

2002 Worldwide Refining Survey

Jeannie Stell
Survey Editor

All figures are
as of January 1, 2003

All figures in barrels per calendar day (b/cd)

LEGEND

Numbers identify processes in table

Coking

1. Fluid coking
2. Delayed coking
3. Other

Thermal process

1. Thermal cracking
2. Visbreaking

Catalytic cracking

1. Fluid
2. Other

Catalytic reforming

1. Semiregenerative
2. Cyclic
3. Continuous regen.
4. Other

Catalytic hydrocracking

1. Distillate upgrading
2. Residual upgrading
3. Lube oil manufacturing
4. Other
- c. Conventional (high pressure) hydrocracking: (>100 barg or 1,450 psig)
- m. Mild to moderate hydrocracking (<100 barg or 1,450 psig)

Catalytic hydrotreating

1. Pretreatment of cat reformer feeds
2. Other naphtha desulfurization
3. Naphtha aromatics saturation
4. Kerosine/jet desulfurization
5. Diesel desulfurization
6. Distillate aromatics saturation
7. Other distillates
8. Pretreatment of cat cracker feeds
9. Other heavy gas oil hydrotreating
10. Resid hydrotreating
11. Lube oil polishing
12. Post hydrotreating of FCC naphtha
13. Other

Alkylation

1. Sulfuric acid
2. Hydrofluoric acid

Polymerization/Dimerization

1. Polymerization
2. Dimerization

Aromatics

1. BTX
2. Hydrodealkylation
3. Cyclohexane
4. Cumene

Isomerization

1. C₄ feed
2. C₅ feed
3. C₅ and C₆ feed

Oxygenates

1. MTBE
2. ETBE
3. TAME
4. Other

Hydrogen

- Production:
1. Steam methane reforming
 2. Steam naphtha reforming
 3. Partial oxidation
- Recovery:
- a. Third-party plant
 4. Pressure swing adsorption
 5. Cryogenic
 6. Membrane
 7. Other

NOTES

A Formerly listed as AB
Nynas Petroleum
B Formerly listed as Koch
Petroleum Group

C Formerly listed as BP PLC
D Formerly listed as Tohoku
Oil Co.Ltd.

E Formerly listed as Koa Oil
Co. Ltd.
F Formerly listed as Sunoco
Inc.

G Formerly listed as Equilon
Enterprises LLC
H Formerly listed as Ultramar
Diamond Shamrock

I Formerly listed as
Refinery Co. (Refco)
J Formerly listed as
VebaOel AG

K Formerly listed as Solitary
Malagasy

Capacity definitions:

Capacity expressed in barrels per calendar day (b/cd) is the maximum number of barrels of input that can be processed during a 24-hour period, after making allowances for the following: (a) Types and grades of inputs to be processed, (b) Types and grades of products to be manufactured, (c) Environmental constraints associated with refinery operations, (d) Scheduled downtime such as mechanical problems, repairs, and slowdown. Capacity expressed in barrels per stream day (b/sd) is the amount a unit can process when running at full capacity under optimal feedstock and product slate conditions. An asterisk (*) beside a refinery location indicates that the number has been converted from b/sd to b/cd using the conversion factor 0.95 for crude and vacuum distillation units and 0.9 for all downstream cracking and conversion units.

Hydrogen:

Hydrogen volumes presented here represent either generation or upgrading to 90+% purity.

Catalytic reforming:

1. Semiregenerative reforming is characterized by shutdown of the reforming unit at specified intervals, or at the operators's convenience, for in situ catalyst regeneration.
2. Cyclic regeneration reforming is characterized by continuous or continual regeneration of catalyst in situ in any one of several reactors that can be isolated from and returned to the reforming operation. This is accom-

plished without changing feed rate or octane.

3. Continuous regeneration reforming is characterized by the continuous addition of this regenerated catalyst to the reactor.
4. "Other" includes nonregenerative reforming (catalyst is replaced by fresh catalyst) and moving-bed catalyst systems.

REFINERY REMOVALS

Name	Location	Country	Crude b/cd	Reason
Australia Lubricating Oil Refinery Ltd.	Kurnell	Australia	Incorporated into Caltex Refineries (NSW).
Anchor Refining Co.	McKittrick, Calif.	US	10,000	Operates as an asphalt plant.
Berry Petroleum	Stephens, Ark.	US	6,700	Shut down in 1998.
Greka Energy Corp.	Santa Maria, Calif.	US	10,000	Operates as an asphalt plant.
Iraqsoma Refinery Co.	Mogadishu	Somalia	10,000	Shut down and dismantled in 1990.
Nippon Mitsubishi Petroleum Refining Co. Ltd.	Niigata	Japan	2,000	Shut down March 1999.

Paramount Petroleum Corp.	Paramount, Calif.	US	50,000	Operates as an asphalt plant.
Premcor Refining	Hartford, Ill.	US	68,000	Shut down October 2002.
Tenby Inc.	Oxnard, Calif.	US	4,500	Operates as an asphalt plant.
Tricor Refining	Bakersfield, Calif.	US	12,500	Shut down December 2001.
Trifinery Petroleum Services	Corpus Christ, Tex.	US	30,000	Operates as an asphalt plant.
Young Refining Corp.	Douglas, Ga.	US	6,000	Operates as a roofing plant.
World Oil	South Gate Calif.	US	7,000	Operates as a roofing plant.

NEW REFINERIES

Name	Location	Country	Crude b/cd
Petroperu SA	El Milagro, Amazonas	Peru	1,700