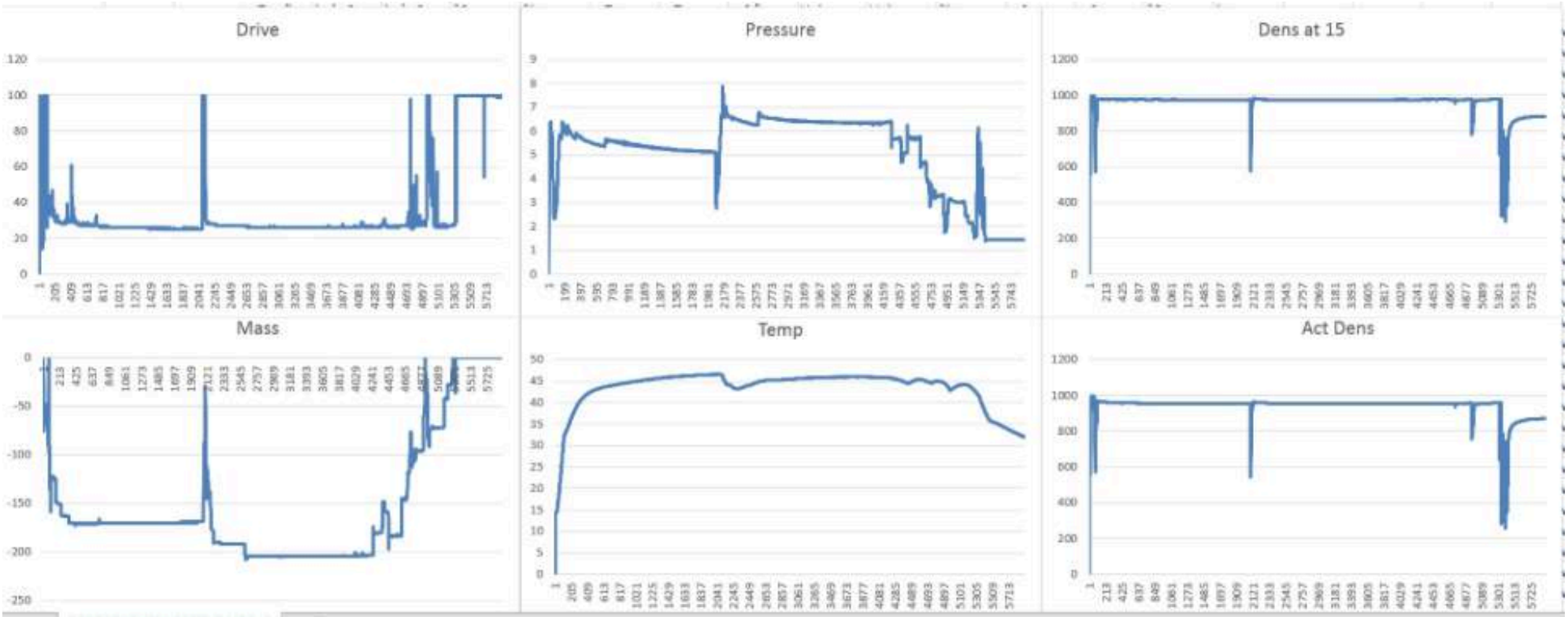
Marine Bunker Transfer Data																		
3000 Software Re	8.300.000		Sensor Mo	CMFHC2														
ECP Software Rev	4.000.000		Vessel Nam	KALAMIS-E HFO														
BunkerLink Softw	1.3 Build 1025.0		Printer Typ	Epson TMT88														
Date	Time	Elapsed Tin	Mass Flow	Density @	Density	Temperatu	Drive Gain	Mass Total	Mass Inven	Volume Flo	Left Pickoff	Right Picko	Max Aerati	Volume Tot	Volume Inv	External Te	External Pr	Liquid Dete
			mTon/hr	kg/m3	kg/m3	°C	%	mTon	mTon	m3/hr	Volts	Volts	%	m3	m3	°C	bar	
12/15/15	17:25:12	1,5	0	539,297	535,831	14,36	100	-0,0173	-20236,2	0	0,045	0,046	2500	0	0	0	3,35	1
12/15/15	17:25:13	3,3	0	539,297	535,831	14,36	100	-0,0173	-20236,2	0	0,045	0,046	2500	0	0	0	3,35	1
12/15/15	17:25:16	5	-27,4	665,877	663,04	14,34	100	-0,0137	-20236,2	-41,3	0,045	0,046	2500	0	0	0	3,42	1
12/15/15	17:25:17	6,8	-24,7	727,86	727,548	14,31	100	-0,0324	-20236,2	-34	0,073	0,07	2500	0	0	0	3,49	1
12/15/15	17:25:19	8,5	-32,3	725,359	725,458	14,29	100	-0,0324	-20236,3	-44,6	0,073	0,07	2549	0	0	0	3,5	1
12/15/15	17:25:20	10,3	-66,1	700,847	704,244	14,29	100	-0,0596	-20236,3	-93,8	0,067	0,064	2570	0	0	0	3,59	1
12/15/15	17:25:23	12	-51,6	607,294	611,308	14,29	100	-0,0596	-20236,3	-84,4	0,059	0,055	2570	0	0	0	3,71	1
12/15/15	17:25:24	13,7	-45,6	555,757	555,156	14,28	100	-0,111	-20236,3	-83,8	0,059	0,055	2527	0	0	0	3,91	1
12/15/15	17:25:25	15,4	-63	621,803	615,43	14,29	100	-0,15	-20236,3	-103	0,046	0,045	2527	0	0	0	4,09	1
12/15/15	17:25:28	17,1	-41,5	659,826	656,607	14,28	100	-0,15	-20236,3	-65,4	0,046	0,045	2525	0	0	0	4,23	1
12/15/15	17:25:29	18,9	-68,3	780,936	778,599	14,3	100	-0,198	-20236,4	-87,6	0,068	0,066	2525	0	0	0	4,36	1
12/15/15	17:25:31	20,6	-74,4	862,008	858,442	14,32	100	-0,198	-20236,4	-86,6	0,068	0,066	2524	0	0	0	4,56	1
12/15/15	17:25:32	22,4	-75,4	907,016	906,171	14,32	100	-0,255	-20236,4	-82,8	0,095	0,094	2520	0	0	0	4,89	1
12/15/15	17:25:35	24,1	-62,8	916,051	916,34	14,34	100	-0,255	-20236,5	-68	0,128	0,127	2520	0	0	0	5,3	1
12/15/15	17:25:36	25,8	-59	932,588	932,01	14,39	100	-0,316	-20236,5	-63,2	0,128	0,127	2513	0	0	0	5,65	1
12/15/15	17:25:38	27,5	-57,9	946,124	946,262	14,43	100	-0,362	-20236,5	-61	0,193	0,192	2513	0	0	0	5,76	1
12/15/15	17:25:40	29,3	-55,2	955,659	955,843	14,48	100	-0,362	-20236,5	-57,8	0,193	0,192	2511	0	0	0	5,92	1
12/15/15	17:25:41	31	-52,7	966,194	965,93	14,53	100	-0,411	-20236,6	-54,6	0,246	0,243	2275	0	0	0	6,18	1
12/15/15	17:25:43	32,7	-51,7	975,729	975,302	14,58	41	-0,411	-20236,6	-53	0,24	0,243	2275	0	0	0	6,24	1
12/15/15	17:25:44	34,5	-49,3	983,263	983,026	14,66	50	-0,452	-20236,6	-50,1	0,24	0,243	2082	0	0	0	6,3	1
12/15/15	17:25:47	36,2	-48,8	987,331	987,235	14,78	46	-0,452	-20236,7	-49,4	0,236	0,236	2082	0	0	0	6,36	1
12/15/15	17:25:48	37,9	-48,6	988,932	988,807	14,88	41	-0,495	-20236,7	-49,1	0,236	0,236	1903	0	0	0	6,4	1
12/15/15	17:25:50	39,6	-48,9	990	990,029	15	35	-0,533	-20236,7	-49,4	0,244	0,243	1903	0	0	0	6,36	1
12/15/15	17:25:52	41,4	-49,4	991,568	991,337	15,09	33	-0,533	-20236,8	-49,8	0,244	0,243	1769	0	0	0	6,27	1
12/15/15	17:25:54	43,1	-50,3	993,135	992,867	15,22	30	-0,577	-20236,8	-50,7	0,246	0,247	1637	0	0	0	6,12	1
12/15/15	17:25:55	44,9	-52,6	994,236	993,897	15,35	27	-0,577	-20236,8	-52,9	0,25	0,25	1637	0	0	0	5,79	1
12/15/15	17:25:56	46,6	-53,3	994,337	994,067	15,51	25	-0,617	-20236,8	-53,6	0,25	0,25	1530	0	0	0	5,49	1
12/15/15	17:25:59	48,4	-52,9	994,438	993,947	15,65	23	-0,617	-20236,8	-53,2	0,252	0,252	1530	0	0	0	5,35	1
12/15/15	17:26:00	50,2	-53,1	994,539	994,118	15,78	21	-0,665	-20236,8	-53,4	0,252	0,252	1424	0	0	0	5,27	1
12/15/15	18:16:41	3090,2	-170	975,814	954,425	46,27	25	-139	-20374,9	-178	0,255	0,255	45	-145	0	0	5,17	1
12/15/15	18:16:42	3091,9	-170	975,814	954,422	46,27	25	-139	-20375	-178	0,255	0,255	45	-145	0	0	5,16	1
12/15/15	18:16:44	3093,6	-170	975,814	954,445	46,25	25	-139	-20375	-178	0,255	0,255	45	-145	0	0	5,16	1
12/15/15	18:16:46	3095,3	-170	975,814	954,431	46,27	25	-139	-20375,1	-178	0,255	0,255	45	-145	0	0	5,17	1
12/15/15	18:16:48	3097,1	-170	975,848	954,416	46,28	25	-139	-20375,3	-178	0,255	0,255	45	-145	0	0	5,17	1
12/15/15	18:16:49	3098,8	-170	975,848	954,397	46,29	25	-139	-20375,3	-178	0,255	0,255	45	-145	0	0	5,17	1
12/15/15	18:16:50	3100,6	-170	975,848	954,396	46,29	25	-139	-20375,4	-178	0,255	0,255	45	-146	0	0	5,17	1
12/15/15	18:16:53	3102,3	-170	975,848	954,414	46,28	25	-139	-20375,4	-178	0,255	0,255	45	-146	0	0	5,16	1
12/15/15	18:16:54	3104	-170	975,848	954,389	46,3	25	-139	-20375,6	-178	0,255	0,255	45	-146	0	0	5,17	1
12/15/15	18:16:56	3105,7	-170	975,848	954,368	46,32	25	-139	-20375,6	-178	0,255	0,255	45	-146	0	0	5,17	1
12/15/15	18:16:58	3107,4	-170	975,848	954,385	46,31	25	-140	-20375,7	-178	0,255	0,255	45	-146	0	0	5,18	1
12/15/15	18:17:00	3109,1	-170	975,848	954,405	46,29	25	-140	-20375,8	-178	0,255	0,255	45	-146	0	0	5,17	1
12/15/15	18:17:01	3110,9	-170	975,814	954,439	46,26	25	-140	-20375,8	-178	0,255	0,255	45	-146	0	0	5,16	1
12/15/15	18:17:02	3112,6	-170	975,848	954,401	46,29	25	-140	-20376	-178	0,255	0,255	45	-146	0	0	5,16	1
12/15/15	18:17:05	3114,3	-170	975,848	954,406	46,29	25	-140	-20376	-178	0,255	0,255	45	-146	0	0	5,16	1
12/15/15	18:17:06	3116	-170	975,848	954,384	46,31	25	-140	-20376,1	-178	0,255	0,255	45	-146	0	0	5,17	1
12/15/15	18:17:08	3117,8	-170	975,848	954,371	46,32	25	-140	-20376,1	-178	0,255	0,255	45	-146	0	0	5,17	1
12/15/15	18:17:10	3119,5	-170	975,848	954,381	46,31	25	-140	-20376,3	-178	0,255	0,255	45	-146	0	0	5,17	1
12/15/15	18:17:12	3121,3	-170	975,882	954,353	46,33	25	-140	-20376,4	-178	0,255	0,255	45	-147	0	0	5,16	1
12/15/15	18:17:13	3123	-170	975,882	954,345	46,34	25	-140	-20376,4	-178	0,255	0,255	45	-147	0	0	5,16	1
12/15/15	18:17:16	3124,7	-170	975,882	954,359	46,33	25	-140	-20376,6	-178	0,255	0,255	45	-147	0	0	5,16	1
12/15/15	18:17:17	3126,4	-170	975,848	954,387	46,31	25	-140	-20376,6	-178	0,255	0,255	45	-147	0	0	5,17	1
12/15/15	18:17:18	3128,2	-170	975,882	954,359	46,33	25	-141	-20376,7	-178	0,255	0,255	45	-147	0	0	5,17	1
12/15/15	18:17:20	3130	-170	975,882	954,33	46,35	25	-141	-20376,8	-178	0,255	0,255	45	-147	0	0	5,17	1
12/15/15	18:17:22	3131,7	-170	975,882	954,338	46,35	25	-141	-20376,8	-178	0,256	0,255	44	-147	0	0	5,16	1
12/15/15	18:17:24	3133,5	-170	975,916	954,293	46,38	25	-141	-20377	-178	0,255	0,255	44	-147	0	0	5,17	1
12/15/15	18:17:25	3135,2	-170	975,882	954,304	46,37	25	-141	-20377	-178	0,255	0,255	44	-147	0	0	5,17	1
12/15/15	18:17:28	3137	-170	975,916	954,295	46,38	25	-141	-20377,1	-178	0,255	0,255	44	-147	0	0	5,17	1
12/15/15	18:17:29	3138,7	-170	975,916	954,287	46,38	25	-141	-20377,1	-178	0,255	0,255	44	-147	0	0	5,17	1
12/15/15	18:17:31	3140,5	-170	975,882	954,293	46,38	25	-141	-20377,2	-178	0,255	0,255	44	-147	0	0	5,16	1
12/15/15	18:17:32	3142,2	-170	975,882	954,31	46,37	25	-141	-20377,4	-178	0,255	0,255	44	-148	0	0	5,16	1
12/15/15	18:17:35	3144	-170	975,882	954,343	46,35	25	-141	-20377,4	-178	0,255	0,255	44	-148	0	0	5,16	1
12/15/15	18:17:36	3145,7	-170	975,882	954,305	46,38	25	-141	-20377,5	-178	0,255	0,255	44	-148	0	0	5,16	1

EMERSON CORIOLIS MASS FLOW METERS

Marine Bunker Transfer Data																		
3000 Software Re	8.300.000		Sensor Mo	CMFHC2														
ECP Software Rev	4.000.000		Vessel Nam	KALAMIS-E HFO														
BunkerLink Softw	1.3 Build 1025.0		Printer Typ	Epson TMT88														
Date	Time	Elapsed Tin	Mass Flow	Density @	Density	Temperatu	Drive Gain	Mass Total	Mass Inven	Volume Flo	Left Pickoff	Right Picko	Max Aerati	Volume Tot	Volume Inv	External Te	External Pr	Liquid Dete
			mTon/hr	kg/m3	kg/m3	°C	%	mTon	mTon	m3/hr	Volts	Volts	%	m3	m3	°C	bar	
12/15/15	17:25:12	1,5	0	539,297	535,831	14,36	100	-0,0173	-20236,2	0	0,045	0,046	2500	0	0	0	3,35	1
12/15/15	17:25:13	3,3	0	539,297	535,831	14,36	100	-0,0173	-20236,2	0	0,045	0,046	2500	0	0	0	3,35	1
12/15/15	17:25:16	5	-27,4	665,877	663,04	14,34	100	-0,0137	-20236,2	-41,3	0,045	0,046	2500	0	0	0	3,42	1
12/15/15	17:25:17	6,8	-24,7	727,86	727,548	14,31	100	-0,0324	-20236,2	-34	0,073	0,07	2500	0	0	0	3,49	1
12/15/15	17:25:19	8,5	-32,3	725,359	725,458	14,29	100	-0,0324	-20236,3	-44,6	0,073	0,07	2549	0	0	0	3,5	1
12/15/15	17:25:20	10,3	-66,1	700,847	704,244	14,29	100	-0,0596	-20236,3	-93,8	0,067	0,064	2570	0	0	0	3,59	1
12/15/15	17:25:23	12	-51,6	607,294	611,308	14,29	100	-0,0596	-20236,3	-84,4	0,059	0,055	2570	0	0	0	3,71	1
12/15/15	17:25:24	13,7	-45,6	555,757	555,156	14,28	100	-0,111	-20236,3	-83,8	0,059	0,055	2527	0	0	0	3,91	1
12/15/15	17:25:25	15,4	-63	621,803	615,43	14,29	100	-0,15	-20236,3	-103	0,046	0,045	2527	0	0	0	4,09	1
12/15/15	17:25:28	17,1	-41,5	659,826	656,607	14,28	100	-0,15	-20236,3	-65,4	0,046	0,045	2525	0	0	0	4,23	1
12/15/15	17:25:29	18,9	-68,3	780,936	778,599	14,3	100	-0,198	-20236,4	-87,6	0,068	0,066	2525	0	0	0	4,36	1
12/15/15	17:25:31	20,6	-74,4	862,008	858,442	14,32	100	-0,198	-20236,4	-86,6	0,068	0,066	2524	0	0	0	4,56	1
12/15/15	17:25:32	22,4	-75,4	907,016	906,171	14,32	100	-0,255	-20236,4	-82,8	0,095	0,094	2520	0	0	0	4,89	1
12/15/15	17:25:35	24,1	-62,8	916,051	916,34	14,34	100	-0,255	-20236,5	-68	0,128	0,127	2520	0	0	0	5,3	1
12/15/15	17:25:36	25,8	-59	932,588	932,01	14,39	100	-0,316	-20236,5	-63,2	0,128	0,127	2513	0	0	0	5,65	1
12/15/15	17:25:38	27,5	-57,9	946,124	946,262	14,43	100	-0,362	-20236,5	-61	0,193	0,192	2513	0	0	0	5,76	1
12/15/15	17:25:40	29,3	-55,2	955,659	955,843	14,48	100	-0,362	-20236,5	-57,8	0,193	0,192	2511	0	0	0	5,92	1
12/15/15	17:25:41	31	-52,7	966,194	965,93	14,53	100	-0,411	-20236,6	-54,6	0,246	0,243	2275	0	0	0	6,18	1
12/15/15	17:25:43	32,7	-51,7	975,729	975,302	14,58	41	-0,411	-20236,6	-53	0,24	0,243	2275	0	0	0	6,24	1
12/15/15	17:25:44	34,5	-49,3	983,263	983,026	14,66	50	-0,452	-20236,6	-50,1	0,24	0,243	2082	0	0	0	6,3	1
12/15/15	17:25:47	36,2	-48,8	987,331	987,235	14,78	46	-0,452	-20236,7	-49,4	0,236	0,236	2082	0	0	0	6,36	1
12/15/15	17:25:48	37,9	-48,6	988,932	988,807	14,88	41	-0,495	-20236,7	-49,1	0,236	0,236	1903	0	0	0	6,4	1
12/15/15	17:25:50	39,6	-48,9	990	990,029	15	35	-0,533	-20236,7	-49,4	0,244	0,243	1903	0	0	0	6,36	1
12/15/15	17:25:52	41,4	-49,4	991,568	991,337	15,09	33	-0,533	-20236,8	-49,8	0,244	0,243	1769	0	0	0	6,27	1
12/15/15	17:25:54	43,1	-50,3	993,135	992,867	15,22	30	-0,577	-20236,8	-50,7	0,246	0,247	1637	0	0	0	6,12	1
12/15/15	17:25:55	44,9	-52,6	994,236	993,897	15,35	27	-0,577	-20236,8	-52,9	0,25	0,25	1637	0	0	0	5,79	1
12/15/15	17:25:56	46,6	-53,3	994,337	994,067	15,51	25	-0,617	-20236,8	-53,6	0,25	0,25	1530	0	0	0	5,49	1
12/15/15	17:25:59	48,4	-52,9	994,438	993,947	15,65	23	-0,617	-20236,8	-53,2	0,252	0,252	1530	0	0	0	5,35	1
12/15/15	17:26:00	50,2	-53,1	994,539	994,118	15,78	21	-0,665	-20236,8	-53,4	0,252	0,252	1424	0	0	0	5,27	1

5905	12/15/15	20:20:00	10489,4	0	882,449	870,521	32,04	100	-439	-20675,3	0	0,26	0,249	27	-459	0	0	1,43	0
5906	12/15/15	20:20:01	10491,2	0	882,449	870,511	32,04	99	-439	-20675,3	0	0,26	0,25	27	-459	0	0	1,43	0
5907	12/15/15	20:20:04	10492,9	0	882,449	870,591	32,03	99	-439	-20675,3	0	0,26	0,25	27	-459	0	0	1,43	0
5908	12/15/15	20:20:05	10494,6	0	882,449	870,622	32,03	100	-439	-20675,3	0	0,259	0,249	27	-459	0	0	1,43	0
5909	12/15/15	20:20:07	10496,4	0	882,414	870,608	32,02	100	-439	-20675,3	0	0,259	0,249	27	-459	0	0	1,43	0
5910	12/15/15	20:20:09	10498,2	0	882,414	870,653	32	99	-439	-20675,3	0	0,261	0,25	27	-459	0	0	1,43	0
5911	12/15/15	20:20:11	10499,9	0	882,414	870,658	32,01	99	-439	-20675,3	0	0,261	0,25	27	-459	0	0	1,43	0
5912	12/15/15	20:20:12	10501,7	0	882,414	870,719	32	99	-439	-20675,3	0	0,259	0,249	27	-459	0	0	1,43	0
5913	12/15/15	20:20:15	10503,5	0	882,912	870,753	32,01	99	-439	-20675,3	0	0,259	0,249	27	-459	0	0	1,43	0
5914	12/15/15	20:20:16	10505,1	0	882,414	870,731	31,99	100	-439	-20675,3	0	0,259	0,249	27	-459	0	0	1,43	0
5915	12/15/15	20:20:17	10506,9	0	882,877	870,828	31,97	100	-439	-20675,3	0	0,259	0,249	27	-459	0	0	1,43	0
5916	12/15/15	20:20:19	10508,6	0	882,877	870,846	31,96	99	-439	-20675,3	0	0,259	0,249	27	-459	0	0	1,43	0
5917	12/15/15	20:20:21	10510,4	0	882,877	870,827	31,97	100	-439	-20675,3	0	0,259	0,249	27	-459	0	0	1,43	0
5918	12/15/15	20:20:23	10512	0	882,877	870,889	31,97	100	-439	-20675,3	0	0,259	0,249	27	-459	0	0	1,43	0
5919	12/15/15	20:20:24	10513,8	0	882,877	870,941	31,95	99	-439	-20675,3	0	0,261	0,25	27	-459	0	0	1,43	0
5920	12/15/15	20:20:27	10515,5	0	882,877	870,999	31,94	100	-439	-20675,3	0	0,261	0,25	27	-459	0	0	1,43	0
5921																			
5922		Average Te	44,80649		Average AP	975,878													

EMERSON CORIOLIS MASS FLOW METERS



Neden İstanbul en kaliteli bunker ikmal limanıdır?

1- En düşük kalite bunker ürünü ISO 8217:2005 dir. Avrupa limanlarının %50 si bu kaliteyi garanti edemez. Türk Limanlarında ortalama kalite ISO 8217:2010 dur.

2- İkmal prosedürü olarak MARPOL ANNEX VI zorunludur. İkmal öncesi, ikmal ve ikmal sonrası dökümantasyonu oturmuştur.

3- Bunker claim oranı % 0.3 ler seviyesindedir. Singapur ve benzeri limanlarda bu oran %15 in üzerindedir.

4- 16 adet double hull bunker barcı hizmet vermektedir.

Neden CYE Petrol en iyi bunker şirketidir?

1- Yeni nesil double hull bunker barçları kullanılmakta.

2- MARPOL Annex VI ikmal prosedürü kullanılmakta.

3- Tüm Bunker ürünlerinde ISO 8217:2012(E) garanti edilmekte (all grades).

4- QUALITY CLAIM için min 90 gün süre verilmekte (rakipler 15 gün max).

5- EMERSON Coriolis Mass Flow Meter lerle bunker ikmali yapılmakta.

Yukarıdaki 5 kalite unsurunun tümünü müşterilerine sunan dünyadaki tek “physical bunker supplier” CYE Petrol/İstanbul dur.

CYE

since 1988