

Johor Baru vs. Singapore: who get the sugar cake

Who control fuel supply – controls the port's traffic !

Sea fleet – one of the important world users of fuel. Expenditures for it in the operating costs of each vessel reach 30–50%, and for the obsolete uneconomical tankers of large tonnage they reach to 80% and more. In the sea industry always they it is no wonder that manifested the increased attention to the bunker market. Meanwhile geographical and other special features of this quite market are in many respects determined by the trends of development of commercial fleet and world navigation.

Sizes and the structure of the demand

For guaranteeing the demands of international sea navigation in the entire world yearly are expended (without taking into account the needs of cabotage) about 140 million tons of fuel on the sum more than 15 billion dollars. After the petroleum and freight crises in the middle of the 70's the World Market for ship fuel proved to be in the long stagnation, and an increase in sales was definitely renewed only since the beginning of the 90's – on the average to 2% per year. This market as a whole is characterized by the relative stability of demand, although it perceptibly is reduced in the periods of the global cyclic decreases in the sea trade, when chartering tonnage is reduced and the part of the commercial fleet occurs on the hitching post.

For the years 1990–2002 the world sea transportation of loads increased on the average for the year by 3,2% and the volume of the transport work of fleet (in the ton– mile expression) – by 2,9%. The needs for the sea bunkering of the industrially developed participating countries of OECD (Organization for Economic Cooperation and Development) grew in 2002 to 92,8 million tons. According to the nearest forecasts in 2003 the rates of the development of sea trade in the world must increase still more, that cannot but gladden the bunker business. But the process of removal from service of the large number of old tankers and bulk carriers, which are replaced by much more economical new vessels, at the same time is strengthened. This will hold in control an increase in the market demand for the fuel–, and average annual increase in the present decade, it will most likely, remain in the range 2–3%.

In the geographic distribution of world bunker deliveries the gradual displacement of activity to the Far East in connection with the anticipating increase in navigation in the countries of East and southeastern Asia occurs. The regional markets for North Western Europe and Mediterranean in the totality consume of about 30% of entire volume of fuel, utilized in the world for the supply of merchant ships. These markets long time occupied key place in the world on sales of ship fuel, but in recent years into the leaders began to be advanced Far–Eastern region. The third on the significance regional market (North American) is considerably inferior to European and Far–Eastern.

As is known, ship fuel– is subdivided into two basic forms: the first covers different stamps of heavy fuel – petroleum residue by viscosity from 30 to 380 cst (according to the international classification Of intermediate Of fuel Of oil – 1FO); the second includes lung sea fuel– diesel (Marine Of diesel Of oil – MDO) and gas oil (Marine of GaS Of oil – MGO).

The content of sulfur in the fuel became one of the most important contemporary norms, generated by more stringent requirements for the protection of environment.

The structure of sales of ship fuel in the recent decades substantially changed in connection with the changes in the world commercial fleet and the tendency to reduce this article of expenditures. From of the 80's the overwhelming majority of the transport vessels (more than 95%) began to be equipped with diesel installations, moreover 75% of all vessels use the low-speed Diesel engines, which use as the fuel of stamp IFO. Remaining vessels middle- and by high-speed diesels use more expensive stamps of light fuel.

In proportion to the renovation of fleet due to the large-capacity vessels with the economical power plants grew the demand for cheap heavy fuel and basic volume of sales on the world bunker market now it is fallen to the fuel mazut. The greatest demand enjoy stamps IFO-380 and IFO-180, which correspond to the requirements of International standard ISO: 8217-96. In a much smaller quantity the expensive lung of fuel- is consumed (distillates). Let us say, in all EU countries the share of distillates is now less than 20% in the joint volume of the fuel, expended to the bunkering of vessels in world traffic.

Factors and the geography of the demand

There are some regularities in the geography of sales of various types. In the large ports on the trans-shipment of mass loads are characteristic predominantly sales of the fuel of stamps IFO for the supply of heavy duty vessels with the low-speed diesels. In the regions, where is exploited the large number of auto-passenger ferry boats or small vessels of coastal floating, and also fishing vessels, is formed steady demand for the distillates. Thus, on the national bunker markets of Great Britain and Norway the share of light fuel composes uncommonly high specific weight – approximately 60%. This portion is high in the countries with the developed coastal navigation. In **France**, for example, in the cabotage are consumed about half million of tons of fuel, and 98% of this quantity – distillates. In the entire sphere of the coastal navigation of the countries of Europe diesel fuel occupies 80% of volume of bunkerings. For the regions of industrial fishing and bunkering bases, which operate the distant sea trades, are characteristic steady sales MGO for the fishing vessels. In particular, on the **Canary Islands**, where are sold per year 2,5 million tons of ship fuel (Las Palmas and Tenerife), of about 40% of entire demand it ensures the precisely fishing fleet (among the EU countries Spain he possesses the largest fishing fleet).

The determining factor of regional demand for the bunkering – this is traffic volume of vessels. The volume of demand depends on a quantity of [suzozakhodov] into the local ports and the revolution of tonnage, scales of port activity, geography of seaways in the region, the proximity of the lively navigable routes and maintenance of transit ship flows. Is extremely important the presence of infrastructure (technical, organizational, information) and of adjacent supply sources of fuel competitive on the prices – local oil refineries ([NPZ]), and also the collection of services, the quality of service, the traditionalism of purchases, the confidence of clientele.

Great significance for the work of bunkering bases has a degree of the development of linear navigation – ferry-boat and container lines. For example, in the Greek port Piraeus of approximately 800 thousand tons of fuel yearly consume only the vessels of

local ferry–boat– passenger lines, moreover the peak of demand is fallen for the summer period. In many small ports, especially in the Caribbean and Mediterranean, bunker business is developed because of the attraction of the cruise routes, which ensure large seasonal demand on the fuel–. Frequently for the ports remote from the commercial ways this serves as the basic source of income and business activity. The seasonal splash of sales of fuel give cruise vessels in the very southern **Argentinean** port Of Ushuayya in the cape of Horn, in the ports of Alaska, etc.

Very high and steady demand for the bunkering is formed in the nodal points of oceanic and sea communications. In such points of law court they supplement fuel stocks after prolonged passage or before beginning distant voyage. Insignificant commercial ports therefore became the large bunkering centers of international significance with the large annual volume of sales of ship fuel (Fudzheyra, Gibraltar, Durban, whig and other). Large transit [sudopotoki] create high demand on fuel– in the zone basic channels (Suez, Panamanian) and straits (Black Sea, Baltic and other). The waiting time of the passage through Bosphorus, waterway SV of Laurentius and other straits or channels frequently is used for completing the ship reserves.

Passage of the vessels through the Black Sea and Baltic straits

	Quantity of passages of vessels per year
Bosphorus	47 thousand
along the strait	29 thousand
Dardanelles	43 thousand
along the strait	30 thousand
Eresunn	40 thousand
The Store Baelt	18 thousand
The Little Belt	3 thousand

This category of international bunkering centers illustrates well an example of the flourishing fuel business in the zone of the **Strait of Gibralter**, through which yearly pass about 70 thousand vessels. Strictly Gibraltar (small British possession (cliff) of an area of 6 sq. km.) economically exists in essence due to the resale of fuel (2,5 million tons/year), the quantity of bunkered vessels in the port itself growing in the last decade several times. In the same zone successfully act two more sufficient visible center: Spanish is enclave Ceuta on North–African coast on the other side of the Strait of Gibralter (0,54 million tons/year) and the Spanish port of Algeciras (1,42 million tons/year). The overall consumption of fuel in “the triangle” Gibraltar–Algeciras– Ceuta reaches 4,5–4,8 million tons/year, which puts this the focus of bunkering bases in first place in entire Mediterranean pond. For the comparison: in the zone of the Suez Canal, where it passes yearly 14 thousand vessels, the volume of bunkerings is about 3 million tons/year.

In contrast to such specialized bunkering centers, large commercial ports became important supply bases because of the enormous scales of load and of ship–traffic. Here bunker business underwent development as the associated sphere of port services. Good prospects for the bunkering operations are added in the seaports, located in the lower reaches of the river of the navigable rivers, where sea and inland waterways converge (Rotterdam, New Orleans, Hamburg, Buenos Aires and other). In the most advantageous position are located a few port complexes, for

which the characteristically entire combination of contributory factors – arrangement on the cross lines of the lively ocean-going ways, gigantic freight traffic, the developed functions of the maintenance feeder and coastal navigation, its own petroleum refining.

Because of this combination acquired status of the largest in the world bunker **port Singapore**. In 2002 it moved 258 million tons of loads and were accepted 145 thousand vessels, which ensured sales of 20,1 million tons of the bunker fuel (record demand in **Singapore** it was fixed in the year before last – 20,4 million tons). From this volume 86% it was necessary on heavy fuel IFO. In the largest in the world on freight traffic Rotterdam port it was in 2002 processed 322 million tons, in this case port they visited 29 thousand seagoing vessels and 133 thousand river, which as a whole 9 million tons of fuel required. For the satisfaction of so great demand much fuel is imported both into **Singapore** and into Rotterdam, although in each of them it acts on 4 its own large [NPZ] (total power respectively 60 and 50 million tons/year). The structure of sales in the port Rotterdam appears as follows: 93% – stamp IFO, 4% – MGO and 3% – MDO.

Proposal of the services

Bunkering operations usually are accomplished with the aid of the specialized tanker– bin operators of different tonnage, and also fuel servicing trucks on the port moorages. Considerably more rarely adapts the bunker service “of ex–pipe”, when fuel– is given to the vessel on the conduit on the feeding terminal. In a whole series of regions of the world (in Fudzheyre, in the strait the Store Baelt, in the delta of Orinoco and others) is most common the bunkering out of the port water areas (“offshore”). This extra–coastal of Shornaya bunkering is advantageous to the operators of vessels, it makes it possible to avoid deviation from the route of floating and to supplement fuel stocks without the approach into the port, i.e., to economize on port dues and other expenditures. This method became the main thing in the supply of transit vessels with the passage of straits, channels, it was mouth navigable rivers and so forth in the zone of Baltic straits for the off–shore service are used the bin operators of sea floating by a dead weight from 1500 to 6000 tons, equipped with the isolated tanks for the different stamps of ship fuel. In the ports of Europe, USA, Japan and other countries increasingly more bin operators with the double casing appears.

Bunker business in the majority of the countries is under the jurisdiction of the private capital, although in its development the state policy plays important, and the now and then and decisive role. Specifically, to this policy Malta is, for example, obliged to the acceleration rates in sales of ship fuel (to 20% per year) and to advancement within the short time in a number of the leading bunkering bases in Mediterranean pond. Encouragement by the government of Malta of off–shore supply allowed island state, in spite of the absence of her own [NPZ], to intercept the large part of the bunker business in this region of the Mediterranean in the Sitsiliysk's **port of Augusta** – one of the main in Italy centers of bunkering and **petroleum refining**. Although because of the need for the import of the fuel of price in Malta somewhat above, this is compensated by the absence of port dues. Malaysia, where the ineffective policy of authorities makes its noncompetitive on the bunker market southeastern Asia, is in spite of the potentially great opportunities of using the geographical location of the country, can serve as the obvious case of the negative action of state.

In the entire world of approximately 500 particular and state companies are occupied by the supply of seagoing vessels by fuel. The role of the producers of petroleum products – main petroleum concerns – on the bunker market was reduced: in the past they controlled more than

80% sales, but now not more than 40%. Many bunker brokers and traders act together with the suppliers of fuel on the market. Main role belongs to large transnational corporations. Thus, one of the leading European companies – Danish O.W. Bunker & of trading [so] – became the most important supplier of **ship fuel** in Scandinavia and it operates already in 11 countries. It has daughter firms in the zone of Baltic straits, in the keel, Goteborg, Istanbul, Piraeus, To Tallinn, to Riga, Arkhangelsk and other ports, and it also attends main fishing regions in the North Atlantic.

The number of leading in the world suppliers includes the company Of bominflot Of inc. It proposes its service almost in 30 seaports of the USA, in the countries of South America, North Western Europe and the Mediterranean, and also has daughterly enterprises in Estonia (Bominflot of Estonia AS) and in the port Novorossisk (Chernomor–Bominflot ltd). Largest by the volume of bunkerings is in the world considered the company of the USA ExxonMobil of marine of fuels (EMMF), which yearly achieves in the ports of the different countries of the world of 18000 operations of supply.

Port/the region	Types of the fuel			Note
	Petroleum residue IFO–380	Petroleum residue IFO–180	Diesel fuel MDO	
North America				
New York	180–181	197–198	345–350	W
Philadelphia	180–182	194–196	350–355	W
Norfolk	181–183	191–193	295–300	W
Mobile	183–185	189–191	265–270	W
Houston	174–175	179–180	255–260	W
New Orleans	173–175	178–180	255–260	W
Los Angeles	189–191	206–208	305–310	W
Seattle	186–188	192–194	305–310	W
Montreal	187–189	197–199	315–320	W
Halifax	194–196	213–215	295–300	W
Vancouver	190–192	196–198	320–325	W
Latin America				
San Juan	190–192	196–198	300–302	D
Aruba	186–188	198–200	300–302	D
The Panama Canal	180–181	190–191	290–300	W
El Salvador	180–182	184–186	312–314	D
Rio de Janeiro	173–181	177–185	307–309	D
Buenos Aires	–	176–178	265–280	D
Montevideo	164–168	168–172	290–292	D
North Western Europe				
Rotterdam	166–170	174–177	215–222	D
Falmouth	178–182	187–190	292–294	D
The Store Baelt	180–181	190–191	236–238	D
Hamburg	173–175	179–181	220–222	D
Antwerp	189–171	174–176	222–224	D
Havre	185–187	201–203	269–271	W
Gdansk	177–179	186–188	250–252	D

Goteborg	179-181	189-191	236-238	D
Saint Petersburg	168-172	173-178	228-245	D
Tallinn	168-172	172-178	214-216	D
Klaipeda	182-184	188-190	274-276	D
Mediterranean and Black Seas				
Marseille	182-188	193-195	260-262	W
Gibraltar	181-183	187-188	272-273	D
Algeciras	181-183	186-187	272-274	D
Augusta	181-183	186-188	258-260	W
Malta	179-180	186-188	255-258	D
Las Palmas	192-194	198-200	269-271	W
Piraeus	185-186	190-191	255-257	D
The Suez Canal	180-181	185-186	350-352	D
Novorossisk	185-186	190-191	255-257	D
Istanbul	187-189	194-1%	256-258	D
The Middle East/Africa				
Jidda	173-174	178-179	264-265	D
Fujairah	176-177	180-181	246-248	D
Capetown	-	181-185	256-258	W
Abidjan	228-230	238-240	336-338	W
Dakar	209-211	225-227	290-292	W
The Far East				
Singapore	181-184	186-187	215-220	D
Tokyo	205-208	210-213	275-278	D
Hong Kong	193-196	197-199	215-230	D
Pusan	185-187	189-191	275-277	D
Kaohsiung	-	198-200	265-267	D

Special features of the separate markets

diagram 1

Portion of regions of the world in the consumption of the ship fuel

Region	Portion
The Far East (Singapore)	32%
Europe	31%
North America	13%
Central and South America	6%
The Middle East and South Asia	11%
Africa	6%
Australia	1%



Europe

In the countries the European Union the volume of bunkerings is more than 42 million tons/year in international navigation and about 6 more million – in the cabotage. The entrance into the European Union in 2004 the large group of the new states, including of Malta, Cyprus,

Poland and countries of the Baltic States, will add still several million tons to the general fuel market for association.

In the North Sea the place for largest concentration of bunkering activity are port region "OF ARA", which includes Rotterdam, Amsterdam, Antwerp is somewhat less significant ports of the Netherlands and Belgium. Yearly in this region are consumed about 16 million tons of bunker fuel. From this quantity in the portion of the ports of the Netherlands are fallen 11–12 million tons/year (in the comparison from 10,4 million tons in 1990 even 8,9 in 1980). Besides its own production of fuel important source of supply is the import, moreover petroleum residue of Russian production predominates in the summer period in the imported deliveries. In Rotterdam the vessels, which envelope in the port for the loading–unloading operations, as a rule, are coaled. The approaches of vessels into Rotterdam for the bunkering are not specially considered here as the typical cases, in spite of provided in this case reduction in port dues, off–shore service is not permitted by the legislation of the Netherlands, i.e., any operations on the transfer of fuel they must occur in the limits of port.

The bunker market of Scandinavia is evaluated at 5 million tons/year, of them 1,7 is fallen to the Swedish ports – Goteborg, etc. in Denmark bunker business is oriented to the Baltic straits, where year is sold about 1,5 million tons/. In all ports of Germany in the northern and Baltic seas the volume of sales of bunker fuel is 1,2–1,3 million tons / year, including 0,8 – in the port of Hamburg.

In the Mediterranean the main supplier of ship fuel – Spain (about 6 million tons/year). In this pond, besides the already named "Gibraltar triangle" and Suetsa, is separated an also whole series of the large regional centers of supply. Among them – the largest in the pond seaport Marseille with the outer harbors phos also of washer (general freight traffic on the order of 100 millions, and the volume of the bunkerings of 1,6 million tons/year). The bunker ports of Italy – genoa, Augusta, Leghorn – provide for the deliveries of 2,65 million tons/year.

In the eastern Mediterranean Greek Piraeus and Turkish Istanbul compete. The volume of sales of bunker fuel in Piraeus for the years 1997–2000 increased from 3,8 to 4,0 million tons, which is of about 90% of entire bunker market of Greece.

At port Piraeus yearly calls about 26 thousand vessels, of them 80% – judgment of Greek companies. Specifically, national demand – basis of local bunker business. Indeed enormous Greek fleet prevails in the Mediterranean, and, according to some data, Greek shipowners yearly buy on the whole 14 million tons of fuel. Much less than the fuel realizes in Istanbul – about 0,8 million tons/year.

The role of African countries on Mediterranean bunker market is unobtrusive (excluding Egypt) despite the fact that North Africa – this one of the largest regions of oil export.

North America

From the yearly number of all approaches into the ports of the world of ocean-going vessels the tenth part is fallen to the ports of the USA. In this country each year on the supply of vessels is expended 24–25 million tons of fuel, from which 70% – this is the fuel mazut. American seaports each year attend about 60 thousand vessels (with dead weight of 10 thousand tons and more); moreover majority of them – tankers and the bulk carriers, which complete or which begin hence distant transoceanic voyages.

In the port system of the USA are separated four basic regions – Atlantic and Pacific coast, Gulf of Mexico and Great Lakes. Main role in the ship- and freight traffic plays the port region of the Gulf of Mexico: through it passed in recent years approximately by 63% of entire sea trade in the USA and are here located by 4 of 5 largest ports the countries. In this region are concentrated the basic [nefeperevalochnye] and oil-refining power of America. Therefore not randomly it leads also on the consumption of ship fuel – 8,5 million tons per year. Main bunkering ports of the USA – this Houston (2,7 million tons/year) and New Orleans (2,5). Among other port regions of the country by the most dynamic increase is separated the bunker market for the Pacific coast because of the displacement of commercial and navigable activity to the direction of the USA – Asia. Grew sales of ship fuel in the Pacific Ocean ports – Los Angeles (to 2,5 million tons per year), Seattle (1,5), San Francisco (1,0). New York (1,5) and Philadelphia remain the key centers of bunkering in the region of the Atlantic coast of the country (1,2).

The volume of sales is 1,7 million tons per year in all ports of Canada, and Vancouver, Canadian ports of the Great Lakes, Montreal and Halifax play basic role in the supply of vessels. Most of all fuel is consumed in the Pacific Ocean port Vancouver (0,5 million tons/year), moreover cruise navigation here gives half of demand.

In Mexico bunker market is under-developed, in spite of the great potential possibilities, based on the large oil output and the local production of fuel. On the bunkering yearly are thus far expended only about 0,25 million tons. But in per [spektive] with the development of infrastructure Mexican market will be able to compose competition to the bunkering ports of the USA and to more influence market situation in entire Caribbean pond.

Central and South America

Panama, which after the establishment of national control over the Panama Canal in every way possible encourages foreign investments into the bunker industry, occupies special position in the region. State formed “petroleum empty bands”, in limits of which the suppliers can use special tax regime for the import, the storage and the preparation of fuel. Its own production of petroleum products is supplemented with the import of the missing types from the plants in the USA, Venezuela, on the island Aruba. The wide twenty-four hour spectrum of services on both sides of channel ensures about 25 suppliers. Panama expects to increase the volume of sales of ship fuel from 2 to 3 million tons/year.

Furthermore, on the Pacific coast demand on the fuel- to a considerable extent support fishing vessels, and in “banana” ports – ocean-going refrigerators. From the countries of central America is separated Ecuador, where because of the large export of bananas for the supply of vessels it is expended to 0,5 million tons of the fuel (of it 60% – in the port of Guayaquil).

In South America is most developed the bunker **market of Venezuela** (about 2 million tons/year), which operates navigation in the Caribbean Basin and which draws by low fuel prices local production. Sales in Brazil, where the number of bunkering ports considerably grew, rapidly are enlarged, and state oil company set as a goal to increase deliveries to 2,5 million tons/year. The smaller value markets of Argentina (0,4) and Uruguay have (0,28).

The Far East

In the **Asian-Pacific region** after **Singapore** basic became the market for South Korea with a volume of bunkerings of about 12 million tons/year. In this business South Korea is inferior in the world only to Singapore, to the region “OF ARA” and to Fudzheyre (United Arab Emirates). The South Korean market for fuel has a good reputation and it is completely ensured by the national petroleum refining industry, which works on the Near Eastern raw material, although the prices nevertheless are somewhat higher than in Singapore. Traffic volume of vessels swiftly grows: for the years 1990–2002 the number of approaches of ocean-going vessels into the ports of South Korea grew from 27700 to 66700 (plus of 115 thousand approaches of the vessels of coastal floating). The basic volume of bunkerings is achieved in Pusane (6,9 million tons/year), To [ulsane] (2,2) and to Inchkhone (1,8).

In **Taiwan** bunker market also rests on its own large production of fuel and development of sea trade, with this 3 of 4 million tons of the yearly volume of deliveries it penetrates the **port of Gaosyun**. Japanese bunker market (4–5 million tons/year) is famous by the quality of fuel and by high prices. It meets mainly the demand of Japanese commercial fleet, especially because some shipowner's and bunker companies are the daughterly branches of one and the

same financial- industrial groups. Approximately 40% of sales are fallen to the **ports of Tokyo** molded edge.

In Hong Kong local administration makes large efforts for increasing its attractiveness as the bunkering base, which in spite of exist serious difficulties (shortage of fuel, the high cost of storage because of the exorbitant prices to the earth and other). In 2002 Hong Kong it visited 70500 ocean-going vessels, and the volume of sales was 3,0 million tons. The capacity of the Chinese bunker market, which as a result of the entrance of C.P.R. (Chinese Peoples' Republic) in [VTO] is located on the threshold of liberalization and profound changes, is evaluated by the same value. Are thus far for it characteristic the supremacy of one bunker government monopoly, rigid quotas to the import of fuel, the limited selection of stamps. The leading bunker companies with the impatience expect discoveries by them access to this promising market. Indeed only one Shanghai port in the past year increased freight traffic to **264 million tons** and it left in the second place in the world after Rotterdam, having for the first time outdistanced **Singapore**.

diagram 2
Main bunkering centers

Ranking	Worldwide location	mln. of tons per year
The I	Singapore	20
THE II	Fudzheyra	12
THE III	Rotterdam	8.5
IV	Pusan	6.9
The V	Piraeus	4
VI	Antwerp	3.7
VII	Hong Kong	3
VIII	Gaosyun	3
IX	The Suez Canal	2.9
The X	The Panama Canal	2.8
XI	Houston	2.7
THE XII	Gibraltar	2.6



