

**An invaluable online tool, now enhanced to include crude slates and refinery outages**

# WORLD REFINERY DATABASE

Built on PIRA's tradition of exhaustive data-gathering and expert analysis, the World Refinery Database provides an in-depth, forward view of the international refining business. Since its launch in 2005, clients have relied on the Database's cutting-edge functionality, delivering capacity data by unit and configuration, along with detailed ownership status and history. **Now the Database has been enhanced to give clients the ability to access refinery-by-refinery crude slate and outages data.** The result is a robust, turnkey research tool that is unmatched in the industry.



Users of the World Refinery Database have an edge in understanding the ever-changing dynamics of the worldwide refining industry. Available only through PIRA Online, the Database encompasses nearly every refinery and associated

process unit in the world, providing regular updates and an historic archive for each facility. In its newly expanded and enhanced format, the Database contains refinery-by-refinery crude run histories broken out into major grade categories and historic refinery outage data. **And for those companies that opt to add this premium service, it also includes the capability to input user-defined estimates of refinery outages.** By cross-referencing outages and typical historic run slates, the impacts of refinery outages on crude grade requirements can be readily evaluated. This comprehensive combination of refinery-level runs and refinery-level crude grade slates is not to our knowledge available elsewhere.

The Database offers a variety of query options at the user's discretion. Because the searchable data can be downloaded into spreadsheets, it is an invaluable tool for clients to have and use in their own independent assessment and analysis.

Simply put, the World Refinery Database is geared for companies that highly value a comprehensive review of the state of the world's refineries, their history, operation, crude requirements, and future plans. Instead of endlessly searching for these data in multiple locations, you can have it right at your fingertips on PIRA Online.

PIRA's World Refinery Database

Overview | Regional Summary | Country Summary | Evolution | Refinery Outages | Ownership | Refining Margins | Background Data | Glossary

Scenario Name: PIRA's Reference Case

Location: From 1984 To 2008 Operator: All Individual Operators Owner: All Individual Owners Capacity: Absolute (Firm) Config./Evolution: All Configurations

Netherlands Absolute (Firm) Refinery CDU & Condensate Splitter Capacity Outages Based on Period From 1984 to 2008 (MB/CD)

Active Scenario: PIRA's Reference Case

Year	Month	Name	Country	AS	Operator	Owner	Capacity	Crude Run Outages Based on Scenario Input (%) and Historic Gr							
								Distiller Capacity	Scenario Input (%)	Light Sour	Light Sweet	Medium Sour	Medium Sweet	Heavy Sour	Heavy Sweet
2007	Jan	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2007	Feb	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2007	Mar	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2007	Apr	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2007	May	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2007	Jun	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2007	Jul	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2007	Aug	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2007	Sep	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2007	Oct	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2007	Nov	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2007	Dec	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2008	Jan	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2008	Feb	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2008	Mar	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0
2008	Apr	NAVE	Netherlands	AS	Amsterdam	Smid En-Hollander	10	100	0	0	0	0	0	0	0

A Refinery Outage Report for the Netherlands



Clients of PIRA's World Refinery Database benefit from:

- Detailed historical breakdown of capacity and process unit configuration for nearly every refinery and associated unit in the world. Quarterly data extend back to 1984.
- Up-to-date forecast of planned refinery investments, including additions and new construction. An assessment is made of each project's status and likelihood. Separate listings of closed or idled facilities and cancelled projects are included.
- Comprehensive historical summary of crude/condensate runs for essentially every refinery in the world. Annual data range from 2005 through 2009.
- Historical slate data are broken out into six major grade categories by API gravity and sulfur level.
- By-facility historical summary of crude distillation outages for every refinery that publicly reports such data in the world. Monthly data extend back to 2007.
- The Refinery Outage Scenario Manager, a special tracking tool that allows clients to use their own estimates of outages for any time period in comparison with PIRA's database of capacities, historical runs by grade, and historical reported outages.
- All capacity, runs, and outage databases can be searched by year, company (owner or operator), configuration, region, country, PADD, state/province, or city.
- Summary reports can be "drilled down" to the most-discreet level of detail.
- Ability to download data into a variety of formats, for further study and manipulation, as well as charting capabilities.
- Extensive background data, refining margins, and glossary that provide useful market information and technical definitions.

PIRA's World Refinery Database

Overview Regional Summary Country Summary Evolution Refinery Outages Ownership Refining Margins Background Data Glossary Submit

Period-End: 2008 4 Qtr Range: Owner Group: Individual Owner: Capacity: Absolute (Firm) Configuration: All Configurator

Worldwide Absolute (Firm) Refinery Slate/Capacity Based on Period Ending 4Q 2008 (MB/CD)

Data Detail	Refinery Crude Run Slate (Annual Avg.)						CDU	Condensate + Splitter	VDU	Coking	Thermal Cracking	Visbreakin g	FCC	Reformer	Hydrocra ck	Hydroreat ing	
	Light Sour	Light Sweet	Medium Sour	Medium Sweet	Heavy Sour	Heavy Sweet											
U.S.	700.4	3,189.1	4,899.7	1,376.6	4,347.1	250.7	14,763.6	17,636.0	60.0	7,999.5	2,451.3	0.0	33.1	5,891.0	3,625.4	1,688.0	15,150.5
Canada	100.0	938.0	176.2	285.0	245.0	30.0	1,774.2	2,068.4	20.0	661.4	59.3	79.6	63.4	494.4	365.6	272.8	1,400.6
NWE	107.6	3,462.0	2,424.1	521.2	234.2	30.0	6,779.1	7,680.8	135.0	2,953.4	236.2	150.5	568.7	1,227.1	1,214.8	560.8	5,701.3
MED	283.6	1,908.2	2,679.3	448.6	380.8	23.8	5,724.4	6,835.6		2,543.4	88.0	134.4	685.7	1,051.4	977.4	573.2	4,819.5
East Europe	2.7	248.5	1,173.4	5.4	11.9	5.3	1,447.1	2,035.3		953.7	90.4	0	133.6	339.9	321.4	224.9	1,361.1
Japan	1,683.6	360.1	1,713.3	183.6	29.5	13.9	3,983.9	4,790.1	90.0	1,740.0	76.1	127.0	17.8	1,013.9	835.3	182.5	4,966.0
ANZ	48.0	663.8	47.0	0	0	0	758.8	868.1	52.0	238.9			225.4	203.8	50.9	596.0	
South Asia	380.5	1,164.6	1,665.8	91.3	194.9	91.3	3,588.2	3,428.1	25.0	1,100.8	221.5	26.9	215.4	491.7	282.1	277.1	1,644.7
East Asia	2,013.6	1,634.4	2,303.9	745.6	112.2	151.5	6,961.2	8,322.5	484.1	1,788.9	141.8	159.8	258.2	995.7	1,162.2	571.7	5,315.0
China	66.1	316.4	1,904.4	3,437.4	909.4	257.3	6,891.0	8,914.7	85.0	3,293.1	1,065.6	18.0	154.2	2,323.0	772.6	877.7	3,136.0
Middle East	506.0	804.8	4,903.1	70.0	182.0	0	6,465.9	6,676.1	675.0	1,896.4	90.2	27.3	425.1	445.4	787.5	601.2	3,193.2
Africa	33.0	1,159.9	982.0	127.0	64.6	41.3	2,407.8	3,156.0	12.0	632.6	56.3	9.0	116.9	213.1	472.9	98.0	1,304.1
FSU	100.0	1,470.7	4,435.5	0	44.1	0	6,050.3	8,275.2	297.4	3,006.8	258.7	285.5	430.3	758.3	1,323.3	235.2	4,242.3
Latin America	189.2	1,119.1	2,275.7	897.3	2,451.7	3.0	6,936.0	8,108.0	55.0	3,604.3	676.5	96.6	423.7	1,749.3	742.6	126.4	3,664.4
World Total	6,214.2	18,439.6	31,583.5	8,188.9	9,207.4	898.0	74,531.6	88,784.8	1,990.5	32,413.2	5,511.8	1,114.5	3,526.2	17,219.5	13,087.0	6,340.4	56,496.7

Note: Crude runs data will not appear if not available. Data become available each June for the prior calendar year.

A Regional Summary Report with crude run data

## Components of the World Refinery Database:

### 1. Regional Summary Reports

Provides capacity and – for premium users – crude run data with regional aggregation and “drill-down” capabilities to the most discrete level of detail.

### 2. Country Summary Reports

This section takes the Regional Summary section a step further, allowing users to more quickly retrieve refinery data in by-country, by-state/city, or by-refinery detail.

**PIRA's World Refinery Database**

Overview | Regional Summary | Country Summary | Evolution | Refinery Outages | Ownership | Refining Margins | Background Data | Glossary | Submit

Period-End: From 2005 1 Qt To 2008 4 Qt | Range: | Geographical Location: Select Region, Italy, Sarroch | Owner: Select Owner Group, Exclude Indiv. Own. Deta | Capacity: MB/CD, Expansion (Firm) | Configuration: All Configuration

1 of 1 | 100% | Find | Next | Select a format | Export

**Sarroch, Italy Refinery Slate/Capacity Expansion (Firm) Based on Period From 1Q 2005 To 4Q 2008 (MB/CD)**

Summary

						Distillation Capacity		Other					
						CDU	VDU	Reformer	Hydrotreating	Aromatics-BTX	Hydrog (MMSF/D)		
Italy	<input type="checkbox"/> All	<input type="checkbox"/> Sarroch	<input type="checkbox"/> Saras Raffinerie Sarde	2005	4	Firm Expansion				1			
				2006	1	Initial Capacity							12
						Firm Expansion			0.60	2			
				2007	2	Firm Expansion	14	17					
					4	Initial Capacity				27			
				2008	2	Firm Expansion					24		
					3	Firm Expansion							
Total							14	17	2	53		12	

Note: Crude runs data will not appear if not available. Data become available each June for the prior calendar year.

Country Summary Report in “Data Detail” mode. Note interactive drill-down.

### Evolution Reports

Users can create capacity and runs “evolution” reports that allow them to analyze and compare trends over time, for any mix of geographical locations, individual owner/operator company or owner/operator group of companies, or any refinery configuration. Data can be presented in the form of annual cumulative changes or annual incremental changes – with the ability to drill-down to aggregated quarterly detail for capacity data.

### 3. Utilization Reports

Refinery capacity utilization reports (e.g., crude runs as a percent of capacity) can be generated from any of the above-mentioned data tables.

### 4. Refinery Outages

PIRA provides a historical database of outages by month beginning in 2007. These data were all developed from public sources of information (no proprietary data are included). These data can be compared against historically typical run slates to estimate the impact of outages on crude grade requirements.

In addition to the historical data, this section includes the **Refinery Outage Scenario Manager** a custom tool that allows users to enter their own estimates of historical, current, or future outages and thus see the potential impact on crude grade requirements. Reports can be generated for the PIRA history or the user's own data (or a combination of the two). As with all reports, data can be summarized by year, region, operator, etc.

Year	Region	Country	City	Operator	Absolute Runs (Crude & Condensate Splitter) MB/CD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008	NWE	Germany	Lingen	Ensoel	87	87	87	87									
2008	NWE	Germany	Schwedt	Petrolchem, and Kraftat. Schwedt	220	220	220	220									
2008	NWE	Germany	Wesseling	Union Rheinische B.K.	143	143	143	143									
2008	NWE	Germany	Wilhelmshaven	ConocoPhillips	260	260	260	260									
2008	NWE	Ireland	Whitegate	Irish Refining	72	72	72	72	✓	✓	✓	✓	✓	✓	✓	✓	✓
2008	NWE	Netherlands	Amsterdam	Simul Ex hollandse	10	10	10	10									
2008	NWE	Netherlands	Europort	Koch Industries	80	80	80	80	✓	✓	✓	✓	✓	✓	✓	✓	✓
2008	NWE	Netherlands	Europort	Kawati Petroleum Europort B.V.	80	80	80	80	✓	Cancel							
2008	NWE	Netherlands	Europort	Netherlands Refining Company	400	380	380	380									
2008	NWE	Netherlands	Feris	ExxonMobil	188	188	188	188									
2008	NWE	Netherlands	Feris	Shell Nederland Raff	416	416	416	416	✓	✓							
2008	NWE	Netherlands	Vlissingen	Total Fina Raff. Nederl.	148	148	148	148									
2008	NWE	Norway	Haugstad	Statfjord	180	180	180	180	✓								
2008	NWE	Norway	Gals	ExxonMobil	110	110	110	110									
2008	NWE	Portugal	Matosinhos	GALP	91	91	91	91									
2008	NWE	Portugal	Sines	GALP	213	213	213	213									
2008	NWE	Sweden	Gothenburg	A.B. Nynas	13	13	13	13									
2008	NWE	Sweden	Gothenburg	Freem	106	106	106	106									
2008	NWE	Sweden	Gothenburg	Shell Raffinaderi	78	78	78	78									
2008	NWE	Sweden	Lysekil	Freem	220	220	220	220									

Refinery Outage Scenario Manager

### 5. Ownership Evolution Reports

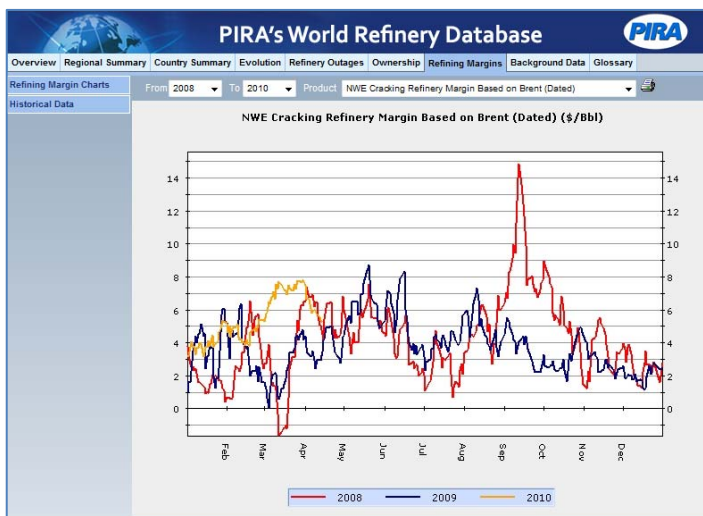
Ownership evolution reports contain detailed information on historical development of ownership percent share for every refinery in the world covering the full time period of the project.

### 6. Refining Margins

Provides a series of charts and data that show refining margin trends. The 10 margin calculations are based upon the most current data generated by PIRA's refinery model simulation of operations in each regional refining center.

### 7. Background Data and Glossary

Provide users with methodologies and definitions for refinery process units, conversion factors, operable days and stream factors for every unit on a by-country basis. Additional sections include new grassroots refineries, closures, and regional product-quality developments.



Sample refining margin chart

## Options/Fees

### Premium Access:

The fee for access to the complete set of capacity, crude runs/slates, and outages data in PIRA's World Refinery Database – Premium Access – is US\$25,000 per year (\$36,500 for companies who are not clients to PIRA's Global Oil Retainer), which allows access to 10 unique users at one company location. For usage beyond that profile, the fee is adjusted accordingly.

### Standard Access:

Prior to 2010, PIRA's World Refinery Database contained primarily refinery capacity information and did not contain information on runs, slates, or outages. **Subscribers can still obtain access to this capacity-only data package for US\$13,000 per year (\$19,000 for companies who are not clients to PIRA's Global Oil Retainer), the same fee as before.** That fee allows access to 10 unique users at one company location. For usage beyond that profile, the fee is adjusted accordingly.

### Upgrading Your Current World Refinery Database Access:

Existing World Refinery Database clients can upgrade their service by adding crude runs/slates and outages data access. A "top off" fee will be charged to their current World Refinery Database subscription.



**RESPONSE FORM**

My company wishes to become a client to PIRA's World Refinery Database at the following access level and fee:

	Non-Client	Oil Client
Capacity-Only Access:	<input type="checkbox"/> \$19,000	<input type="checkbox"/> \$13,000
Premium Access: Capacity + Runs/Slates/Outages:	<input type="checkbox"/> \$36,500	<input type="checkbox"/> \$25,000

My company wishes to UPGRADE its access to the World Refinery Database at the following additional premium fee:

	Non-Client	Oil Client
Premium Access: Capacity + Runs/Slates/Outages:	<input type="checkbox"/> \$17,500	<input type="checkbox"/> \$12,000

I understand and agree that the fee paid entitles our company to have 10 users located at one company site. (For usage beyond that profile, contact PIRA for licensing terms/fees.)

Name/Title of Primary Contact: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Phone/Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

Signature: \_\_\_\_\_

PLEASE MAIL, FAX, OR E-MAIL TO:

PIRA Energy Group  
 Attn.: Managing Director, Client Services  
 3 Park Avenue, 26th Floor  
 New York, NY 10016-5989  
 Phone: 212-686-6808  
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