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Letter From the Editor

Dear Readers,

Last week, we announced the creation of our new website: www.turkishweekly.net/energy. I hope that you have found it really beneficial and downloaded the missing previous issues of USAK's Energy Review to complete the whole set, since the previous issues will only be available until the second week of the May.

This week we prepared the 16th issue while the French people were voting for their next president. We wish luck for the both candidates in the second round.

In this issue there are four interesting articles which were written by our experts;

First of all as always you will find a well prepared technical report of Mr. Direskeneli about Cayirhan Thermal Power Station.

Then you can read two political analyzes of our crew. One of them was penned by our editor Mr. Ibrahimov and he analyzed the pipeline politics and the EU policies in a well organized article.

The other one is of Mr. Turker's and he discussed the current situation in the region for energy politics from the Turkey's point of view.

Lastly, I, Hasan Selim Ozertem tried to analyze recent developments in the oil markets.

I hope you enjoy this issue and we proudly congratulate establishment of the Turkey's Great National Assembly's anniversary and children's festival.

Until next week,

My Best Regards.

Hasan Selim Ozertem
Co-Editor

Clean Energy Production 2x150 MW- Cayirhan Thermal Power Station Flue Gas Desulphurization System- 1987-1992



Haluk Direskeneli
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In mid- May 2007 we plan to visit Cayirhan Thermal Power Plant. We shall announce the exact date in web site in Ankara Branch of Chamber of Mechanical Engineers. We would like to invite all interested colleagues to join to our technical tours. It is free of charge. All you have to do is call or send an email to Ankara office and register your name, for security procedures of the host company. That is standard procedure at all thermal power plant.

Cayirhan is a good example of successful privatization in the local market. Plant thermal efficiency is high, availability is high, and labor productivity is also high. It is situated at the local indigenous mine mouth lignite reserves.

Cayirhan had a wide range of rehabilitation program covering Instrumentation and controls as well as upgrading flue gas cleaning and desulphurization systems

Our tour will enable us to visualize the latest developments at the site.

Your writer had involved in early proposal works of the FGD system in the plant long time ago. It will be wise to remember those lessons learnt notes at site herein below.

In order to learn the technical and commercial details of "Flue Gas Desulphurization" we had a very good opportunity to work together with a reputable International Company in installing a system in a local thermal power plant. There is nothing difficult, nothing so secret.

To meet our country's increasing energy demands, the Turkish Electricity Authority's power plants fire poor quality lignite of low calorific value, high ash and high moisture content, which can not be utilized elsewhere. This operation introduces environmental hazards which have to be avoided. Under the current strict environmental regulations, the Authority considers this their major problem to solve, - avoiding environmental pollution while producing electricity from economic fuel sources. Due to the high sulphur content of the fuel from in its mine, Cayirhan Power Plant was selected for the installation of first Flue Gas Desulphurization (FGD for short) System in year 1987.

Since this installation was an integral part of utility plant, and was the first of its kind in Turkey to apply desulphurization techniques to flue gases, Cayirhan FGD system was regarded by the Authority as a major step in the application of these measures for the control of Environmental Pollution.

The successful initiation of this FGD plant emphasizes the validity of this solution of a technological process applied for a cleaner environment. Even the additional costs of such a solution still allow for economical energy production.

Starting at this point, the Authority decided to make long-term commitment to install similar FGD systems in all other utility power plants.

General Information on the Project



The FGD facility, integrated with the 2x150MW capacity Cayirhan Power plant is 120km from Ankara city center, and is located in Nallihan county, near to Cayirhan town. The Cayirhan Power Plant supplies 1,800,000,000 KW-hr of electric power into the national grid each year while utilizing poor-quality lignite from local mines.

The proximate analysis of the lignite which is based to Cayirhan Power Station is as follows,

Average Lignite Proximate Analysis,

Lower heating Value,	2,800 kcal/kg
Ash	41.3 percent (dry basis)
Moisture	27.5 percent
Total Sulphur	4.65 percent
Combustible Sulphur	4.15 percent

Since the combustible sulphur is quite high at 4.15 percent, under full load of the two units of the power plant, 30 tons of SO₂ is calculated to be discharged to the local environment each hour. This is the prime reason for building the FGD plant.

The contract for FGD plant was signed on 3rd July 1987. It is on a turn-key basis, with a consortium formed by Bischoff- Kloeckner- Lentjes of Germany and the local partner in Turkey. The contractual lump sum price was 71,638,715 DM, plus 4,387,482,000 TL. By having the credit agreements to cover the project effective as of January 1988, the subject installation has been in operation since November 1991 in parallel with the utility plant.

The financing of the FGD plant was 100% from foreign sources, which also included coverage for the local portion.

Technical Details of the Project

CLIENT TURKISH ELECTRICITY AUTHORITY, Ankara, Turkey
(TEK for short)

CONTRACTOR Consortium formed by
Kloeckner-Ina, Germany
G.Bischoff, Germany (Engineer)
+ Local partner

Job Description: Flue gas Desulphurization System starting from Electrostatic
Dust Collector outlet, (by-passing existing stacks) comprising 2
each wet scrubber and their auxiliaries in Cayirhan Power Plant
which has 2x150MW Electricity Output while firing local lignite.

Process Descr: Flue gas Desulphurisation system is based on Wet-Scrubbing
principle while CaCO₃ is used as the raw material for
desulphurization, and the final product is Gypsum with 10%
moisture.

Main Characteristics of Cayirhan Power Plant:

Characteristics of Lignite:

Lower Heating Value:	2,800 kcal/kg
Ash	41.3% dry basis
Moisture	27.5% as received
Total Sulphur	4.65% as received
Combustible Sulphur	4.15% as received

Firing Process Data:(actual conditions)

Fluegas at MCR	601,000 Nm ³ /hr
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Dust Content after E/P 200 Miligram/Nm³
(with humidity)

SO₂ after E/P 17,580 Miligram/Nm³
(with humidity)

Supplementary Fueloil nr.6 firing is necessary until reaching to 30% boiler loading.

Design Criteria for Fluegas Desulphurization Process

Fluegas at MCR 721,200 Nm³/hr
(with humidity)

Dust Content 400 Miligram/Nm³
(with humidity)

Expected Desulphurization Efficiency

Should be more than 95% between 50% to 120% loadings

FABRICATION ACTIVITIES (local)

- Flues
Complete flues made of 6/8mm thick steel sheets with cross-sections 4.2mx4.5m horizontal and
5m Dia/5.6m Diameter vertical lines.
- Scrubbers
With diameter from 12m reducing gradually to 9.5m and 4m at 100meter height two each cylindrical
towers, rubber covered inside.
- Emergency Storage Tank, one each
With 18 meter diameter at 15 meter height one each cylindrical tank, conically based, with flat ceiling,
rubber covered inside.
- Suction Material Tanks, two each
With 9 meter diameter at 10 meter height two each cylindrical tanks, conically based, with flat ceiling,
rubber covered inside.
- Gypsum Water Storage Tank, one each
With 14 meter diameter at 14 meter height one each cylindrical tank, conically based, with open
ceiling, rubber covered inside and base.
- Filtered Return Water Storage Tank, two each
With 4.4 meter diameter at 5 meter height one each cylindrical tank, conically based, with open
ceiling, rubber covered inside and base.
- Conveyors and conveyor galleries for Gypsum and Lime stone transportation
- Supporting steel structures for flues and platforms
- Steel structures for hoppers and platforms between scrubbers
- Service platforms above tanks
- Steel structures for equipment service platforms within FGD housing building
- FGD housing building steel structures,
- Overhead and monorail cranes, their supporting structures



- Pipe rack supporting structures between buildings,
- Embedded items

Total shop fabrication is 4273 tons whereby

FGD housing Boiler steel and pipe rack 1342 tons
Flues, scrubbers, tanks 2114 tons
Others 817 tons
(supporting structures, platforms, hoppers, cranes, conveyors and galleries etc)

FIELD CONSTRUCTION ACTIVITIES

- Construction and site erection of shop fabricated 4273 tons of material and equipment, also additional erection of foreign supply Switch-over Dampers, booster fans, mist eliminators, Wet-Ball mill, Crushers, Vacuum Filters, Tank Mixers, Pumps, various equipment, armatures, pipes, valves, fittings, electrical instrumentation which amounts to 2808 tons, overall 7080 tons of site construction.
- Approximately 16,500 m² insulation of flues, scrubbers, and open field tanks.
- Sand blasting to SA-2-1/2 of material and steel construction
- Cold tests

CIVIL WORKS

- All above and below zero elevation civil works, portable water, fire water line civil construction, heating equipment, cooling equipment, building surface coverings (trapeze Aluminum, partially sandwich type insulation), building steel construction, roads, acid resistant floor coverings,

In order to give an idea of the amount carried out for the civil works in the project, here are the figures for the materials used.

- Steel 1,780 tons
- Concrete 24,650 m³
- Piling 6,400 m
- Surface covering 8,000 m²
- Steel structure 1,342 ton
- Acid resistant floor coverings 3,000 m²

DESIGN WORKS

Design works for flues, scrubbers, tanks, steel supporting structures, stairs, detail design of platforms, complete design of conveyors, conveyor support structures, cranes, pipe-rack, civil works and buildings.

OTHERS

All inland transportation
Delivery of necessary spare parts

PRICE

Foreign portion by Foreign partners 71,638,715 Deutsche Marks
Local Scope 29 billion TL (1988 prices)

DELIVERY PROGRAMME

Contract effective date 27 January 1988



Period	33 months
Extension	6+8=14 months
Completion	27 December 1991

GUARANTEE PERIOD

- 4 years for Tanks, scrubbers, steel structure, coverings and painting
- 3 years or 18,000 hours of operation for fans, compressors, pumps and similar equipment
- 2 years for electrical works, instrumentation and controls.

In Cayirhan FGD plant, conventional cleaning with limestone solution is applied and gypsum is obtained as the byproduct. The plant comprises 2 each 100% operation lines. Flue gases from each utility unit are cleaned in separate cleaning lines.

The Cayirhan FGD plant is split into 3 major sections, which are the limestone preparation unit, the cleaning tower, and the gypsum water extraction unit.

Flue gases passing through the existing Electrostatic filters and newly modified flues are sent to the cleaning tower by booster fans. The cleaning tower is where the SO₂ is removed. For each boiler unit, there is one cleaning tower. While the flue gas rises through the tower, it reacts with downcoming pulverized limestone solution. The SO₂ in flue gas is thus absorbed by the solution, forming gypsum.

The limestone solution that is passed to the cleaning tower is prepared in the "Limestone Solution Preparation Unit". The raw material for this unit is obtained from the limestone mine only 7 kms (4 miles) from the power plant. It is transported as precrushed particles with maximum size of 6cm (2.5 inches). There is one additional 100% spare unit for the crushing at the location where the limestone solution is prepared and transferred to the cleaning tower.

The flue gas, from which 95% of the SO₂ content has been removed, is then discharged to the atmosphere via the "Wet Stack" situated at the top of the cleaning tower.

The gypsum by-product which is removed from the bottom of the cleaning tower is dried and filtered in hydrocyclones and vacuum filters. This dewatered gypsum is then sold on the market as a saleable industrial product.

Our experience was an extraordinary opportunity to teach us the details of an FGD systems. It is our sincere feeling that today in Turkey with local young intellectual and engineering capability, we can repeat the same project in other thermal power plants without or very limited foreign assistance.

All we need is self-confidence as well as confidence of investor who would put money into similar other projects. Once again we would like to congratulate the Purchasing Authority and the creditors who put money which made the project realized, and to the engineers/employees who make the plant to run smoothly, efficiently at maximum availability
Your comments are always welcome.

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Rovshan Ibrahimov,
Editor, USAK Energy Review

But an interesting nuance is that the EU still have not agreed with the countries of the region on the supply of oil and gas.

Although Azerbaijan interested in exporting its gas through the pipeline Nabucco, gas from that country will not be enough to fulfill this pipeline.

Russia recently launched a project construction Burgaz-Aleksandropol for bypassing the Turkish straits. This pipeline will be the first transport corridor in the EU, managed by Russia.

How Pan-European oil pipeline will be filled if there is no additional quantities of oil to fulfill the existing pipeline.

Does Energy Policy in the EU Need Correction?

EU Enlargement and the ongoing integration process within the organization, forcing it to increase activity in the field of energy policy. In this case, one of the key points is to provide alternative ways for the supply of oil and gas to the markets of the EU.

Depending on external supplies of energy, the EU mainly consumes energy resources, mostly from the Middle East and Russia. At the same time, transportation corridors from which oil and gas have been supplied pass through these regions. This situation could lead to a dependence on resources from these regions. And there is no guarantee that suppliers will not take advantage of the situation to achieve their political goals.

The EU Commission has also recently begun to actively pursue a policy to provide alternative sources of oil and gas, mainly from the countries of the Caspian region. New pipelines such as Nabucco gas pipeline and Pan-European oil pipeline which will pass through the territories of Romania, Serbia, Slovenia, Croatia and Italy are planned for construction. Current transport projects planned for the supply of crude oil and gas from the Caspian Sea. But an interesting nuance is that the EU still have not agreed with the countries of the region on the supply of oil and gas.

Although Azerbaijan interested in exporting its gas through the pipeline Nabucco, gas from that country will not be enough to fulfill this pipeline. For gas supplies from Uzbekistan, Kazakhstan and Turkmenistan is needed to build an additional Transcaspian gas pipeline. But realization of this facility is still not clear.

The main producer of natural gas in the region, Turkmenistan, linked to long-term contracts with Russia and China. This obligation could lead to ensure that Turkmenistan simply may not have additional amounts of gas for transporting it through Nabucco.

The same holds true for the situation with oil, the Baku-Tbilisi-Ceyhan oil pipeline through from which Azerbaijani oil is exported and expected run from Kazakhstan is already operates. Russia recently launched a project construction Burgaz-Aleksandropol for bypassing the Turkish straits. This pipeline will be the first transport corridor in the EU, managed by Russia. And no suspicion that Russia will make every attempt to transport foreseen additional volumes of oil from the Caspian region to Europe through this pipeline. In addition, Azerbaijan has chosen a new strategy for moving from the raw materials for the production and implementation in Europe of finished petroleum products.

In connection with this situation questions arise: How Pan-European oil pipeline will be filled if there are no additional quantities of oil to fulfill the existing pipeline. Kazakhstan also exported oil through the territory of Russia, and small quantities are transported by tankers to Baku and hence transferred with railroad till the Georgian port of Batumi on the Black Sea. With regard to natural gas, in addition to seeking to fill Nabucco gas pipeline, the EU may face another unexpected problem, namely the increase in the production of liquefied gas. While gas prices are increasing, the costs of producing liquefied gas are reduced. By 2015, demand for LNG is expected to double. It is projected that by 2010 the proportion LNG

in gas imports to the United States will raise to 8% and by 2025 will reach 15%. Thus, the net amount of LNG imports is expected to rise from 99 billion cu. meters in 2003 to 198 billion cu. meters in 2025.

To date in 10 countries, the first factory for the production of liquefied gas is under construction or design. One of the major gas producers in the world, Qatar in the near future plans to increase production by 20 million a year and go on the leaders. The post-Soviet Russia and Turkmenistan have also been preparing for a production of liquefied gas. The feature of LNG is that it may have to be transported over greater distances than is possible with transportation through pipelines. Thus, there are hundreds of none pipeline supplies in remote areas on land using LNG.

Another advantage of LNG is convenient marine transportation of liquefied gas tankers to the region of its consumption. The liquefied gas plays a strategic role during the peak of supplying gas because LNG is conveniently stored in tanks and used at the right moment.

Russia is planning to export its gas to markets in the United States and Mexico, and had already offered their wish. As a result, in the Leningrad and Murmansk oblasts of Russia, as well as on Sakhalin implemented on an industrial LNG production. Next to Turkmenistan, Azerbaijan may also planned LNG production, which could be started in the port of Ceyhan, where the Azerbaijani State Oil Company (SOCAR) plans to construct refinery plant.

In the case of the situation in the wake, common European pipeline projects may fail. Because these pipelines simply wouldn't be oil and gas to be filled. Moreover, the profitability of these projects may be extremely low, because the pipelines pass through many different countries and to ensure that they have succeeded, they should be full of energy.

Gas might not even be enough for the mega project North Stream pipeline, which would connect Russia and Germany under the Baltic Sea. Two reasons raise, the first as it was mentioned before switching to the production of liquefied gas. The second reason is the probability of decreasing of gas production in Russia. Experts believe that in the next two years in Russia is expected sharp decline in gas production. Firstly, operated to date deposits are depleted. Meanwhile, till now oil companies were reluctant to invest capital in the exploration and exploitation of new deposits. And so there will be a shortage of gas in the domestic market and Russia.

Following the forecast is somewhat ambiguous for the EU Commission, by investing huge capital investments in such risky projects. Perhaps this was the way the EU is trying to streamline its overall foreign policy. EU members opt for a more independent policy in this matter, and therefore the implementation of these projects, to some extent, may provide a mechanism for overall policy. However, this mechanism can be achieved with a very high price.

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Ahmet Türker,
USAK Energy Review

Turkey's Troubles and Chances Surrounding the Energy Strategy

Turkey's energy strategy designed as a "hub" and/or "market (trader)" is not an easy goal to achieve. Being a rather stable country in an unstable region, passing through transitions to be a European country, geopolitics are all have positive impacts on this strategy. However, are these political and diplomatic parameters are enough to make Turkey a strategic energy corridor?

Maybe the question is wrong. After all, with its gas and oil pipelines, Turkey is already an energy corridor. But turning this into a strategic asset requires more than steel pipes and ports.

Turkey, among other countries in the region, is not free of problems. These problems may constitute a big obstacle in front of EU membership which may only happen in the very long run.

If it is based on economic integration, Turkey's energy strategy and its growing population (and domestic market) is an advantage to EU.

This also depends what Turks and Europeans understand from being a "European country". If it is based on economic integration, Turkey's energy strategy and its growing population (and domestic market) is an advantage to EU. But if we understand a "social integration" as well, that may take some time.

So, the economic and social parameters are the tides for Turkey's EU membership. No decision is easy for both sides. But energy and energy security may play a great deal in this decisive process in the following years.

Turkey's huge experience with terrorism and number of experiences with externally inflicted instabilities is a chance for Turkey in this unstable region. Being a NATO member and getting on fine –not well- with the problematic Bush government is also the country's success.

Of course, one can argue that Turkey had no choice but to be a NATO member during the cold war era and US's influence on Turkey as the dominant foreign effect on the country, but this doesn't change the fact that Turkey is a Muslim NATO member and has started membership process with EU.

Turkey does not have any significant hydrocarbon resources of itself. It is either Iran, Turkmenistan, Russia, Azerbaijan, Kazakhstan or Iraq that will be using the Turkish corridor.

Turkey does not have any significant hydrocarbon resources of itself. It is Iran, Turkmenistan, Russia, Azerbaijan, Kazakhstan or Iraq that will be using the Turkish corridor. Most of these countries are not stable, democratic regimes which is a trouble for the corridor, but their reserves and willingness to have alternative ways for accessing world markets are a chance for Turkey

Recently, Financial Times reported that Iraq's reserves may be 100bn barrels more according to IHS, well known for their CERA. These reserves, if happens to be easily extractable and profitable may also be a chance for Turkey, too. But can we talk about an Iraqi security regardless of Syria and Iran?

Syria and Iran, being neighbors of Turkey, are problematic too. Any instability caused in these countries may well be harmful to Turkey's

It is not only internal stability that adds value to Turkey's energy strategy, but these countries development and opening to the world is essential.

A stable pipeline transit between these areas and Turkey will transform both sides.

As Azerbaijan being a chance for Turkey, it will not be an exaggeration to condemn Turkish political and diplomatic circles of not giving enough importance to this "relative" country

regional security. US has not achieved control in Iraq and seems like failing.

These countries are essential for Turkey's and Iraq's security. So it is not only internal stability that adds value to Turkey's energy strategy, but these countries development and opening to the world is essential. Iran for example is losing power due to underinvestment in the energy sector.

On the other hand, Turkey is badly affected by Iraq war during Bush Senior and now Bush Junior. Turks welcoming of the Iraqi Kurds during Saddam's chemical attack on them has been a one-sided friendship towards the pragmatist Kurds. This is also the curse of the whole region; the leaders thinking themselves wiser than the others fail to make up long term good relations.

However, Turkey once again may change this, if it is really a major power in the region. A stable pipeline transit between these areas and Turkey will transform both sides. The challenge is how to bank the selfish pragmatism of these tribal leaders in favour of Turkey and avoiding any one sided – from Turkey's side- "brother" rhetoric.

In the Caucasus, BTC pipeline is a great success, but how much of this is Turkey's or major oil companys' may be disputed. But the BTC's success has also woken up the bear for a move. Burgas-Dedeagac (Alexandropolis) pipeline is a small but a "should be watched carefully" Russian counter move.

Burgas-Dedeagac is also a chance for relieving the highly crowded Bosphorus, but what about the Samsun-Ceyhan pipeline? The oil transferred is in control of Russia and with the choice of Burgas-Dedeagac, Russia showed that it's reluctance for Samsun-Ceyhan.

Turkey's other chance is Azerbaijan, or we should say Azerbaijan's chance is Turkey and of course Georgia. Unfortunately, Armenia is the common problem for both countries. But Azerbaijan has a rapidly growing economy and has nearly the same language with Turks of Anatolia.

As Azerbaijan being a chance for Turkey, it will not be an exaggeration to condemn Turkish political and diplomatic circles of not giving enough importance to this "relative" country. If Turkey has given the same importance of Northern Cyprus and Armenian problem to Azerbaijan and Kazakhstan, the energy strategy may have been designed in a more multilateral and beneficial way for both three countries.

It should be emphasized that with this strategy Turkey should enjoy more foreign direct investment and petrodollars as well as cultural richness of these countries. Unfortunately, who will do this? It all boils down to humans.

If the chance knocks your door and if there is no one inside or if everyone is busy for another thing to welcome the chance, the chances may be wasted. The geopolitical chance needs man power to be welcomed.

Even the discussions of Kyoto agreement has been reduced to merely signing or not signing the agreement instead of a progressive plan to get ready for signing the agreement. Public has not been preached wholly other than "signing will harm our economy".

So, how many diplomats, "real" energy specialists, energy departments,



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playing energy politics in a region of instability, Putin nationalism and insecurity needs a lot of experts those whole heartedly knows the dynamics of the region and energy

research and development efforts is going on in Turkey? In the hands of international relations experts, the chances will be wasted within the realist and liberalist competition. Turkey needs more economists, energy law experts, energy specialists and environmental scientists.

Saying more is even an underestimation, playing energy politics in a region of instability, Putin nationalism and insecurity needs a lot of experts those whole heartedly knows the dynamics of the region and energy. Without this man power, Turkey's energy strategy will only be a lucky or damned boat swimming through the tides of chance and curse.

Ahmet Türker,
USAK Energy Review

Oil Markets - This Week

Oil Markets: Falling Prices and the Gasoline

Hasan Selim Ozertem
Co-Editor, USAK Energy Review

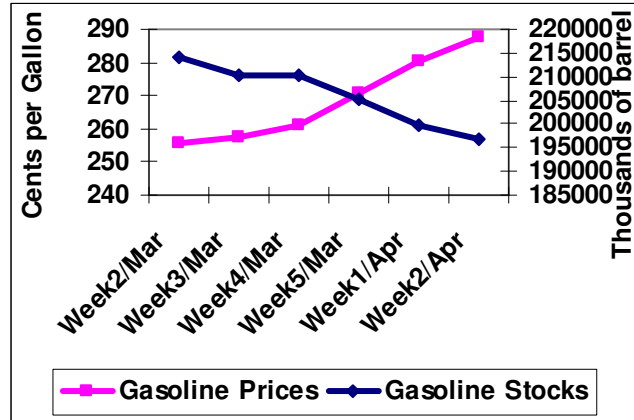
Crude oil prices fell both for WTI and Brent oil when compared to last week's market closure. This week prices started with a downward trend in oil markets, but the prices slightly increased on Friday due to worries about elections that was made in Nigeria this weekend; Africa's biggest oil producer.

For about one month everybody is talking about gasoline stocks and gasoline production due to beginning of driving-season. Gasoline production and stock levels are important indicators in this context when compared to the role of distillate oil in the winter.

Gasoline production and stock levels are important indicators in this context when compared to the role of distillate oil in the winter.

According to Energy Information Administration (EIA), gasoline stocks declined 2.7 million barrels and became 197 million barrels in the US. Due to increased demand retail gasoline prices became 287 cents. However, EIA in its weekly report suggest that prices increased so much that it would not be surprising to see them to decline or stabilize over the next several weeks, since the high prices are so attractive that it stimulates production of gasoline.

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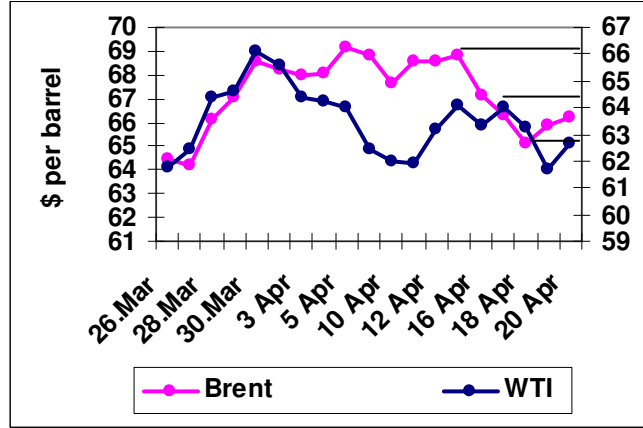


Gasoline
Source: EIA

This week oil prices drew a wavy trend. In the absence of political disputes (when compared to previous weeks) or the expectation of big economic problems for the near future, the prices, especially the Brent oil began to fall in the beginning of the week.

This week oil prices drew a wavy trend. In the absence of political disputes (when compared to previous weeks) or the expectation of big economic problems for the near future, the prices, especially the Brent oil began to fall in the beginning of the week. The Energy Department announcement that refineries operated with 90.4 percent capacity last week (Bloomberg) was effective in this downward trend. Even though the Brent has increased slightly on Friday due to worries about elections in Nigeria, the closing price closing price (\$66.22) was \$2.6 lower than previous week's closure.

The superiority of Brent over WTI continues. It even became \$61.7 this week. The reason is still the same; ample supply of WTI in the Cushing prevents WTI crude oil price to increase



Oil Prices
Source: Financial Times

On the other hand, the superiority of Brent over WTI continues. It even became \$61.7 this week. The reason is still the same; ample supply of WTI in the Cushing prevents WTI crude oil price to increase. Moreover due to maintenance and some problems in the refineries of the region, the demand of WTI does not increase, but as the situation returns to normal probably, the price of WTI will increase with the rising demand.

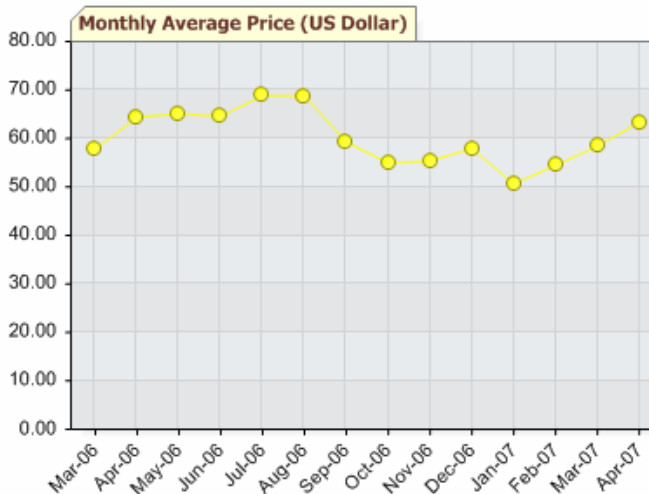
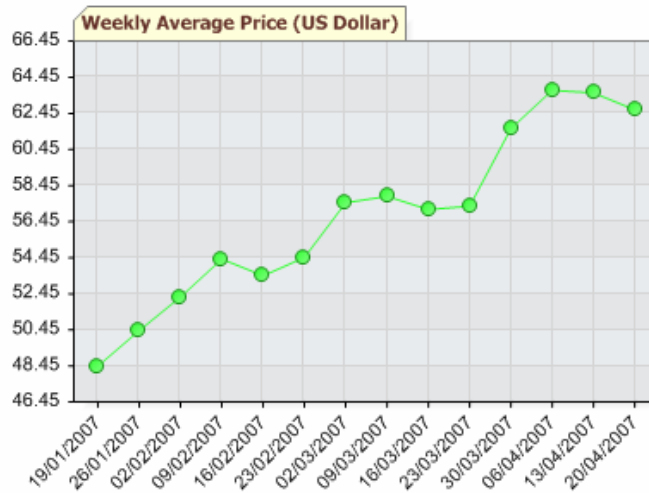
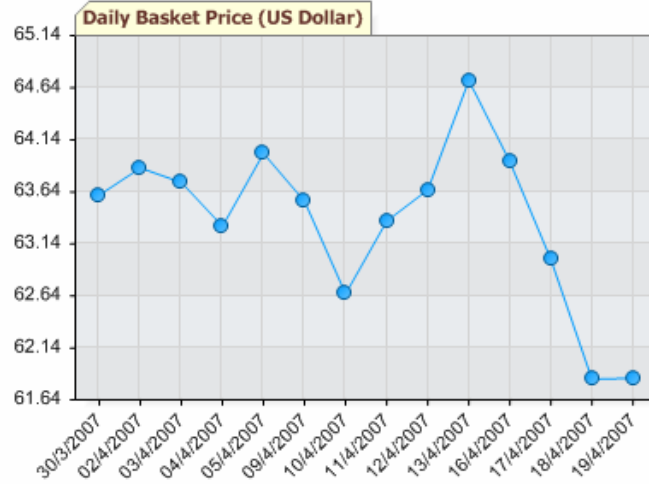
For the stability of the oil prices, tranquility in the political environment and the positive economic expectations are important, since emergence of any conflict or any change in expectations cause speculative motives to gain ground and accordingly prices begin to fluctuate in the market

For the stability of the oil prices, tranquility in the political environment and the positive economic expectations are important, since emergence of any conflict or any change in expectations cause speculative motives to gain ground and accordingly prices begin to fluctuate in the market. In this context, political situation in Nigeria and Middle East is so important. For the next week, according to Bloomberg's survey 17 out of 38 analysts expect oil prices to fall, whereas 10 of them expect prices to increase.

22 April 2007
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Indicators

OPEC's Basket Price



Indicators

Indicative Exchange Rates Announced at 15:30 on 20/04/2007 by the Central Bank of Turkey

CURRENCY		EXCHANGE RATES		EXC.RATES ON BANKNOTES	
		Buying	Selling	Buying	Selling
USD/TRY	1 US Dollar	1.3360	1.3424	1.3351	1.3444
EUR/TRY	1 EURO	1.8182	1.8270	1.8169	1.8297
GBP/TRY	1 British Pound	2.6762	2.6902	2.6743	2.6942

Turkish Refinery Output Price

Product Name	YTL/TON	YTL/M3	Special Concise Tax	Dividend	Exclusive of VAT	VAT	VAT included price	Validity Date
Unleaded Petrol 95 OCTANE			YTL/M3	YTL/M3	YTL/M3	YTL/M3	YTL/M3	
İzmit	998,73	759,03	1.362,50	1,40	2.122,93	382,13	2.505,06	17/04/2007
İzmir	998,73	759,03	1.362,50	1,40	2.122,93	382,13	2.505,06	17/04/2007
Kırıkkale	1.002,85	762,17	1.362,50	1,40	2.126,07	382,69	2.508,76	17/04/2007
Batman	1.031,71	784,10	1.362,50	1,40	2.148,00	386,64	2.534,64	17/04/2007
Jet Fuel			YTL/M3	YTL/M3	YTL/M3	YTL/M3	YTL/M3	
İzmit	892,25	713,80	0,00	1,40	715,20	128,74	843,94	21/04/2007
İzmir	892,25	713,80	0,00	1,40	715,20	128,74	843,94	21/04/2007
Kırıkkale	904,45	723,56	0,00	1,40	724,96	130,49	855,45	21/04/2007
Kerosene			YTL/M3	YTL/M3	YTL/M3	YTL/M3	YTL/M3	
İzmit	892,25	713,80	760,50	1,40	1.475,70	265,63	1.741,33	21/04/2007
İzmir	892,25	713,80	760,50	1,40	1.475,70	265,63	1.741,33	21/04/2007
Kırıkkale	912,58	730,06	760,50	1,40	1.491,96	268,55	1.760,51	21/04/2007
Batman	919,36	735,49	760,50	1,40	1.497,39	269,53	1.766,92	21/04/2007
Diesel 7000			YTL/M3	YTL/M3	YTL/M3	YTL/M3	YTL/M3	
İzmit	878,18	742,06	834,50	1,40	1.577,96	284,03	1.861,99	18/04/2007
İzmir	878,18	742,06	834,50	1,40	1.577,96	284,03	1.861,99	18/04/2007
Kırıkkale	919,29	776,80	834,50	1,40	1.612,70	290,29	1.902,99	18/04/2007
Batman	919,29	776,80	834,50	1,40	1.612,70	290,29	1.902,99	18/04/2007
Diesel 50			YTL/M3	YTL/M3	YTL/M3	YTL/M3	YTL/M3	
İzmit	876,60	740,73	927,00	1,40	1.669,13	300,44	1.969,57	11/04/2007
İzmir	876,60	740,73	927,00	1,40	1.669,13	300,44	1.969,57	11/04/2007
Kırıkkale	918,40	776,05	927,00	1,40	1.704,45	306,80	2.011,25	11/04/2007
Fuel Oil 4			YTL/TON	YTL/TON	YTL/TON	YTL/TON	YTL/TON	
İzmit	566,07		476,00	1,50	1.043,57	187,84	1.231,41	11/04/2007
İzmir	566,07		476,00	1,50	1.043,57	187,84	1.231,41	11/04/2007
Fuel Oil 6			YTL/TON	YTL/TON	YTL/TON	YTL/TON	YTL/TON	
İzmit	435,80		204,00	1,50	641,30	115,43	756,73	11/04/2007
İzmir	435,80		204,00	1,50	641,30	115,43	756,73	11/04/2007
Kırıkkale	442,76		204,00	1,50	648,26	116,69	764,95	11/04/2007
Batman	442,76		204,00	1,50	648,26	116,69	764,95	11/04/2007

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