



# 2026年 第21周市场周报

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本周话题 WEEKLY TOPIC

租船AI是一款利用大模型技术自动整理船货盘邮件、快速检索公开/私密船盘与货盘，并帮助您更高效发布信息的智能工具。  
Chartering AI is an AI-powered tool that automatically organises tonnage and cargo circulars, enables fast search and filtering, and helps you publish open tonnage or cargo requirements with ease.

主要用途Key benefits:

- 01 每天收到大量船货盘邮件，阅读工作量大，找船特别费时。HiFleet租船AI使用大模型技术帮您整理船货盘邮件，能高效检索船盘与货盘。  
Automatically structures tonnage/cargo emails for efficient review.
- 02 按区域、港口附近智能检索船盘与货盘。Smart search by region or port proximity.
- 03 自动识别发件人角色（船东/OP/经纪人）。Identifies sender type (Owner/Operator/Broker).
- 04 标注 PSC 风险、制裁风险、吊机、舱口等关键技术信息。Tags key technical & risk fields (PSC, sanctions, cranes, hatch specs, etc.).
- 05 支持公开与私密两种模式，适用于不同公司需求。Supports both Public and Private modes for different confidentiality needs.
- 06 按港口多维度筛选预抵船舶，快速锁定目标船舶。Expected Arriving Vessels with multi-dimensional filters for quick targeting.

# HiFleet

## LLM AI Shipping Chartering Tool

Expected Arrivals Screening

Public or private service modes

AI analysis of cargo & tonnage offers chartering emails

Fast search & filtering of cargo/tonnage offers

Search cargo & tonnage offers by port & its nearby

Chartering AI Vessel | Cargo

Public | Private

Port | Vessel

enter the open port name

Search | Reset | Total 32

Filter: Type Length Draft DWT Capacity Age OPEN Date OPEN Area OPEN Type

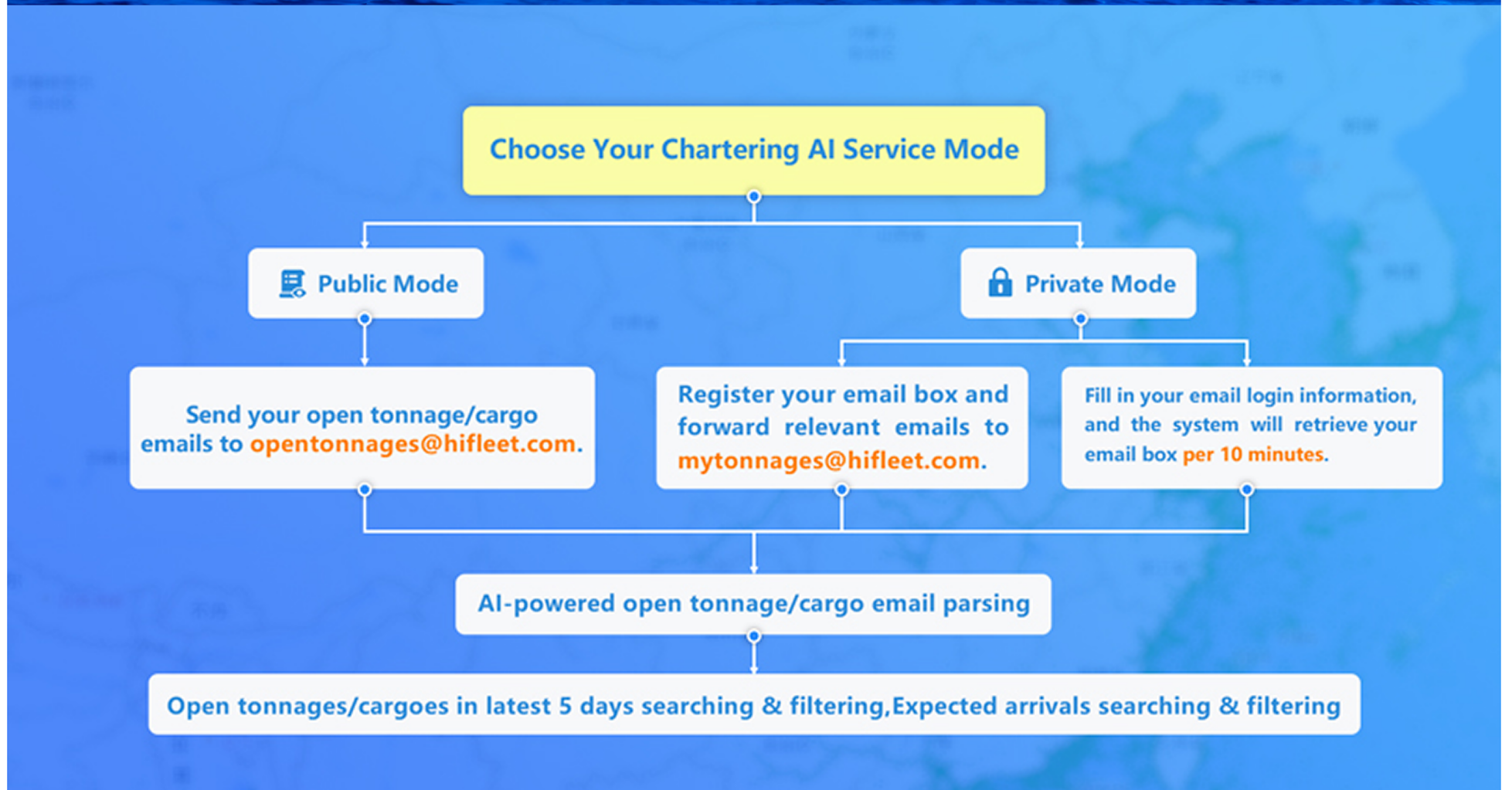
Ship Name	DWT	Age	Sender	Received Time	Open	OPEN Date	OPEN Location	Voyage Intend	Destination	ETA	Duration (day)	Tags
*****	57802	15		2025-10-15 14:49		2025-10-18	DAMMAN	SGP/PN	KIA DAMM...	2025-09-26	-22	Gearless
*****	63342	6		2025-10-15 14:49		2025-10-23	KHALIFA	SGP/PN	Fujairah	2025-10-18	-5	Gearless Ecn DG Approval
*****	56920	14	Owner	2025-10-15 14:10	spot	2025-10-26	SHUWARH	Middle East Ja...	Dammam	2025-09-11	-45	Gearless
*****	63850	0	Owner	2025-10-15 14:10	spot	2025-10-31	DAMMAM	Middle East Ja...	Umm Qasr	2025-10-12	-19	Gearless
*****	64050	5		2025-10-15 11:28		2025-10-16	CHITTAGONG		Chittagong	2025-10-02	-14	Gearless DG Approval
*****	56745	16		2025-10-14 16:42	TCT	2025-10-22	FANGCHENG		CHINA			Gearless Ecn
*****	63522	0		2025-10-14 16:42		2025-10-16	BO HANNA		Shidao	2025-09-28	-10	Gearless Ecn
*****	10701	13		2025-10-14 15:04	spot	2025-11-14	CEBU PHILIP...	CEBU PHILIP...				Gearless Ecn DG Approval
*****	43125	30	Owner	2025-10-14 11:29		2025-10-26	NANTONG	MIDDLE EAST...	Tokai Ayer	2025-10-05	-21	Gearless Ecn
*****	63850	0	Owner	2025-10-14 09:17	period	2025-10-20	YANGZHOU S...		Yisheng	2025-09-29	-21	Gearless Ecn
*****	33379	12		2025-10-13 16:26	spot	2025-12-03	ABDIANLO	WW EXCL GGA	Kakinada	2025-10-09	-55	Gearless
*****	64726	1		2025-10-13 14:41	spot	2025-10-21	Yangjiang S.C...	Yangjiang S.C...				Gearless Ecn DG Approval
*****	56039	18		2025-10-13 14:21	spot	2025-10-18	KING ABDULL...	RUSSIA/UKR...	King Abdull...	2025-10-05	-13	Gearless
*****	57809	14		2025-10-13 14:21	spot	2025-10-19	PUTTALAM	N.DORE/GGA	PUTTALAM ...	2025-10-15	-4	Gearless
*****	78784	20		2025-10-13 14:21	spot	2025-10-19	KEMANMAN ...		Kuantan	2025-10-14	-5	Gearless
*****	58705	13	Owner	2025-10-13 09:22	period	2025-10-23	WEIHAI SHIPY...		Wei Hai	2025-10-05	-18	Ecn
*****	72541	14		2025-10-13 08:46	spot	2025-10-17	HALDIA, INDIA					Gearless Ecn
*****	76784	20		2025-10-11 15:27		2025-10-21	KEMANMAN ...		Kuantan	2025-10-14	-7	Gearless
*****	50815			2025-09-28 15:52		2025-10-10	XINGANG	DAMM				Gearless Box Hold Ocean Fitted CRABS-Full
*****	38340			2025-09-28 15:52		2025-10-31	XINGANG / LL...	DIBOUTI / IED...	Bunati Port	2025-10-17	-14	Gearless

Basic authenticity screening for tonnage offers

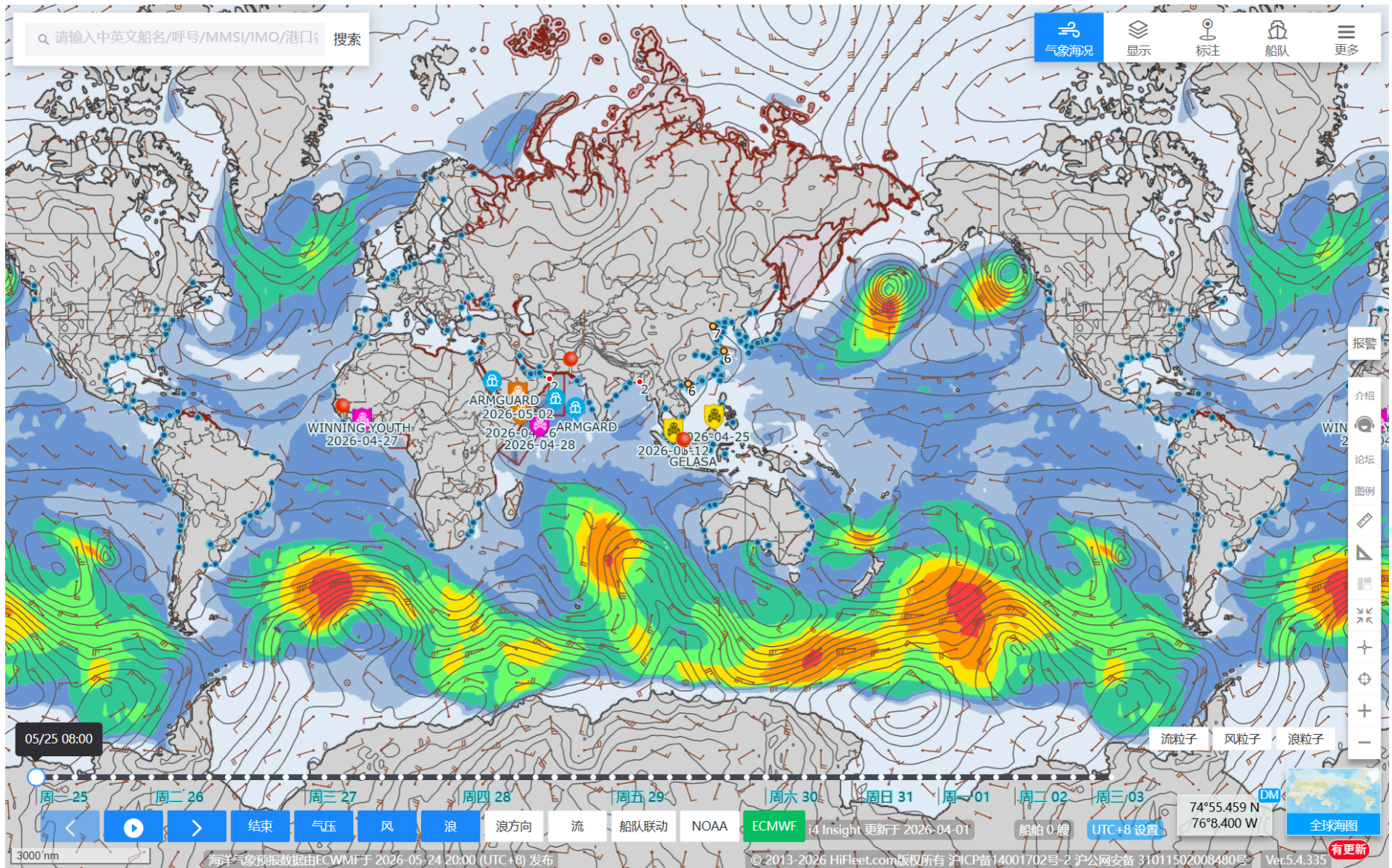
Sanctions-risk alerts for tonnage offers

Basic analysis of 3-year vessel performance (speed/consumption)

Port-of-call country tags (e.g., CIS, AU, BH)



# 第一部分 航运安全 SHIPPING SAFETY



## 航行警告 Navigation Warning

HiFleet显示全球目前有效的航行警告有1406个，远东和环加勒比海居多，请相关水域船舶注意航行警告内容。There are currently 1406 navigational warnings in effect around the ocean on hiFleet with the Far East and around the coastal of Caribbean Sea still being the majority. Please pay attention to the navigational warnings in relevant waters.

## 海盗事件 Piracy

最近一周没有海盗事件报告。There is no piracy report for the latest week.

## 其它 Others

没有 Nil

## 航海气象 Meteorology

未来一周中国渤海海域风力3-4级，轻浪；黄海风力4-5级，有中浪；东海风力4-5级，中浪；台湾海峡4-6级风，有中浪；南海大部海域风力3-4级，中浪。The coming week the wind in Bohai Sea is gentle with slight sea. Yellow Sea the wind is moderate with moderate sea. And China East Sea is moderate with moderate sea. The wind in the Taiwan Strait is moderate with moderate sea. In most of the South China Sea the wind is moderate with moderate sea.

## 海上事件 Marine Incidents

2026年5月20日，希腊船东CAPE XL（2011年，马绍尔旗，185100载重吨，铝土矿到青岛）与日本船东HUGE KUMANO（2020年，巴拿马旗，208,800载重吨）在新加坡海峡碰撞，船艏插入舷侧，双双失控滞留，为近年罕见重大海事事故。On May 20, 2026, the Greek shipowner CAPE XL (in 2011, Marshall Islands flag, 185,100 deadweight tons, transporting bauxite to Qingdao) collided with the Japanese shipowner HUGE KUMANO (in 2020, Panama flag, 208,800 deadweight tons) in the Singapore Strait. The bow pierced through the side of the other, and both ships lost control and were stranded, constituting a rare major maritime accident in recent years.

## 备注 Remark

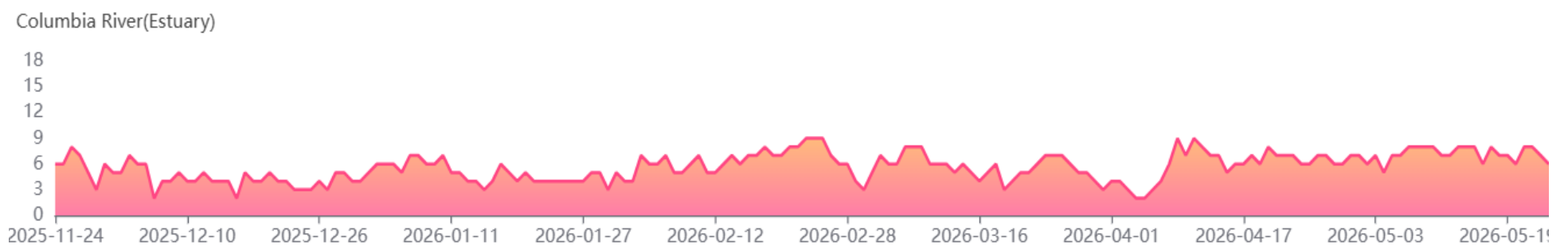
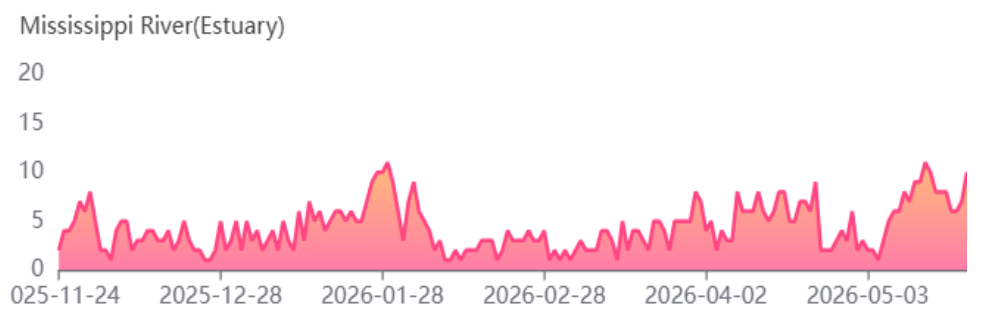
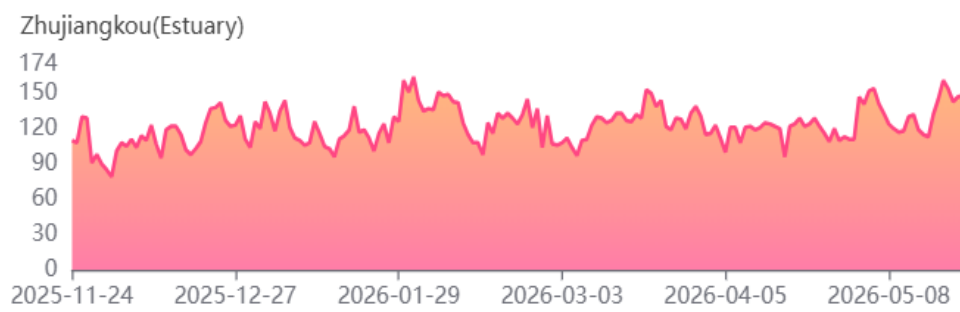
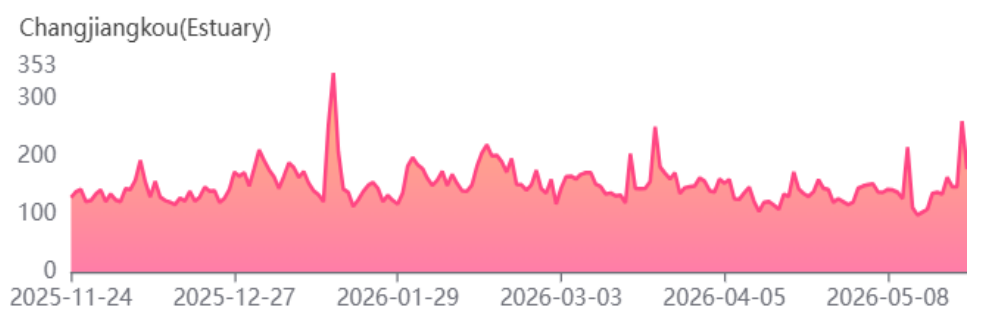
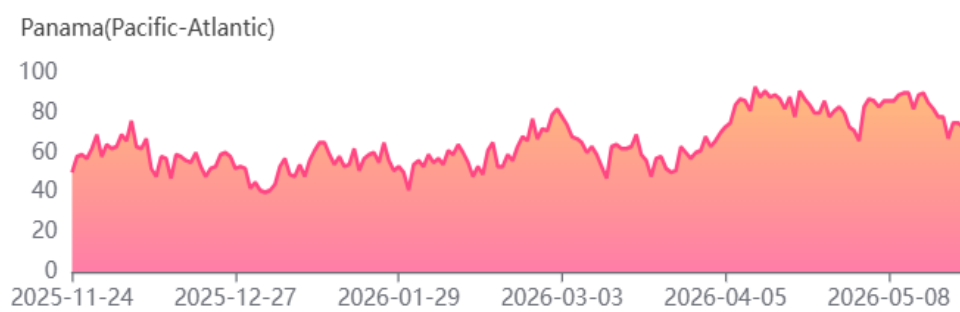
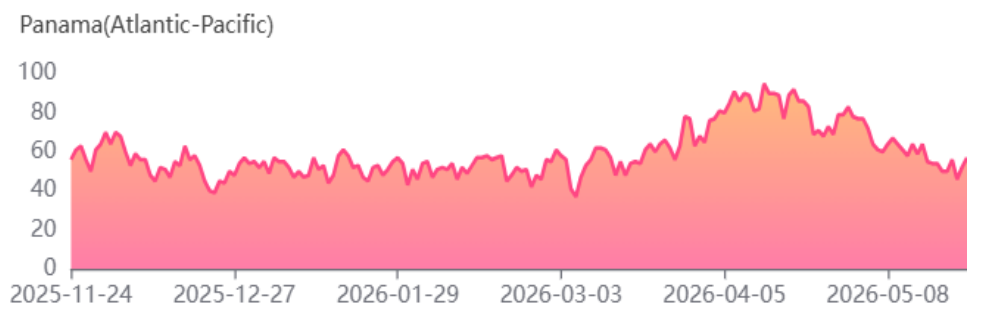
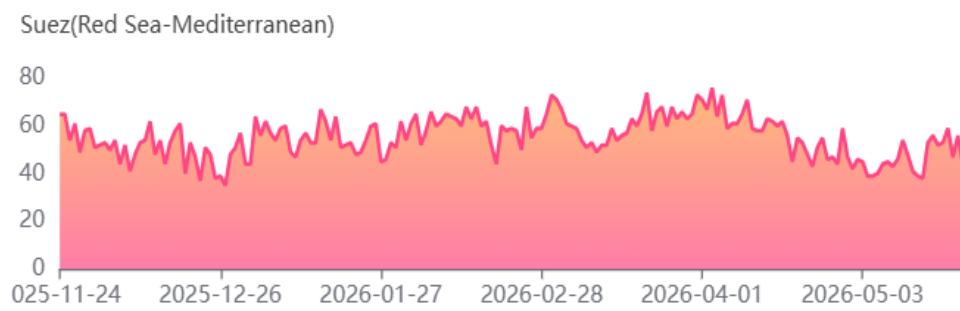
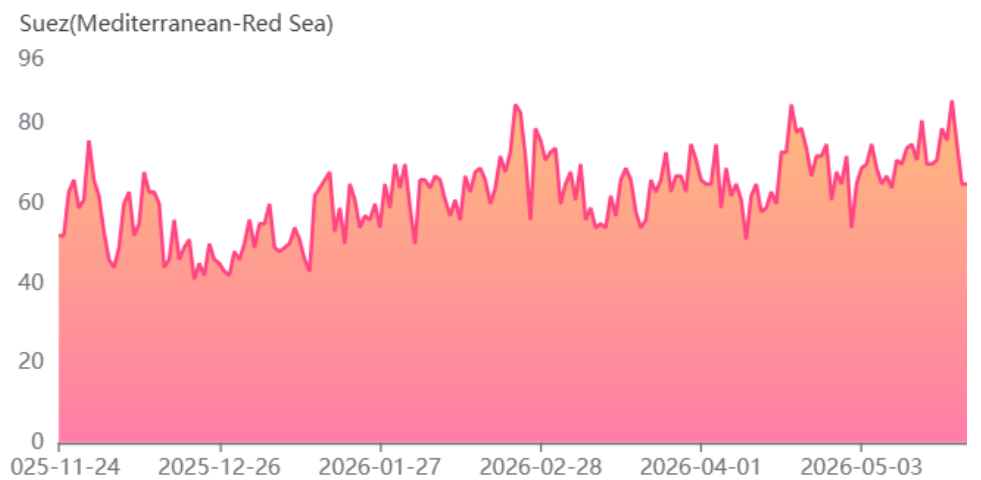
本报告数据截止时间为2026年5月22日北京时间17点；所有数据和或观点仅供参考，在任何情况下本公司及其员工不承担任何风险。The data deadline for this report is Beijing time 17 hours on May 22nd of 2026; All data and/or opinions are for reference only and under no circumstances do the Company and its employees assume any risk.

## 第二部分 航运数据 SHIPPING DATA

最近一周船舶运河/河口锚地等待数量

Latest Week Update Vessel Waiting Numbers Information in Anchorages of Canals and Rivers

Canal/Riv.	P.N.	M.N.	WoW	MoM
Suez.Red	44	1356	36	-387
Miss.Riv.	10	155	-3	-3
CJK	177	4095	267	83
Pa.Atlan.	57	1847	-60	-502
Colum.Riv.	6	205	-3	40
Suez.Med.	65	2038	5	76
Pa.Pac.	74	2346	-95	45
ZJK	108	3768	162	282

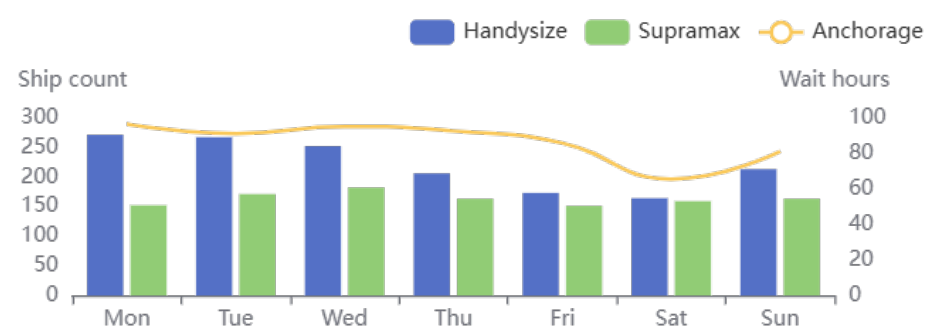


(P.N.-Present Number; M.N.-Month Number; WoW-Week on Week; MoM-Month on Month)

最近一周中国区域超大灵便型散货船和灵便型散货船舶锚泊数量和平均锚泊时长

Latest Week Update for Supra and Handy Num. and Waiting Time Information in Anchorages of China

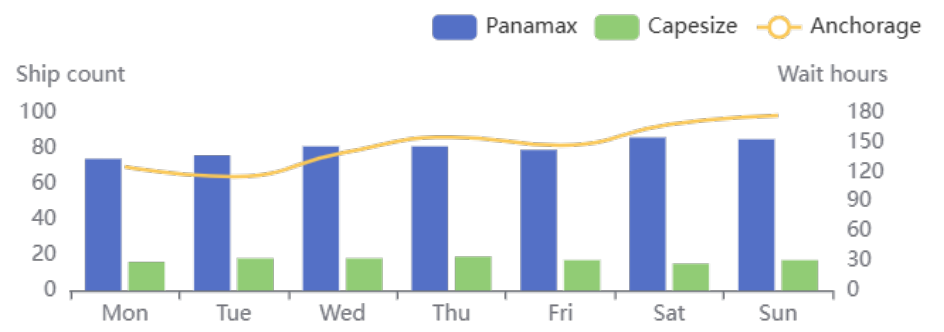
Type	M	T	W	Th	F	Sat	Sun
HDY	271	267	252	206	173	164	213
SMX	152	171	182	163	151	159	163
WT.h.	96.4	91.05	95.1	92.5	85.7	65.5	81



## 最近一周巴西区域好望角型和巴拿马型散货船舶锚泊数量和平均锚泊时长

Latest Week Update for Capesize and Panamax Num. and Waiting Time Information in Anchorages of Brazil

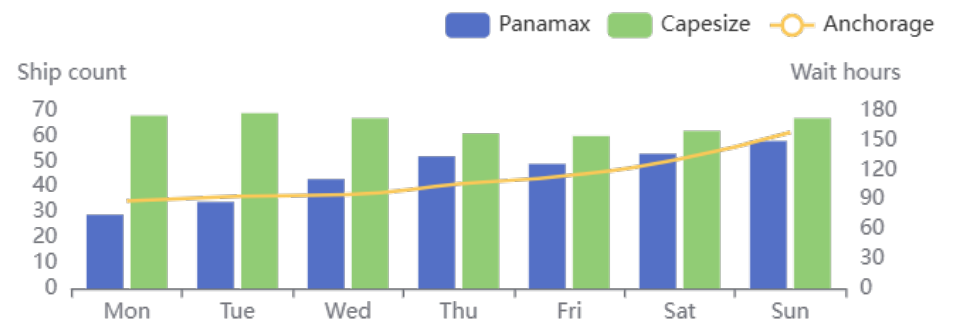
Type	M	T	W	Th	F	Sat	Sun
Pan.	74	76	81	81	79	86	85
Cap	16	18	18	19	17	15	17
WT.h.	125.3	115.2	139.2	155.3	146.9	168	177



## 最近一周澳大利亚区域好望角型和巴拿马型散货船舶锚泊数量和平均锚泊时长

Latest Week Update for Capesize and Panamax Num. and Waiting Time Information in Anchorages of Australia

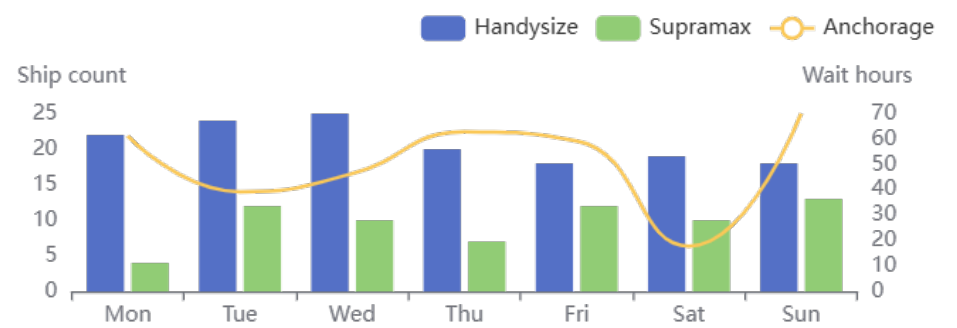
Type	M	T	W	Th	F	Sat	Sun
Pan.	29	34	43	52	49	53	58
Cap	68	69	67	61	60	62	67
WT.h.	88.5	93.1	94.9	105.8	114.4	131.1	158



## 最近一周黑海区域超大型灵便型散货船和灵便型散货船舶锚泊数量和平均锚泊时长

Latest Week Update for Supra &amp; Handy Num. and Waiting Time Information in Anchorages of Black Sea

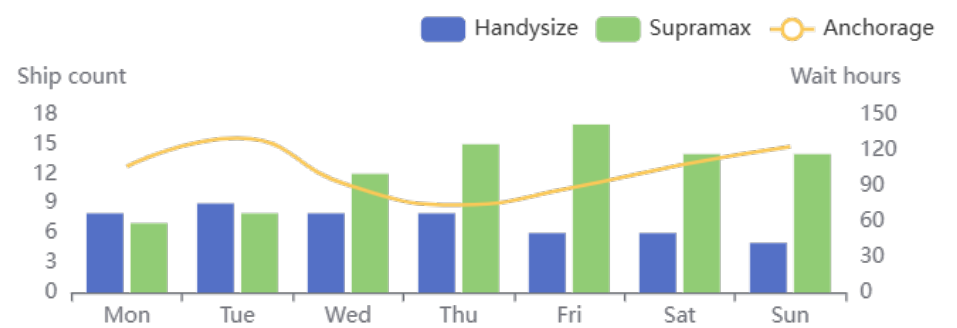
Type	M	T	W	Th	F	Sat	Sun
HDY	22	24	25	20	18	19	18
SMX	4	12	10	7	12	10	13
WT.h.	61.2	39.25	46.4	62.8	59.25	17.8	70



## 最近一周美湾区域超大型灵便型散货船和灵便型散货船舶锚泊数量和平均锚泊时长

Latest Week Update for Supra and Handy Num. and Waiting Time Information in Anchorages of US Gulf

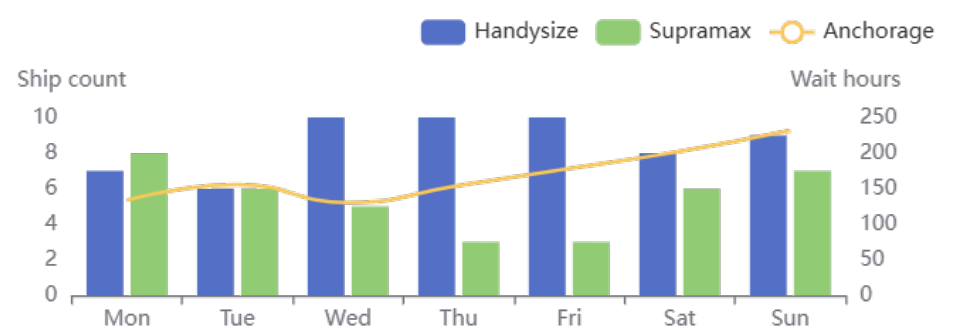
Type	M	T	W	Th	F	Sat	Sun
HDY	8	9	8	8	6	6	5
SMX	7	8	12	15	17	14	14
WT.h.	106.3	130.3	90.65	73.8	87.9	107.5	123



## 最近一周拉普拉特河区域超大型散货船和灵便型散货船舶锚泊数量和平均锚泊时长

Latest Week Update for Supra and Handy Num. and Waiting Time Information in Anchorages of Plate River

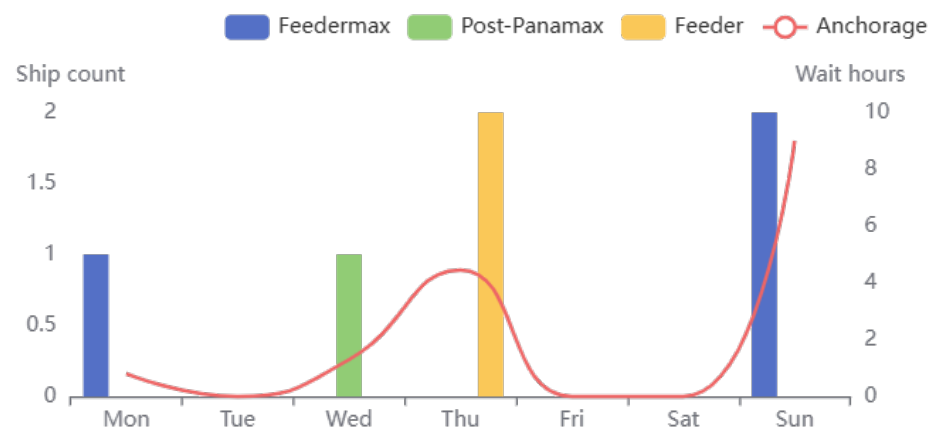
Type	M	T	W	Th	F	Sat	Sun
HDY	7	6	10	10	10	8	9
SMX	8	6	5	3	3	6	7
WT.h.	133.8	156	130.5	154.5	178.5	202.5	232



## 最近一周香港区域集装箱船锚泊数量和平均等待时长

Latest Week Update for Container Vessels Num. and Waiting Time Information on Anchorages of HongKong

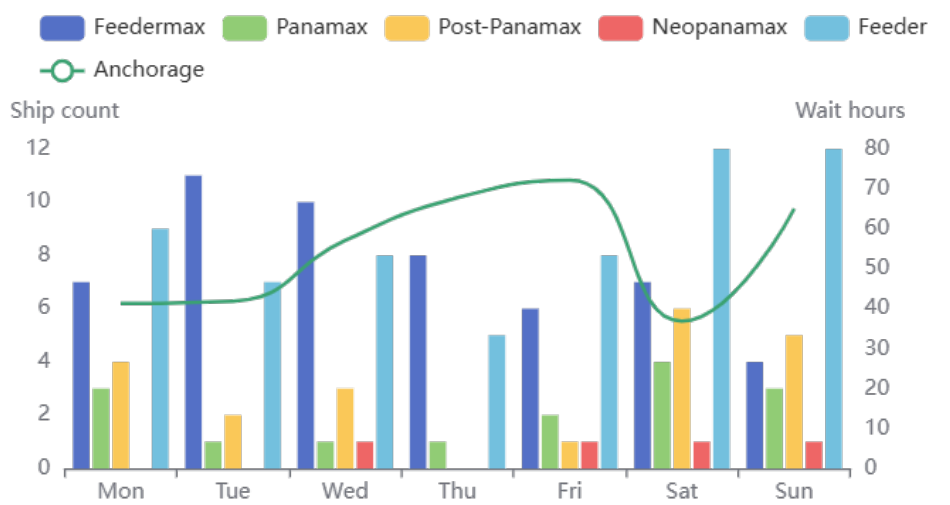
Type	M	T	W	Th	F	Sat	Sun
F.ma.	1	0	0	0	0	0	2
Pan.	0	0	0	0	0	0	0
PPx	0	0	1	0	0	0	0
NPx	0	0	0	0	0	0	0
Fd	0	0	0	2	0	0	0
WT.h.	0.8	0.0	1.3	4.45	0.0	0.0	9
UlcV	0	0	0	0	0	0	0



## 最近一周上海区域集装箱船锚泊数量和平均等待时长

Latest Week Update for Container Vessels Num. and Waiting Time Information in Anchorages of Shanghai

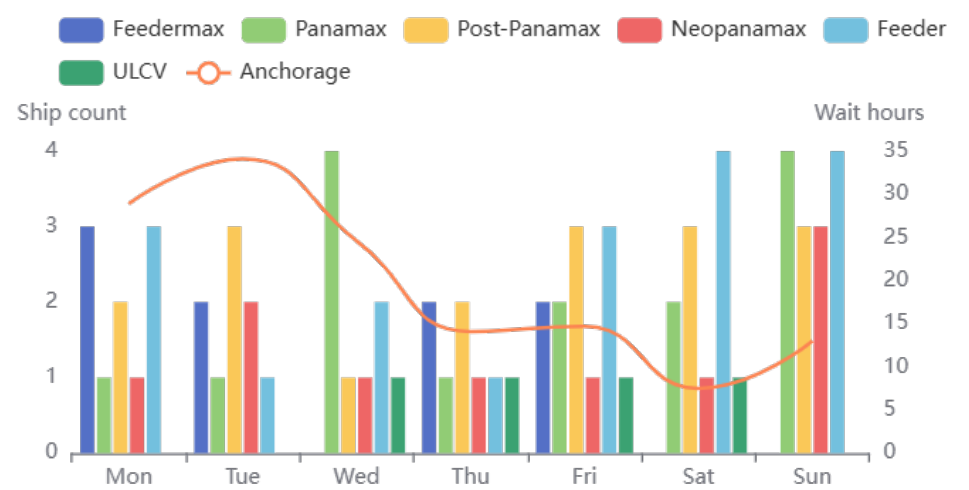
Type	M	T	W	Th	F	Sat	Sun
F.ma.	7	11	10	8	6	7	4
Pan.	3	1	1	1	2	4	3
PPx	4	2	3	0	1	6	5
NPx	0	0	1	0	1	1	1
Fd	9	7	8	5	8	12	12
UlcV	0	0	0	0	0	0	0
WT.h.	41.3	41.9	57.1	67.8	72.2	36.9	65



## 最近一周新加坡区域集装箱船锚泊数量和平均锚泊时长

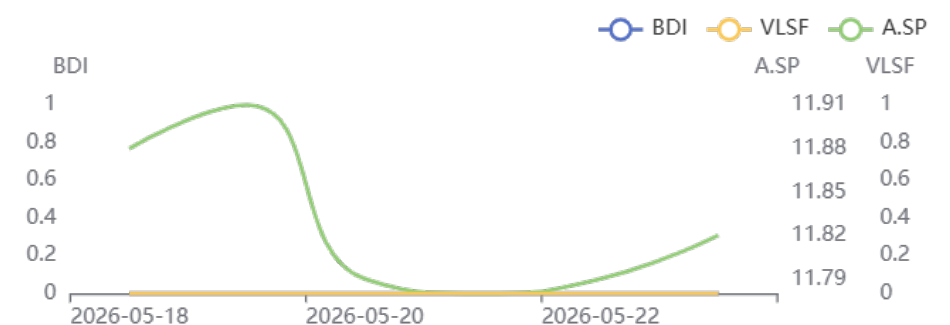
Latest Week Update for Container Vessels Num. and Waiting Time Information in Anchorages of Singapore

Type	M	T	W	Th	F	Sat	Sun
F.ma.	3	2	0	2	2	0	0
Pan.	1	1	4	1	2	2	4
PPx	2	3	1	2	3	3	3
NPx	1	2	1	1	1	1	3
Fd	3	1	2	1	3	4	4
UlcV	0	0	1	1	1	1	0
WT.h.	28.9	34.1	24.6	14.1	14.7	7.5	13



## 最近一周空载散货船平均航速 Latest Weekly Average Speed for Bulkers during Ballast Voyage

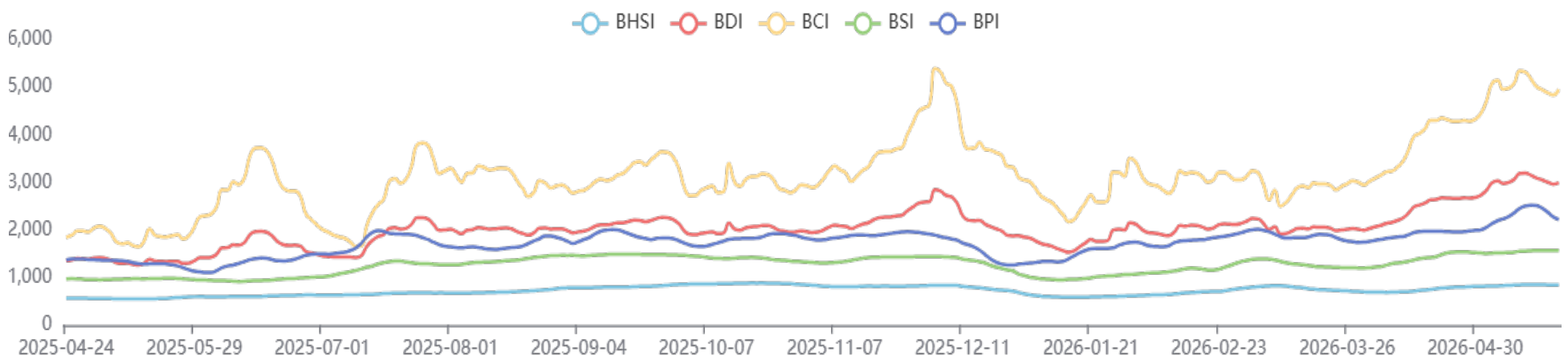
Type	M	T	W	Th	F	Sat	Sun
BDI	0	0	0	0	0	0	0
VLSF	0	0	0	0	0	0	0
A.SP	11.88	11.91	11.79	11.78	11.79	11.82	



# 第三部分 航运市场 SHIPPING MARKET

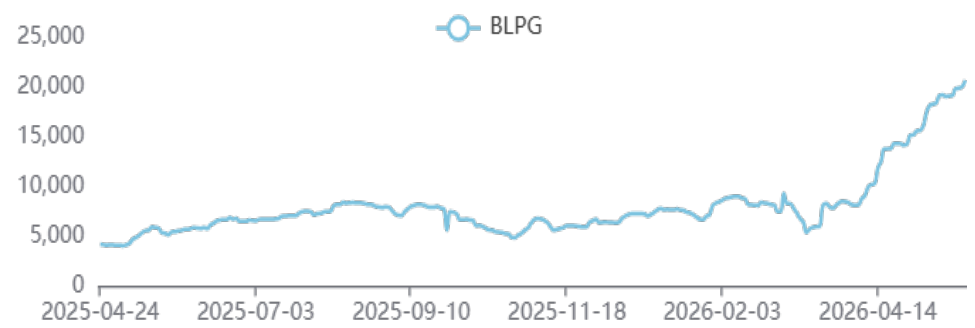
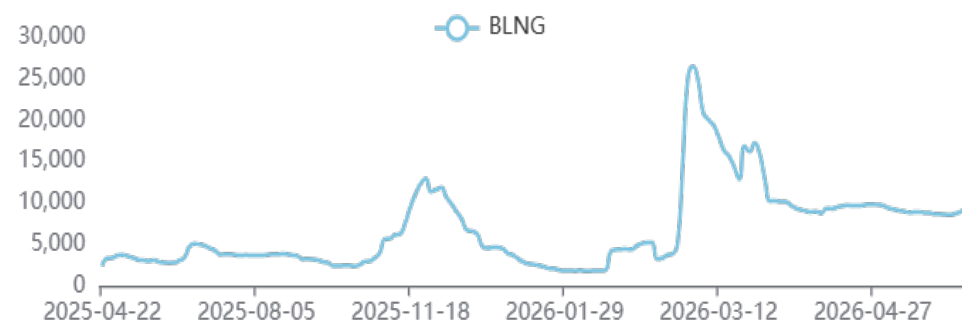
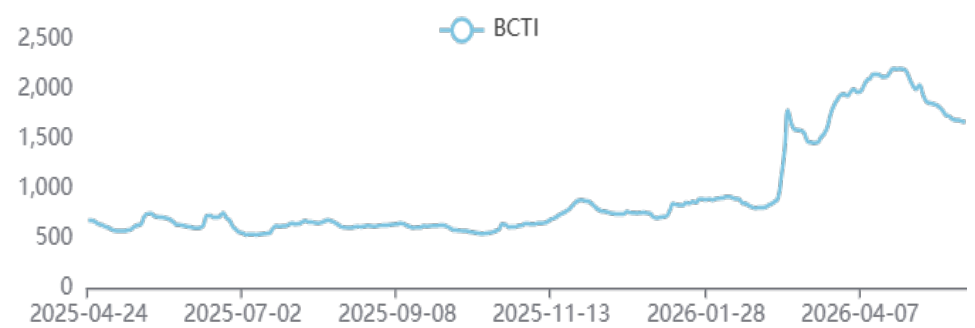
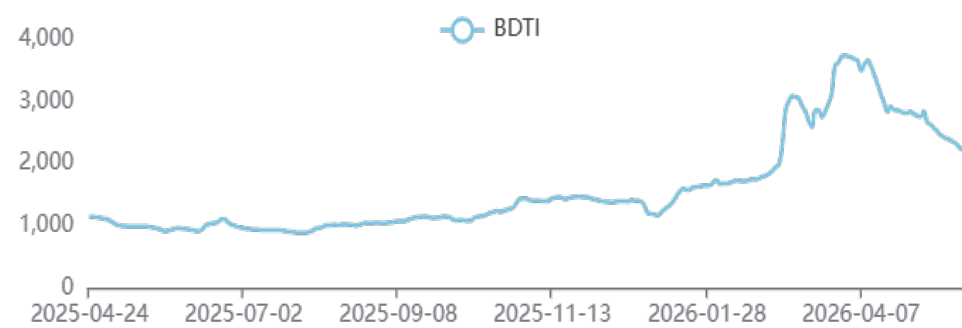
波罗的海干散货指数Baltic Dry Index

Type	PI	WoW	W%	M%	y%
BDI	2991	-160.0	-5.08	12.23	123.04
BCI	4954	-219.0	-4.23	15.69	163.23
BPI	2223	-298.0	-11.82	13.42	75.18
BSI	1567	2.0	0.13	2.08	58.92
BHSI	843	-7.0	-0.82	5.77	46.86



能源运价指数Energy Shipping Index

Type	PI	WoW	W%	M%	y%
BDTI	2185	-190.0	-8.0	-22.3	124.33
BCTI	1668	-58.0	-3.36	-24.08	123.59
BLNG	9347	684.0	7.9	-4.65	210.53
BLPG	20671	1583.0	8.29	46.12	286.81



## 第四部分 运力分布 SUPPLY DISTRIBUTION

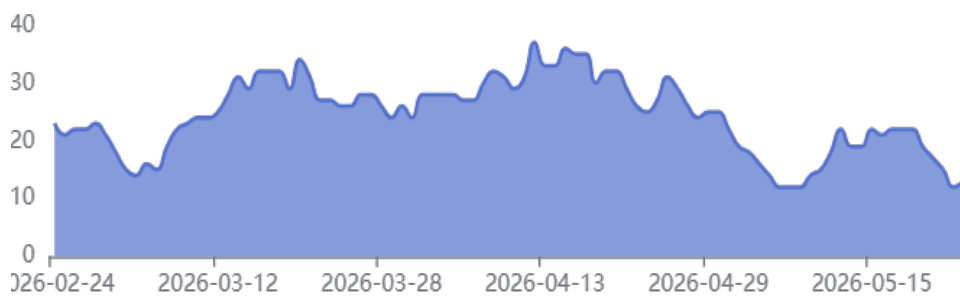


### 好望角型散货船 Capesize

区域：巴西，最近一周好望角型散货船准备装货船舶数量

Area: Brazil, The latest week update number for Capesize with cargo loading intention.

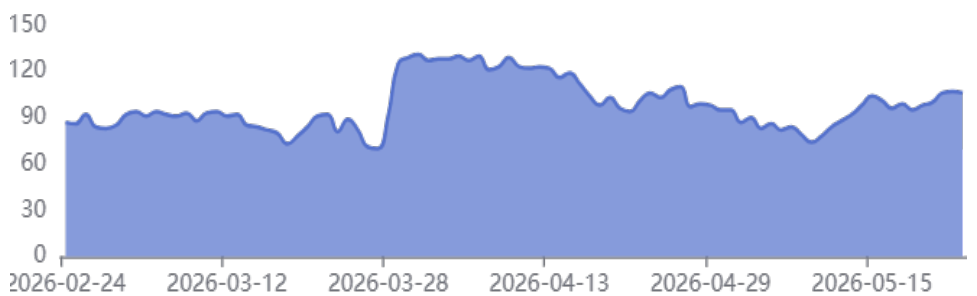
Type	M	T	W	Th	F	Sat	Sun
Cape	22	22	19	17	15	12	13



区域：澳大利亚。最近一周好望角型散货船准备装货船舶数量。

Area: Australia. The latest week update number for Capesize with cargo loading intention.

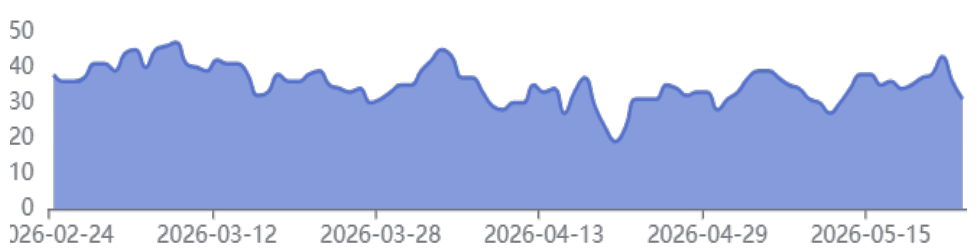
Type	M	T	W	Th	F	Sat	Sun
Cape	99	95	98	100	106	107	106



区域：南非，最近一周好望角型散货船准备装货船舶数量

Area: South Africa, The latest week update number for Capesize with cargo loading intention.

Type	M	T	W	Th	F	Sat	Sun
Cape	34	35	37	38	43	36	31

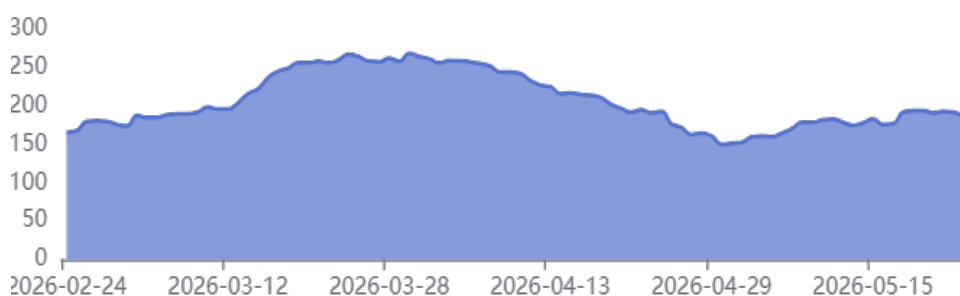


### 巴拿马型散货船 PANAMAX

区域：南美北部和东部。最近一周巴拿马型散货船准备装货船舶数量。

Area: South America. The latest week update number for Panamax with cargo loading intention.

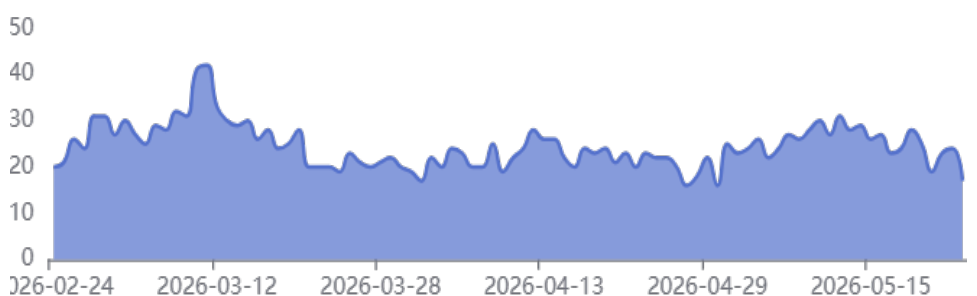
Type	M	T	W	Th	F	Sat	Sun
Pan.	191	193	193	190	192	191	185



区域：黑海。最近一周巴拿马型散货船准备装货船舶数量。

Area: Black Sea. The latest week update number for Panamax with cargo loading intention.

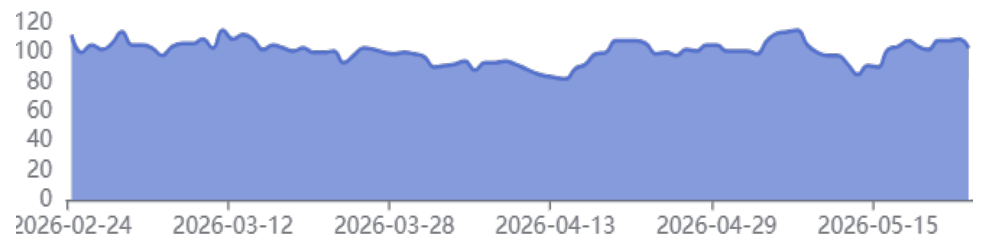
Type	M	T	W	Th	F	Sat	Sun
Pan.	16	15	15	14	13	13	14



区域：澳大利亚。最近一周巴拿马型散货船准备装货船舶数量。

Area: Australia. The latest week update number for Panamax with cargo loading intention.

Type	M	T	W	Th	F	Sat	Sun
Pan.	108	104	102	108	108	109	103

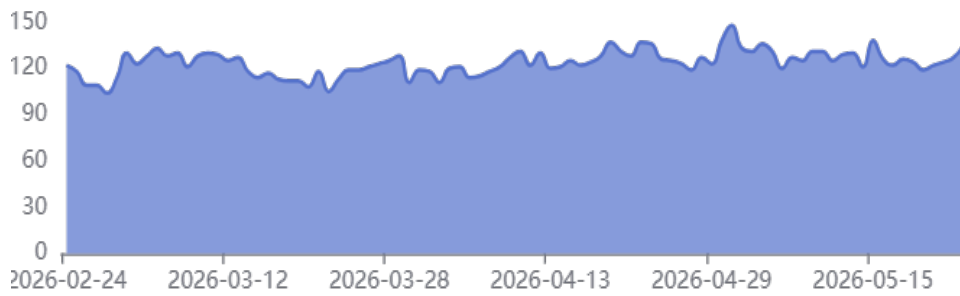


#### 超大灵便型散货 SUPRAMAX

区域：北中国。最近一周超大灵便型散货船准备装货船舶数量。

Area: North China. The latest week update number for Supramax with cargo loading intention.

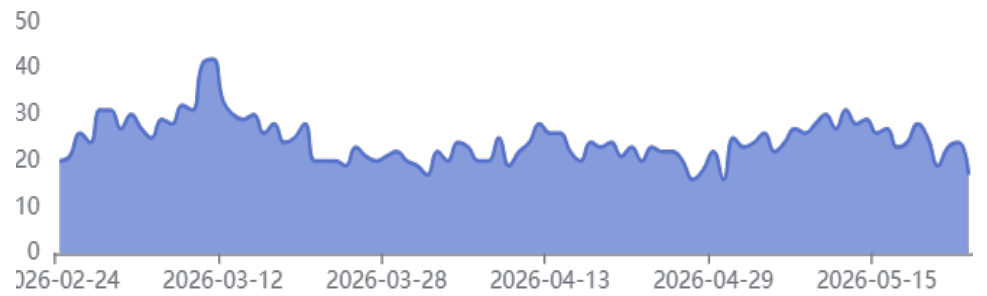
Type	M	T	W	Th	F	Sat	Sun
SMX	126	124	119	122	124	127	135



区域：黑海。最近一周巴拿马型散货船准备装货船舶数量。

Area: Black Sea. The latest week update number for Panamax with cargo loading intention.

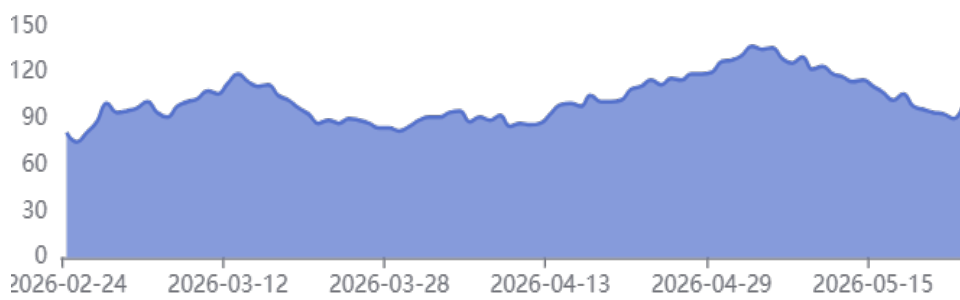
Type	M	T	W	Th	F	Sat	Sun
SMX	24	28	25	19	23	24	17



区域：美湾。最近一周超大灵便型散货船准备装货船舶数量。

Area: US Gulf. The latest week update number for Supramax with cargo loading intention.

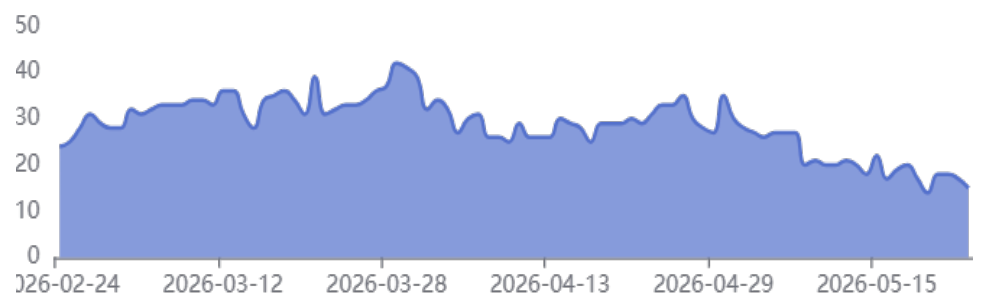
Type	M	T	W	Th	F	Sat	Sun
SMX	20	17	14	18	18	17	15



区域：南美的北部和东部。最近一周超大灵便型散货船准备装货船舶数量。

Area: South America. The latest week update number for Supramax with cargo loading intention.

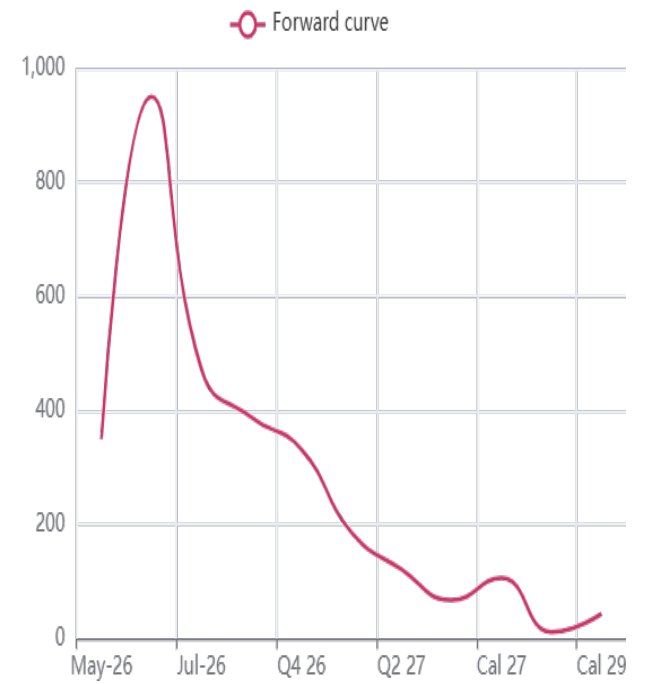
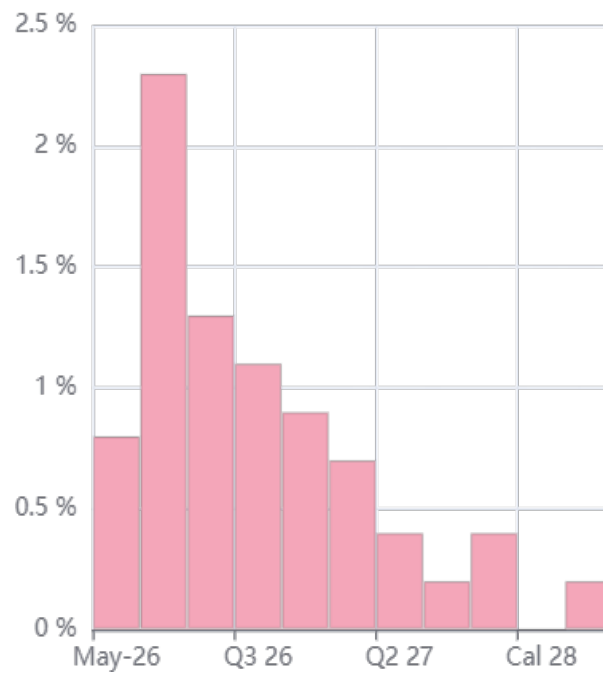
Type	M	T	W	Th	F	Sat	Sun
SMX	106	98	96	94	93	90	100



# 第五部分 远期运价协议 FFA

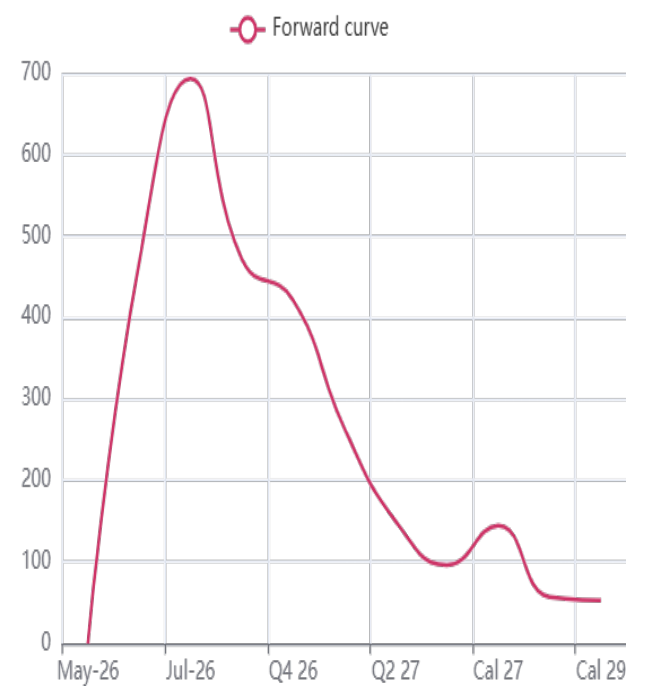
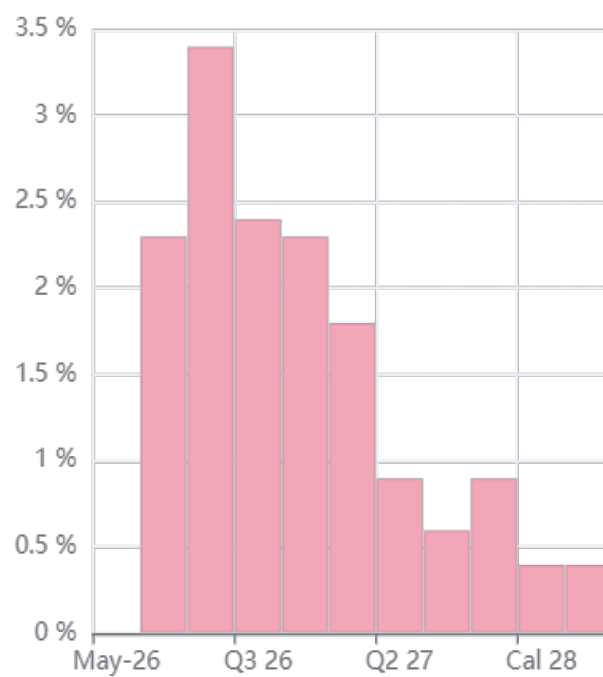
## 好望角型散货船Capesize

5TC	\$/day	WoW	
May-26	45,392.00	350.0	0.8 %
Jun-26	42,003.00	950.0	2.3 %
Jul-26	37,739.00	472.0	1.3 %
Q3 26	36,863.00	387.67	1.1 %
Q4 26	35,766.67	331.67	0.9 %
Q1 27	26,639.00	186.0	0.7 %
Q2 27	32,035.00	121.0	0.4 %
Q3 27	31,274.00	67.0	0.2 %
Cal 27	30,296.75	106.0	0.4 %
Cal 28	26,589.00	11.0	0.0 %
Cal 29	25,342.00	43.0	0.2 %



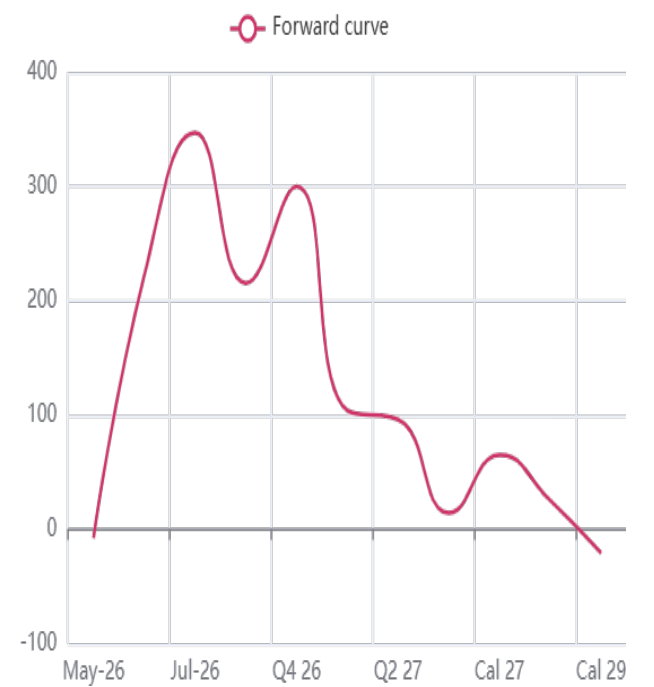
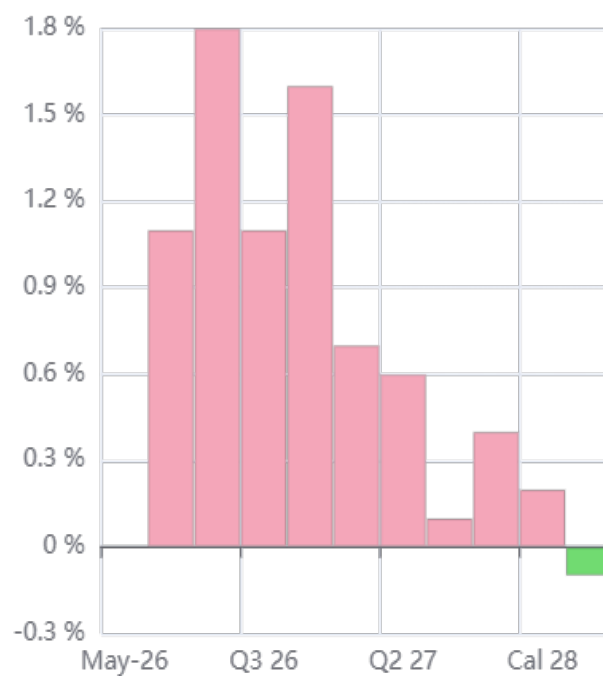
## 巴拿马型散货船Panamax

4TC	\$/day	WoW	
May-26	20,664.00	0.0	0.0 %
Jun-26	20,657.00	468.0	2.3 %
Jul-26	20,950.00	693.0	3.4 %
Q3 26	20,163.00	471.67	2.4 %
Q4 26	18,864.00	421.33	2.3 %
Q1 27	14,818.00	264.0	1.8 %
Q2 27	16,286.00	150.0	0.9 %
Q3 27	15,571.00	96.0	0.6 %
Cal 27	15,409.00	144.5	0.9 %
Cal 28	14,200.00	57.0	0.4 %
Cal 29	13,721.00	53.0	0.4 %



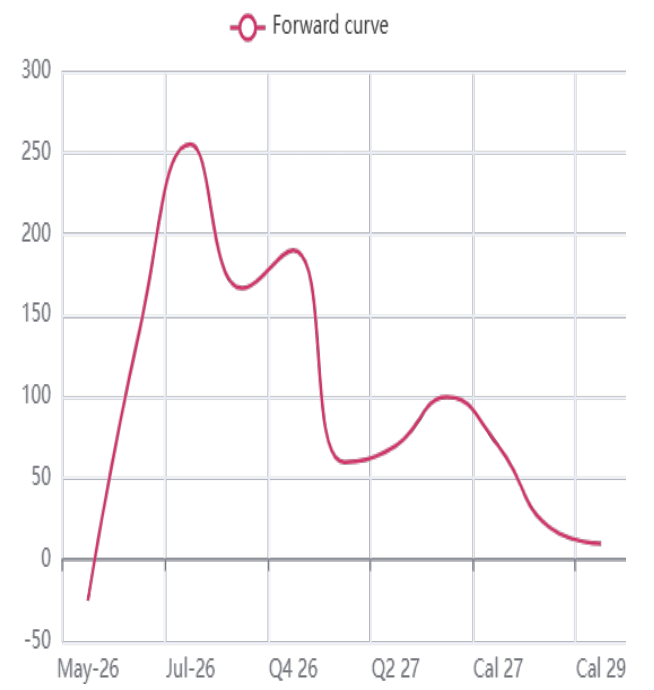
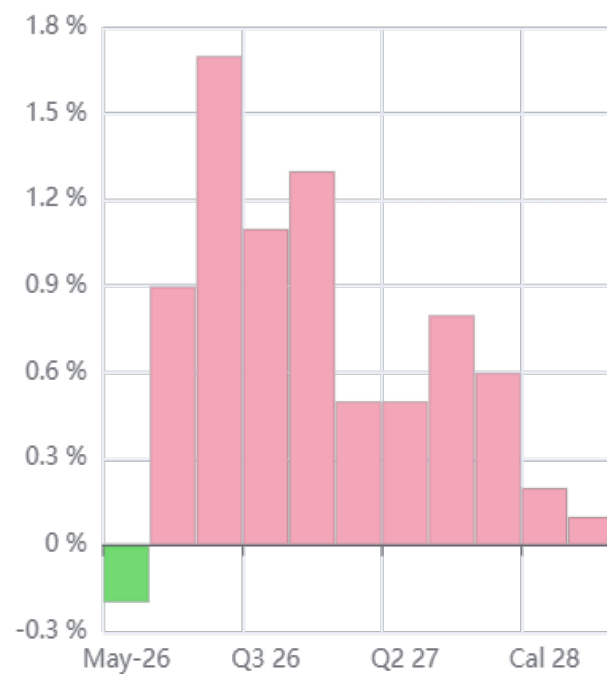
## 超大灵便型散货船Supramax

10TC	\$/day	WoW	
May-26	19,630.00	-8.0	0.0 %
Jun-26	20,127.00	222.0	1.1 %
Jul-26	20,138.00	347.0	1.8 %
Q3 26	19,709.00	215.33	1.1 %
Q4 26	18,541.00	300.0	1.6 %
Q1 27	14,545.00	104.0	0.7 %
Q2 27	16,366.00	96.0	0.6 %
Q3 27	15,498.00	14.0	0.1 %
15,403.50	Cal 27	65.0	0.4 %
Cal 28	14,380.00	25.0	0.2 %
Cal 29	14,052.00	-21.0	-0.1 %



## 灵便型散货船Handysize

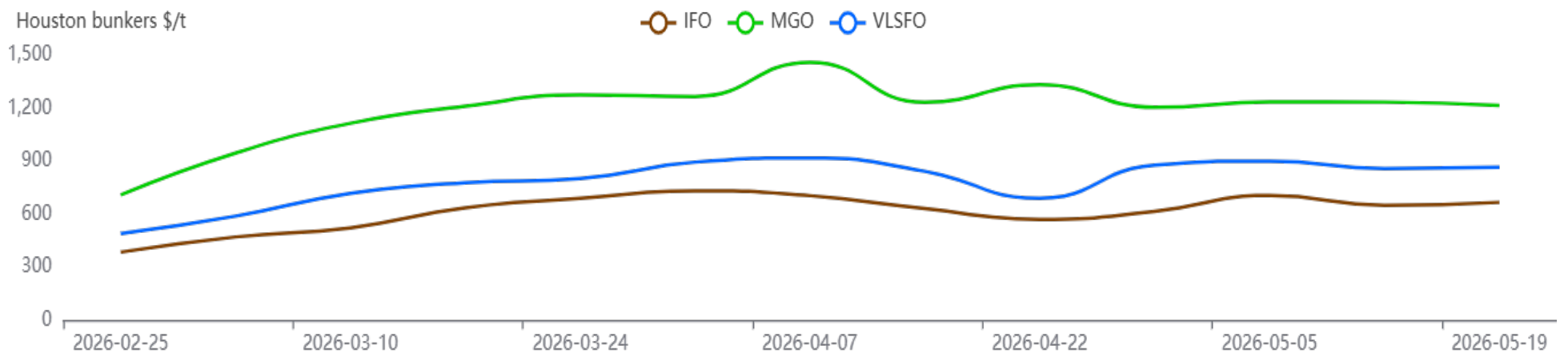
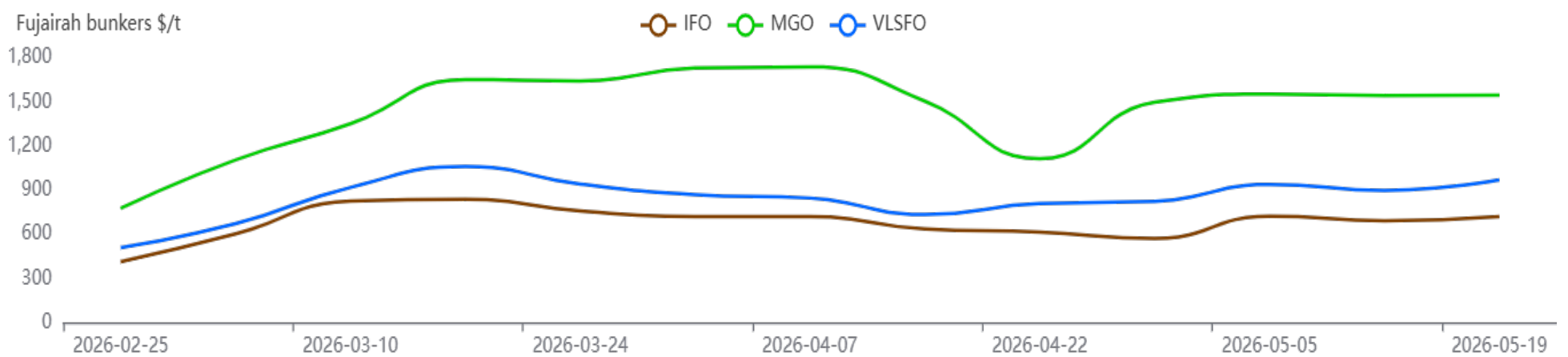
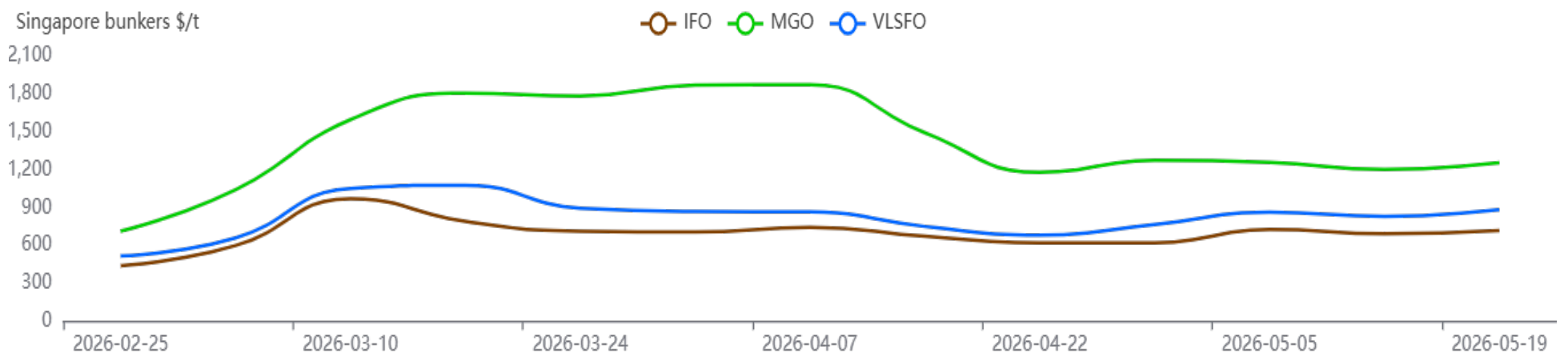
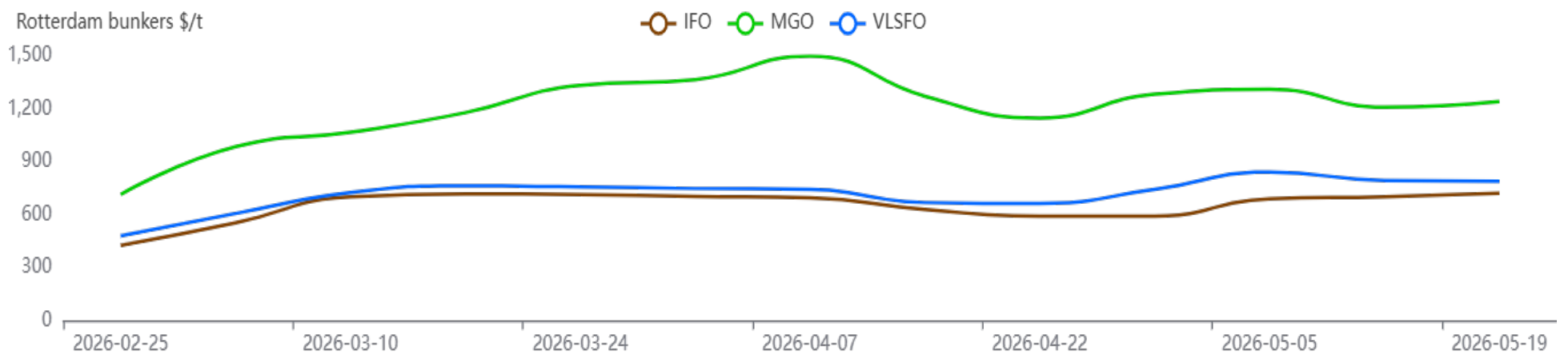
7TC	\$/day	WoW	
May-26	15,185.00	-25.0	-0.2 %
Jun-26	15,445.00	140.0	0.9 %
Jul-26	15,560.00	255.0	1.7 %
Q3 26	15,151.67	166.67	1.1 %
Q4 26	14,310.00	190.0	1.3 %
Q1 27	11,490.00	60.0	0.5 %
Q2 27	13,355.00	70.0	70.0
Q3 27	12,910.00	100.0	0.8 %
Cal 27	12,536.25	70.0	0.6 %
Cal 28	11,725.00	20.0	0.2 %
Cal 29	11,545.00	10.0	0.1 %



## 第六部分 燃油价格 BUNKER PRICE

MP	LO	HO	MO	SP	WoW	W%	M%
zhoushan	850.0	729.0	1226.0	121.0	33.0	37.5	-964.29
Singapore	882.5	718.0	1255.5	164.5	26.0	18.77	169.67
Rotterdam	790.0	722.0	1242.5	68.0	-24.5	-26.49	-6.21
Fujairah	969.5	720.0	1546.5	249.5	44.0	21.41	28.61
Houston	866.0	667.0	1215.5	199.0	-10.0	-4.78	66.53

(MP-Bunkering Main Ports; LO-Heavy Low Sulphur Fuel Oil; HO-Heavy High Sulphur Fuel Oil; MO-MGO; SP-Spread;)



## 第七部分 最新商品价格 LATEST COMMODITIES PRICE

Grains and Oilseeds		Index	+/-	Weekly	Monthly	YTD
Wheat		217.0	5.0	2.36	4.33	10.15
Maize		235.0	-1.0	-0.42	0.43	4.44
Soybeans		230.0	2.0	0.88	1.77	13.3
Rice		167.0	5.0	3.09	2.45	-4.57
Barley		251.0	5.0	2.03	2.87	11.06
Energy		Index	+/-	Weekly	Monthly	YTD
Crude Oil	USD/Bbl	100.44	-1.09	-1.07	10.2	61.32
Brent	USD/Bbl	106.87	-0.38	-0.35	6.99	62.81
Natural Gas	USD/MMBtu	3.05	0.21	7.39	10.91	-3.17
Gasoline	USD/Gal	3.49	-0.19	-5.16	7.06	63.08
Heating Oil	USD/Gal	3.95	-0.19	-4.59	2.33	84.58
Ethanol	USD/Gal	2.0	0.03	1.52	5.26	14.94
Naphtha	USD/T	843.61	-55.23	-6.14	-6.54	53.19
Propane	USD/Gal	0.86	-0.03	-3.37	8.86	13.16
Uranium	USD/Lbs	84.5	-1.8	-2.09	-2.71	18.51
Methanol	CNY/T	3069.0	27.0	0.89	-0.71	33.43
TTF Gas	EUR/MWh	49.28	2.73	5.86	15.44	37.96
UK Gas	GBP/thm	120.96	6.69	5.85	13.39	41.86
Industrial		Index	+/-	Weekly	Monthly	YTD
Copper	USD/Lbs	6.26	-0.32	-4.86	3.47	36.98
Coal	USD/T	132.45	-0.05	-0.04	-0.34	33.45
Steel	CNY/T	3165.0	-49.0	-1.52	1.15	2.49
Iron Ore	USD/T	109.79	-1.32	-1.19	2.56	9.79
Aluminum	USD/T	3639.3	10.3	0.28	0.93	48.42
Lithium	CNY/T	182000.0	-18500.0	-9.23	6.43	187.75
Metals		Index	+/-	Weekly	Monthly	YTD
Gold	USD/t.oz	4517.47	-180.67	-3.85	-4.74	40.29
Silver	USD/t.oz	75.84	-10.5	-12.16	-2.33	135.02
Platium	null	1965.3	-169.5	-7.94	-6.02	95.38
Currencies		Index	+/-	Weekly	Monthly	YTD
EUR/USD		1.16	-0.01	-0.85	-0.85	2.65
USD/CNY		6.8	0.01	0.15	-0.44	-5.82

## 第八部分 本周话题 WEEKLY TOPIC



### 绿色航运技术

航运市场信息，Berge Bulk 已将刚性帆风力翼帆从技术验证阶段，转向实船应用与常态化运营，在营运阶段，船东更加关注船员如何操作风帆，结合航线优化以达到船舶商业运营的协同优化，为公司节能减排。该公司旗下21.12 万载重吨的好望角型散货船Berge Olympus (2018 年建造)，是航运业较早完成 刚性帆风力翼帆改装并投入商业运营的大型散货船，这标志着风力助航技术进入船舶日常经营作业阶段。

当前市场存在的船舶节能清洁技术可以从辅助推进技术，低碳燃料，船体与能效优化，排放控制与碳管理等几个方面去介绍。

风力辅助推进技术中有刚性翼帆，适合大型散货和油轮，长距离航线，这种风帆高度 20至37m，自动调向，适配新旧船改装。常规航线节油 10%至30%，单帆日均节油 0.7至1.5 吨，年减排 CO<sub>2</sub>约 500 吨以上。这种风帆已经开始批量装船，进入常态化运营。另外一种转子帆，利用马格努斯效应，结构简单、可靠性高。节油8%至15%，适合中小型散货船、油船。

低碳 或零碳燃料作为动力。LNG 双燃料属于最成熟过渡方案，新船订单占比也最高，替代率超 75%。CO<sub>2</sub>减排15%至20%，NO<sub>x</sub> 减排85%，硫化物颗粒物减排近100%。绿色甲醇常温液态、储运便利，适配现有发动机改造，远洋新船主流备选，绿色甲醇的供应链还有待完善发展。绿色氨零碳、无碳，远洋零碳路线之一，2026 年进入实船验证与小批量应用，运输和存储要求高。氢燃料电池 / 锂电零排放，内河 / 港口 / 短途主流，续航有限、成本偏高。生物燃料（生物柴油、BioLNG），兼容现有设备，减排30%至60%，部分可达负碳排放，是有限应对欧美燃油法规的燃油。

船体与能效优化技术。空气润滑系统（Air Lubrication），船底气泡减阻，大型船节油 10%至20%，改装友好。节能附体（舵球、消涡鳍、前置导管），低成本、高回报，节油 3%至8%，存量船首选。低阻力涂层 / 轻量化船体，减阻 + 减重，综合节油 5%至12%，新船标配趋势，有机硅是选项之一。AI 航线与能耗管理，智能配载、气象航线、主机优化，节油 5%至15%，快速见效。

排放控制与碳管理。船载碳捕获（OCCS），捕集主机尾气 CO<sub>2</sub>，捕获率70%至90%，处于试点阶段。废气脱硫 / 脱硝（EGC/SCR），满足 IMO Tier III，合规刚需，存量船普及。甲烷捕获 / 利用，针对 LNG 船与油气船，减少逃逸排放。

节能清洁技术已形成 能效提升 加 燃料替代 加 智能管理三层体系。LNG 双燃料是市场绝对主流；风力助力，甲醇、氨、碳捕获快速崛起；AI 管理与实船测试成为技术管理的关键抓手。

Shipping market information Berge Bulk has shifted the rigid sail and wind wing sails from the technical verification stage to practical ship application and regular operation. During the operation phase, shipowners are more concerned about how the crew operates the sails and combine route optimization to achieve coordinated optimization for the commercial operation of the vessels, in order to achieve energy conservation and emission reduction for the company. The 211,200 deadweight Capesize bulk carrier Berge Olympus (built in 2018) under the company's portfolio is the first large bulk carrier in the shipping industry to complete the modification of rigid sail and wind wing sails and put them into commercial operation. This marks the entry of wind-assisted navigation technology into the daily operation and maintenance stage of ships.

The current market's available technologies for improving energy efficiency and reducing pollution of ships can be introduced from several aspects such as auxiliary propulsion systems, low-carbon fuels, hull and energy efficiency optimization, emission control and carbon management.

In the wind-assisted propulsion technology, there are rigid wing sails, which are suitable for large bulk carriers and oil tankers, as well as long-distance routes. These sails are 20 to 37 meters in height, automatically adjust direction, and can be adapted for both new and old ships. On regular routes, fuel consumption is reduced by 10% to 30%. With a single sail, daily fuel savings are 0.7 to 1.5 tons, and annual CO<sub>2</sub> emissions reduction is approximately 500 tons or more. These sails have already been installed on a large scale and are entering regular operation. Another type is the rotor sail, which utilizes the Magnus effect and has a simple structure and high reliability. Fuel consumption is reduced by 8% to 15%, and it is suitable for small and medium-sized bulk carriers and oil tankers.

Low-carbon or zero-carbon fuels as power sources. LNG dual-fuel is the most mature transitional solution, accounting for the highest proportion of new ship orders, with a substitution rate exceeding 75%. CO<sub>2</sub> emissions are reduced by 15% to 20%, NO<sub>x</sub> emissions are reduced by 85%, and sulfur and particulate emissions are reduced by nearly 100%. Green methanol is in liquid form at room temperature, convenient for storage and transportation, suitable for retrofitting existing engines, and is a mainstream option for new ocean-going ships. The supply chain of green methanol still needs to be improved and developed. Green ammonia is a zero-carbon and carbon-free option for the ocean-going sector, entering actual ship verification and small-scale application in 2026. It has high requirements for transportation and storage. Hydrogen fuel cells / lithium batteries are zero-emission, suitable for inland rivers / ports / short-distance transportation, with limited range and high costs. Biofuels (bio-diesel, BioLNG) are compatible with existing equipment, reducing emissions by 30% to 60%, and some can achieve negative carbon emissions. They are a limited response to European and American fuel regulations.

Ship body and energy efficiency optimization technology. Air lubrication system (Air Lubrication), air bubble drag reduction in the ship, up to 10% to 20% fuel savings for large ships, friendly for retrofitting. Energy-saving attachments (rudder balls, vortex elimination fins, front-mounted conduits), low cost, high return, fuel savings of 3% to 8%, preferred for existing ships. Low-resistance coating / lightweight ship body, drag reduction + weight reduction, comprehensive fuel savings of 5% to 12%, standard feature for new ships, silicone is one of the options. AI routes and energy consumption management, intelligent loading, weather routes, engine optimization, fuel savings of 5% to 15%, quick results.

Emission control and carbon management. Shipborne carbon capture (OCCS), which captures CO<sub>2</sub> from the exhaust of the main engine, with a capture rate of 70% to 90%, is in the pilot stage. Exhaust gas desulfurization/denitrification (EGC/SCR), meeting IMO Tier III standards, is a compliance necessity and is widely adopted on existing ships. Methane capture/utilization, for LNG ships and oil and gas vessels, reduces fugitive emissions.

Energy-saving and clean technologies have formed a three-tier system of energy efficiency improvement, fuel substitution, and intelligent management. LNG dual-fuel is the absolute mainstream in the market; wind power assistance, methanol, ammonia, and carbon capture are rapidly emerging; AI management and real ship testing have become the key focuses of technological management.