

India gears up for autogas boom

The massive potential of the autogas market in India is being gradually realised, step by step

There could be up to 2,000 retail service stations dispensing autogas in India over the next four years, and the scope for growth in the sector is “huge”, according to Suyash Gupta, general secretary of the Indian Auto LPG Coalition (IAC).

India’s domestic LPG demand growth is constrained by the problem of price subsidies. This effectively means that the country’s big domestic LPG producers make no profit from selling LPG at artificially low prices, since reimbursement of subsidies by the government rarely happens.

But the autogas sector has no such constraints. Companies can sell autogas based on international price levels — and still find a ready market. Autogas is up to 50pc cheaper than gasoline.

The IAC estimates that Indian autogas demand is now significantly higher than the 31,000 t/yr reported by the latest World LP Gas Association statistics, and could top 80,000 t/yr this year. At the latest count, there are now over 150 retail service stations, and Gupta says the market needs at least 800 such outlets to meet demand (*see p2*).

The growth in autogas demand has surprised some observers because it seemed for a while that competitor transport fuel compressed natural gas (CNG) was more likely to become the country’s leading alternative fuel.

Indeed, the country’s two largest cities of Mumbai and Delhi form part of what Gupta calls “the CNG line”, where the country’s gas pipelines are situated. But outside this belt in the centre and northwest of the country, autogas is taking the major market share. Big cities such as Bangalore, Ahmedabad, Hyderabad and Chennai are all seeing a surge in demand.

Autogas has inherent advantages over CNG for companies. The installation of CNG retail infrastructure is far more costly — building a retail station for CNG can cost around \$400,000, compared with the \$80,000-100,000 that it costs to set up an autogas station. And without gas pipeline infrastructure to supply the gas, a CNG market cannot grow. LPG is far more easily transportable.

The growth in the alternative fuels sector is a response to tighter fuel emissions standards that successive governments have introduced. Since April, gasoline and diesel sold in most of India has had to contain less than 500ppm of sulphur. In India’s 11 largest cities, the limit is 150ppm of sulphur. Limits will tighten in 2008.

Big market

One big market for autogas is the autorickshaw sector. These three-wheeled vehicles are ubiquitous throughout India and are used as short-distance taxis in major urban areas.

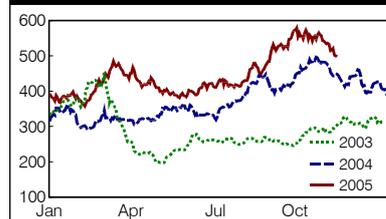
But given the price disparity between domestic LPG and autogas sold at the pumps, one problem looks inevitable — the growth of the “illegal” autogas market. Some drivers use cheap foot-pumps to fill up their vehicles with low-cost domestic LPG. Gupta estimates that the illegal market could involve as many as 2.1mn vehicles — mostly autorickshaws.

The authorities are trying to curb this illegal market. In parts of the state of Gujarat for example, police have successfully instituted a programme of stopping autogas vehicles and then tallying their latest receipts for autogas fuel purchase, checking this against the vehicle’s mileage.

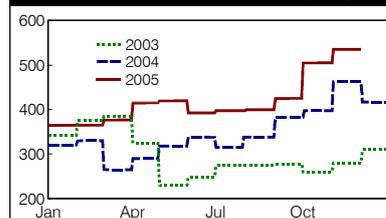
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Autogas rickshaws rule

The vast Indian subcontinent is a promising ground for autogas. Demand is leaping higher, but illegal autogas filling is a problem

Business visitors to India usually head to Delhi or Mumbai, where they might feel adventurous enough to take the ubiquitous autorickshaws around the city. Autogas proponents might be disappointed, as they will find that many of the autorickshaws run on compressed natural gas (CNG), rather than autogas (see p1).

But outside these two major cities, India's autogas sector is enjoying unprecedented success. Most of the country is not connected by India's gas pipeline grid, which means that CNG is not really a commercially viable proposition for fuel retailers. The easier choice, because of its portability, is autogas.

Tireless advocacy

India now has an organisation dedicated to promoting LPG as a transport fuel — the Indian Auto LPG Coalition (IAC). Its tireless secretary, Suyash Gupta, has — along with his colleagues — been busy promoting India's autogas sector to the wider world in various trips, including his attendance of last month's World LP Gas Forum in Shanghai.

The message that the IAC brings is positive. Tighter government fuel standards are capping sulphur limits on diesel and gasoline.

India, as a developing country, has no greenhouse gas emissions targets to meet under the Kyoto protocol. Nevertheless, the government is finding ways to tackle air pollution — an urgent necessity as the air in its main

cities is often toxic. Fuel standards were tightened this year and will get even tighter in 2008. The government also wants to encourage clean alternative fuels, so autogas has a window of commercial opportunity.

The big problem is the massive illegal autogas market — something familiar in developing countries throughout the world. If you are poor and drive an autorickshaw — and subsidised cylinder LPG for domestic households is cheap — the temptation to fill your tank with commercial LPG rather than with fuel from the retail pumps must be at times overwhelming.

Stamping this practice out is one of the many tasks that the IAC has to tackle. Gupta estimates that the illegal market could involve as many as 2.5mn vehicles — most of which are autorickshaws.

The biggest issue about illegal filling using primitive equipment is safety. A serious explosion in Georgia earlier this month from just such an operation shows the inherent dangers of messing with LPG (see p3).

In Nigeria, the adulteration of domestic LPG refilling operations is now so endemic that LPG marketers are being forced to issue a warning that customers should fill their cylinder bottles themselves to avoid being cheated (see p4).

The good news about the Indian autogas sector is that it is growing strongly, despite the presence of the autogas black market. Long may it continue to do so.

EDITORIAL

China: Fuelling the Dragon

This 350-page study analyses China's rampant demand growth and its effect on oil import infrastructure and domestic distribution systems. It examines how Chinese oil companies and the government are addressing growing bottlenecks and inefficiencies, which present an increasing threat to the smooth supply of oil needed to lubricate China's economic boom.

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Asia-Pacific

Reliance pays up

Indian refiner Reliance Industries has — on government orders — dished out some 7.5bn rupees (\$160mn) as a rebate on LPG and kerosine sales to the country's so-called "public-sector undertakings" (PSUs), including state-controlled firms IOC and Bharat Petroleum. A Reliance official says the move will relieve a part of the losses suffered by PSUs for their subsidised LPG and kerosine sales. The rebates will be for the fiscal year from April 2005 to March 2006. A decision on the rebate level has yet to be decided for the next fiscal year.

LPG price rises

Philippines refiner Petron has raised LPG retail prices by 1 peso/kg (0.018¢/kg), effective from 8 November. And in China, Shenzhen Gas has also raised retail LPG prices. The domestic price of LPG for households in Shenzhen has been raised by 6.8pc to 14.2 yuan/m³ (\$1.75/m³). LPG prices for industrial and commercial users were lifted to Yn16.6/m³, from Yn16.3/m³ in September.

Mediterranean

Egypt moves closer to GTL plant

Egypt's plans to build a gas-to-liquids (GTL) plant have taken a step forwards, with Canadian firm Ivanhoe Energy signing an initial agreement with state-run gas firm Egas to prepare a feasibility study for the construction and operation of the project. Egas has agreed to commit 600mn ft³/d (6.6bn m³/yr) for the proposed 45,000-90,000 b/d plant to convert natural gas to ultra-clean synthetic fuel. "This agreement advances our discussions related to GTL opportunities in Egypt, which have been ongoing for a number of years," says Ivanhoe chief Leon Daniel.

Iran rations gasoline

Iran is to introduce gasoline rationing cards in an attempt to curb soaring consumption and cut the country's huge import bill, estimated at \$4bn this

year. This presents an opportunity to Iran's fledgling but growing 31,000 t/yr autogas sector — there are now at least 100,000 vehicles using autogas. State-owned NIOC says 6mn cards have been distributed among Iran's 70mn population, amounting to nearly 20pc of the country's car owners. The cards cap the amount of heavily subsidised gasoline that consumers are allowed to obtain. Iran imports 150,000 b/d of gasoline, with NIOC estimating a 10pc growth in demand for imports by early next year. Iran is struggling to upgrade its refineries, which were almost all built before the 1979 revolution, despite ambitious plans to involve foreign firms in the construction of new units.

Northwest Europe

Kristin gas starts to flow

The Kristin gas field on the Norwegian continental shelf started production on 3 November, just over a month behind its original 1 October start date. But full production will still not be reached until the end of next summer. Delays on the drilling programme were cited for the late start-up. Statoil's Karsto Expansion Project (KEP) links the giant Karsto gas processing complex with gas and natural gas liquids (NGLs) from the Kristin field. Kristin's gas reserves are around 33bn m³, with NGL reserves at around 6.9mn t. The gas will be piped through the Asgard Transport pipeline into Karsto through a new export line to tie the field into existing infrastructure. Maximum gas flows are forecast at 18mn m³/d, while the field will initially produce at 4.5mn m³/d. With 220,300t of storage capacity, the Karsto complex operated by Norwegian state-owned Gassco is already the largest LPG storage facility in Europe and a massive LPG export hub (*LPGW*, 19 October, p8).

Shell directors escape probe

UK regulator the Financial Services Authority has decided not to take further action after completing its probe into the role of directors at Shell,

Nova's force majeure

Nova Chemical, Canada's largest petrochemical firm, declared force majeure last week on ethylene, propylene and other co-products from its facilities in Corunna, Ontario and Sarnia, Ontario.

The outage has hampered LPG demand in eastern Canada, mainly for butane. Nova expects its fourth-quarter results to be negatively affected to the tune of some \$10mn-15mn, in addition to the \$15mn-25mn projected from planned turnarounds.

The Corunna plant can produce 1.6bn lb (725,000t) of ethylene, in addition to other products. Operators closed it in September to repair a flexi-cracker and expand ethylene capacity by 225mn-400mn lb.

The start-up has been delayed until mid-to-late November. Operators blamed the delay on labour availability, weather delays and equipment.

including that of former chief executive Phil Watts, in overstating the company's reserves last year.

Former Soviet Union

LPG on Georgia's mind

An explosion at an LPG outlet in Tbilisi on 8 November could bring tighter state controls over autogas sales at small retail stations. The accident, in which one person was injured and the filling station was destroyed by the resulting fire, drew the city authorities' attention to the dangers of disregarding safety procedures in selling LPG. The mayor of Tbilisi has issued instructions to ban small sellers of LPG in containers within the city limits. "We are investing hundreds of thousands of dollars in building modern gas stations while the owners of these small stations pour gas directly from tanks — which is very dangerous, especially in the city," says a Georgia market participant. Around half of the 20,000-25,000 t/yr Georgian LPG market is sold by unregulated small sellers making a quick profit, but with little regard to safety.

China LPG imports up

China's LPG import strength continued in September, with imports up to a new monthly record of 631,000t, the highest level reached since November last year.

The growth was largely fuelled by Chinese importers' winter stockpiling efforts, in advance of the traditional high demand season and wintry weather conditions. Nevertheless, overall imports for the year are still lagging 2004 levels.

For the third quarter, LPG imports totalled 1.72mn t, buoyed by the upsurge in August and September.

In contrast, imports into China for the second quarter reached only 1.4mn t. Imports for the first nine months of this year were 4.5pc lower at 4.69mn t from the previous year.

These overall sluggish January-September import figures suggest that yet again Chinese LPG imports for the whole of the year will fail to reach 7mn t/yr — seen only two years ago as an inevitable target, easily reached.

The general Chinese market feeling is that further price gains are set to continue in the international market as winter approaches. But questions remain as to whether the September import strength will be sustainable. Wholesale Chinese prices could keep a lid on import demand.

In the domestic market, Chinese LPG output for the year to September rose to 11.9mn t, 7.8pc higher compared with the same period in 2004. In September alone, refining runs also reached a new single month record high at 1.34mn t.

Chinese LPG imports (Sep 2005)

	Sep	Jan-Sep 05	Jan-Sep 04	%chg Jan-Sep 05/04
Imports by country				
Saudi Arabia	212.5	1,319.7	1,693.4	-22.1
UAE	161.3	1,087.2	1,140.9	-4.7
Iran	76.5	330.5	195.2	69.3
Kuwait	-	187.2	437.8	-57.2
Qatar	-	79.4	59.8	32.8
Bahrain	-	14.9	-	-
Total Middle East	457.3	3,019.0	3,527.1	-14.4
Australia	117.4	736.3	367.9	100.2
Thailand	14.5	284.2	224.7	26.5
Malaysia	23.6	167.7	248.0	-32.4
Indonesia	1.7	99.1	76.7	29.2
Taiwan	6.5	70.4	70.2	-11.1
Singapore	4.5	63.0	56.2	12.0
South Korea	1.6	24.3	51.3	-52.7
Other	0.4	13.6	15.3	-11.1
Total Asia-Pacific	170.2	1,458.5	1,119.3	30.3
Brazil	-	80.6	-	-
US	-	58.5	92.5	-36.8
Argentina	-	57.3	66.9	-14.4
Kazakhstan	3.5	11.6	1.0	1086.3
Other	-	5.3	106.6	-95.0
Total Other areas	3.5	213.2	267.0	-20.1
Total Imports	631.0	4,690.8	4,913.3	-4.5
Imports by province				
Guangdong	458.5	3,365.0	3,223.1	4.2
Guangxi	4.0	17.9	33.8	-47.0
Hainan	1.3	33.2	48.6	-31.7
Yunnan	-	0.6	0.7	-9.0
Total S China	463.8	3,416.7	3,306.1	3.3
Shanghai	32.7	233.7	219.5	6.5
Jiangsu	53.5	405.4	400.9	1.1
Zhejiang	77.1	516.4	880.6	-41.4
Shandong	0.029	0.1	0.028	102.0
Fujian	-	102.8	97.0	6.0
Total E China	163.45	1,258.3	1,598.0	-21.3
Xinjiang	3.5	11.6	1.0	1,806.3
Liaoning	0.4	4.0	5.0	-19.9
Beijing	-	0.1	0.1	-12.1
Other cities	0.0	0.020	3.2	-99.4
Total E/NW China	3.9	15.7	9.2	70.3
Imports by province				
Propane	303.3	2,046.1	2,292.5	-10.7
Butane	323.9	2,599.3	2,606.2	-0.3
Other LPG	3.9	45.4	14.6	210.8
Total Imports	631.0	4,690.8	4,913.3	-4.5

— General administration of customs

'Weigh your own cylinders,' suggest Nigerian firms

Sick and tired of sharp practices perpetrated by Nigerian LPG dealers, especially small retailers, major Nigerian marketers are mulling a "weigh your cylinder" enlightenment campaign, aimed at ensuring that LPG consumers are not short-changed.

The campaign, according to Godday Momoh, general manager of independent LPG marketing firm Le Global Gas, is intended to discourage unscrupulous dealers from tampering with the contents of refilled LPG cylinders.

Some small retailers, desperate to make a profit, often indulge in product adulteration by taking LPG out of refilled cylinders and pumping air into them to make up for the extracted quantity. From a standard 12.5kg cylinder, a retailer can extract enough LPG to refill a small 2kg camp cooking canister. He then sells off the adulterated 12.5kg cylinder for the full street value, and also sells the camp gas.

Industry watchers say the malpractice is so widespread that it has become

the norm rather than the exception. But given ever-rising LPG prices and perennial product scarcity, the adulteration is to be expected. "The retailers do all sorts of things because they worry more about cost of replacement than profit," says market analyst John Sidodo. "An LPG dealer who buys a 12.5kg cylinder for 2,000 naira (\$14) and sells it for N2,200 has on the face of it made a profit.

"But because of rising costs, he may subsequently require N2,500 to refill the same cylinder," Sidodo adds.

Mideast Gulf powers up condensate output

Condensate production is set to surge in both the Middle East and Asia-Pacific, mainly on the back of the development of natural gas production.

Condensate production in the Mideast Gulf is set to almost double from 1.533mn b/d in 2004 to 2.851mn b/d in 2008 as a result of rising oil and gas output, according to a new study by consultants Facts, along with Asia Pacific Energy Consulting, called *Meeting the Light Products Crunch: Condensate Outlook East of Suez*.

According to the study, Mideast Gulf condensate production will rise to 4.5mn b/d by 2013. Much of the increase, particularly from Qatar, comes because of burgeoning natural gas development projects led by LNG. Further condensate production is likely to come as gas producers look to develop gas-to-liquids projects. Moves to increase long-term sustainable oil production in Saudi Arabia and the UAE mean higher condensate output associated with crude production.

Challenge

The report also forecasts that Asia-Pacific condensate producers will see output rise to 1mn b/d, bringing total condensate production east of Suez to 3.8mn b/d. This poses a major challenge as well as an opportunity to LNG producers. While high condensate prices mean that they account for an increasing proportion in the overall returns from LNG production, there are fears that excessive competition might drive prices down.

“To date, disposal of condensate has been done on an ad-hoc basis and by sleight of hand,” says an official at a Middle East state-run oil company. “Condensate will have to become a mainstream product.” Qatar has already responded with plans for a new condensates and LPG marketing company (*LPGW*, 21 September, p6).

Mideast condensate production

Country	2004	2008
Saudi Arabia	560	690
Iran	210	608
UAE	470	624
Qatar	275	818
Iraq	5	95
Oman	13	16
Total	1,533	2,851

— Fact

But the report says that much of the incremental condensate production is likely to stay in the Mideast Gulf. With the region suffering an acute shortage of gasoline, there is an obvious incentive to build condensate splitters, which typically yield 50pc naphtha.

Splitter capacity is expected to rise from 837,000 b/d in 2003 to 1.891mn b/d in 2008, before reaching over 3mn b/d in 2013. This hike, allied to refinery upgrades with increased reforming capacity in Kuwait, Oman, Qatar and Abu Dhabi, will go a long way towards offsetting the current deficit in gasoline and will help ensure that the region remains a net exporter of gasoil.

Demand in the Gulf for transport fuels is surging; Iran is importing 6mn t/yr of gasoline and state-run oil firm NIOC estimates that demand will grow at 6pc a year. Dubai alone is next year expected to be short of 2mn t of gasoline.

Iranian plans to build three 120,000 b/d condensate splitters are still awaiting a final investment decision. The units, theoretically due on stream at the rate of one a year starting in 2008-09, are being promoted by the NIOC Pension Fund, which last year signed an initial agreement to build the units with Chinese firm Sinopec. “We are discussing with our Chinese partners. The project is still under consideration and no decision has been taken about how to proceed,” says head of the NIOC Pension Fund, Behrouz Boushehri.

Egypt steps up gas discovery drive

Egyptian state-run oil firm EGPC is aiming to improve its model for future upstream agreements to attract foreign investment and bolster hydrocarbon production as it prepares to receive bids for its next exploration round in early 2006. The round, which offers 13 blocks in the Gulf of Suez and the Eastern and Western Deserts, comes as Egypt struggles to stem declining crude production. This factor is likely to prompt EGPC's agreements and exploration department to sweeten the terms of the exploration contracts.

“A high-ranking committee is reviewing all matters relating to the model of the agreement,” says vice-chairman of EGPC's agreements department, Hussein

Hammouda. While emphasising that existing agreements would remain unchanged, Hammouda declines to specify how future contracts would differ. But sources expect the new terms to reduce risk for contractors, accelerate capital expenditure recovery, and facilitate the development and marketing of gas discoveries.

Crude production of 575,000 b/d is down by 50,000 b/d from last year. But gas and condensate output is on the rise — a point reflected in oil minister Sameh Fahmy's remarks last week that he hopes to see the value of Egyptian oil and natural gas exports increasing from \$5.4bn so far this year to \$8bn next year. This will be achieved through high oil prices and

the implementation of plans to double natural gas exports to 12mn t/yr from three of its LNG projects.

The first of the two 3.6mn t/yr trains at the Idku/ELNG plant came on stream earlier this year. Foreign firms in the ELNG consortium include operator BG of the UK, Malaysia's Petronas and Gaz de France. The second ELNG train came on stream in September, nine months ahead of schedule. BP supplies much of the gas required by the 5mn t/yr Segas plant, which started up in January. BP, Italy's Eni and Egypt's state-run Egas have signed an initial deal for a second 5mn t/yr Segas train, although when this will be built depends on the success of their drilling.

Strong ethane faces stronger future

High ethane prices were the primary topic — and concern — at this month's Petrochemical Feedstock Association of the Americas (PFAA) conference.

Delegates to the annual conference, held this year in Austin, Texas in the first week of November, heard how continued economic growth in the US and China has increased demand for consumer goods. This in turn has driven the price of ethane — the chief US petrochemical feedstock — to record highs.

Ethane is the main feedstock for ethylene, which is used to make plastic and is therefore one of the basic building blocks of a consumer economy.

Prices across the petrochemical sector have also risen because of high natural gas values, which have been boosted by immediate supply problems and increased demand.

The conference was also a good opportunity for the petrochemical industry to assess the affects of the devastating hurricane season. The North American ethylene market was hit by Hurricanes Katrina and Rita, which caused an unprecedented shutdown of almost every ethylene unit in Texas, Louisiana (*LPGW*, 21 September, p1). The later Hurricane Stan did the same in Mexico.

Chocolate blast

The explosion and fire at refiner Innovene's olefins plant in Chocolate Bayou, Texas in early August and an explosion at Formosa Plastic's facility at Point Comfort, Texas in early October also helped contribute to the supply disruption. Innovene's Chocolate Bayou complex of three polypropylene units and two olefins units produces more than 3mn lb/yr of products. The Formosa plant produces 850,000 t/yr of various products.

About 10mn lb of ethylene production was lost because of these outages, Mark Eramo, vice-president for olefins at petrochemical consultancy Chemical Market Associates told delegates. The production loss came at the worst possible time, while the industry is in an upturn and demand is soaring, he said. Despite tight supplies, the US will continue its current pace of ethylene consumption, and these factors will drive prices to historic highs and probably push the costs onto the consumer, Eramo said.

Ongoing world demand, with China leading the way, will require more ethylene production. The world currently consumes 104mn t/yr of ethylene.

High ethane prices pose a big challenge to ethylene producers. One effect is that petrochemical firms search for the cheapest lighter feedstocks. Naphtha is an alternative feedstock to propane, but petrochemical firms have to compete with gasoline blenders, which normally have the upper hand. In response, North American ethylene producers are looking offshore for additional feedstock supply.

"The US has become a major importer of Middle East

naphtha to support our ethylene production," said George Gale, a consultant at Poten and Partners. But the Energy Policy Act of 2005, which was signed into law in August, could help boost natural gas supply and natural gas liquids (NGL) output, said Petral consultant Dan Lippe.

Some 10bn-18bn ft³/d (110bn-197bn m³/yr) of extra natural gas is expected to come on line in the next 10 years. The US Gulf coast and the Rocky Mountains alone are expected to contribute an additional 1bn-3bn ft³/d in the next five years.

Proposed LNG plants could provide an additional 4bn-8bn ft³/d of natural gas in 2007-10. The Mackenzie delta gas pipeline in northwest Canada is anticipated to provide an additional 1bn-2bn ft³/d of natural gas in 2010-12, and completion of the Alaska North Slope gas pipeline will add 4bn ft³/d of natural gas by 2012-14.

'The

greatest consumer society the world has ever seen will be China in 20 years'

Mixed estimates

Estimates on future NGL production are mixed. Some analysts forecast that NGL production in the Rocky Mountains will increase by 50,000 b/d to 130,000 b/d over the next five to seven years. Alaska is expected to contribute 150mn-200mn b/d of NGL production.

The amount of NGL production from LNG imports is also uncertain. At present, many producers are stripping down LNG and making it dry. This decreases the content of NGLs. Getting NGLs from LNG depends on emerging vaporisation technologies, the location of LNG plants, and access to NGL distribution infrastructure, according to Lippe. LNG is predicted to contribute up to 150mn b/d of ethane and up to 50mn b/d of propane, but there is the possibility that there will be no NGL contribution at all.

Despite new production possibilities, worldwide NGL demand may outpace supply, analysts concurred. "The greatest consumer society the world has ever seen will be China in 20 years," said economist Dennis Gartman. "We [in the US] have no idea here how big China is and we have no idea how much [it is] changing."

Canada petchems demand propane

Petrochemical demand for propane in Alberta has outstripped retail consumption — unusual for this time of the year. Ethane, which is the primary petchem feedstock, has tightened up considerably because of decompressor problems at a key plant in the Empress gas processing complex.

Dow and Nova, the top western Canada petrochemical producers, are being forced to switch to propane to run their plants. Most are bidding aggressively for Edmonton propane at even to Conway propane. It normally trades at a slight discount to Conway. Retailers have stepped to the sidelines amid strong prices and mild weather, but the competition between the two industries could get stiff as winter approaches.

Unusual times for US stocks

US primary propane stocks refuse to diminish and have instead touched a four-year high. This is turning out to be an unusual fourth quarter so far for inventories.

Propane stocks posted a weekly gain of 926,000 bl in the week ended 4 November to reach 70.4mn bl, the highest level in almost four years.

According to the US Energy Information Administration (EIA), propane stocks were last this high on 7 December 2001, when they peaked at 70.8mn bl. Current propane inventories are now up by almost 5pc over the year-ago total of 67.14mn bl. The rise runs counter to what normally happens at this time of the year, when winter demand kicks in. The combination of increased supply and decreased demand has had its inevitable effect. Propane production is recovering and imports are strong, while the weather has been mild and demand for crop drying is unseasonably weak.

US propane demand increased by 115,000 b/d to 1.2mn b/d, but was down by almost 6pc from year-ago levels. Average demand for the four weeks ended 4 November was also down to 1.2mn b/d. Warmer-than-average weather in

the US northeast has also dampened demand. This has offset the slight decrease in imports, from 379,000 b/d to 332,000 b/d. Inventories on the US Gulf coast increased by 556,000 bl to 38.9mn bl, 6pc above a year ago. Imports decreased by about 37,000 b/d to 171,000 b/d. Gulf coast production increased to 651,000 bl, but was still down by 46,000 bl from year-ago levels.

East coast falls

East coast inventories fell by 42,000 bl to 4.8mn bl, down by about 15pc from a year ago. Imports totalled 7,000 b/d, up only slightly from the previous week but considerably lower than year-ago levels of 23,000 b/d.

Midcontinent propane stocks fell by 271,000 bl to 23.8mn bl from the previous week, about 9pc higher than a year ago. Imports were down by 8,000 b/d to 147,000 b/d.

Combined Rocky Mountains and west coast inventories were at 2.9mn bl, up by 683,000 bl from the previous week. This was down by 142,000 bl from 3mn bl a year ago.

Propylene non-fuel use inventories stayed at 3.8mn bl, accounting for a 5.4pc share of total propane inventories.

US propane weekly stocks							mn bl
	30 Sep	7 Oct	14 Oct	21 Oct	28 Oct	4 Nov	5 Nov 04
East coast	4.254	4.152	4.345	4.886	4.871	4.829	5.684
Midcontinent	23.854	24.037	23.829	23.833	24.025	23.754	21.818
Gulf coast	38.603	37.179	37.271	37.226	38.356	38.912	36.639
Rocky Mt/W Coast	1.881	2.081	2.095	2.153	2.175	2.858	3.000
Propylene*	4.544	4.152	4.025	3.622	3.833	3.838	2.584
Total	68.592	67.449	67.54	68.098	69.427	70.353	67.141

*included in Gulf coast total

— Energy Information Administration

Shipping

Poten talks strength

Shipping rates look set to stay firm, which is interesting shipping owners “flush with money from the boom in shipping rates in tankers and other markets”, according to the latest annual survey on shipping from consultants Poten & Partners.

The *LPG in World Trade: market outlook for 2005-2015* report was released earlier this month.

Poten puts the rise in shipping potential down to projected increases in LPG supply mainly from the Middle East on the back of large LNG projects. “The significant increase in LPG supply will require shipping capacity,” says the report. “How much shipping capacity depends on trading patterns between the

suppliers and the three principal outlets for the incremental supplies: China, India, and the US.”

The report picks up the annual story from October 2004 and notes how LPG shipping rates have surged. Despite rising yard prices, many have placed newbuilding orders, particularly for very large gas carriers (VLGCs).

The big influx of VLGC newbuildings is partly necessary to replace the oldest vessels in the VLGC fleet, which are now over 25 years old and at the end of their working lives. According to Poten data, six VLGCs will be delivered in 2006, eight VLGCs in 2007, and then a wave of 24 in 2008-09 — “a significant increase on an existing fleet of 105 vessels”.

The report notes concern in some quarters that this massive wave of 2008-09 new deliveries could have a large impact on rates and bring about a vessel surplus. But if the shipbuilders have got it right, then demand for VLGCs should match the additional supply. The “bulge in newbuilding deliveries may cause a transient surplus that may fairly quickly evaporate in the face of growing demand”, the report concludes.

The Poten study includes a historical review and a projection of LPG trading patterns and prices and lists LPG fleet supply by vessel size. It also contains a full listing of over 120 companies in the LPG business including producers, traders, shipowners and distributors.

Latin America deals with change

Consultants Purvin & Gertz held their annual Latin America conference last week in Santiago, Chile. In this special report, LPG World looks at the forces of change that are shifting the region's traditional supply/demand balance

The message from the podium at the Purvin & Gertz (P&G) Latin American Seminar was a sobering one for regional LPG producers — they face a market where supply is growing rapidly as part of a strong expansion of output throughout the Atlantic basin. At the same time, strong LPG prices, which are six to eight times higher than natural gas in some countries, are dampening growth. Customers have ever greater opportunities to switch to natural gas.

“World LPG supply is in a strong expansion cycle, especially in the Atlantic basin,” P&G senior principal Craig Whitley told the meeting. New LNG production in Trinidad, Nigeria, Angola and elsewhere will result in added LPG volume being produced. And burgeoning South American natural gas output will also boost the region's LPG supply.

Peru's Camisea project is to add 600,000-700,000 t/yr of LPG to the South American market. Venezuelan LPG production will grow from 4.4mn t/yr now to 9mn t/yr in 2012. Brazil has already seen its LPG output climb by 50pc since 1998 to more than 5.6mn t/yr, and it projects output at 6.6mn t/yr in 2007. Argentina's LPG output is up from 2.2mn t/yr to 3.4mn t/yr in the same period.

Feeble growth

Despite growing LPG supply, the growth in Latin America's demand for LPG has been anaemic compared with most other regions of the world.

Since 1995, Latin America has seen a 2.3pc/yr growth in demand, while India has seen demand climb by 10.3pc/yr in the same period. Middle Eastern demand has climbed by 6.5pc/yr and southeast Asia has seen a rise of 6.3pc/yr.

In addition to customer migration to natural gas, the relatively high price of LPG has been particularly brutal in its destruction of demand in 2004 and 2005.

Latin America's LPG prices are set in relation to prices at the US market hub of Mont Belvieu, and those prices have been pulled higher by soaring natural gas and crude prices. LPG, crude and natural gas prices are closely allied, because propane and butane compete with ethane as a feedstock for ethylene crackers, while propane competes with naphtha.

P&G's Ron Gist says he expects natural gas prices in North America to remain above \$5-6/mn Btu, given the declining gas output from mature fields in the lower 48 US states. LNG is still a few years away from becoming a significant supplement to regional production, and while storage levels are adequate, much of the natural gas demand sidelined by damage from recent hurricanes will soon come back on line, supporting gas prices.

Gist says the lack of spare crude and refining capacity in

the global oil market should keep crude benchmarks much stronger than before 2004. Propane prices have slipped relative to crude for the last two years, but Gist says propane prices should stabilise at about 65pc of the price of WTI.

More localised issues look set to keep a lid on Latin American LPG demand. In Mexico, LPG demand grew artificially quickly in 1999-2000, when the government put extra fees on gasoline to compensate for its lost revenues from crude imports when crude prices fell. That left Mexican LPG a bargain relative to gasoline, and thousands converted their cars and trucks to LPG. Those price benefits are now gone, and Mexican demand is growing much more slowly.

In Brazil, subsidies on LPG use ended in 2002, and the start-up of the Bolivia-to-Brazil gas line eliminated big parts of the LPG consumer base by making natural gas available.

Fernando Colares Nogueira of Brazil's state-run

Petrobras says he expects to see a 1pc contraction

in LPG demand this year. In Argentina, the currency devaluation pushed the price of LPG from 10 pesos for a 10kg cylinder in 2001 to Ps21 this year.

The good news for LPG sellers is that shifting global supply balances could present opportunities for exports. With a

new natural gas find at Peru's Camisea, there is talk of sending some of its LPG to Japan, Taiwan and South Korea. Trinidad is considering destinations for its LPG that are thousands of sea miles removed from its primary customers in the US. But all of those plans depend on Mont Belvieu prices being low relative to benchmarks in Asian, European and Middle Eastern destinations.

In the short term, booming Atlantic basin LPG supply could keep Mont Belvieu prices below east of Suez benchmarks and discourage shipments to the US Gulf, and pull many shipping fixtures out of the region.

But P&G says Mont Belvieu's huge capacity for storing propane makes it the natural “dumping ground” for propane that cannot find a home anywhere else. Also, the upturn in Middle East crude production is creating more LPG in the region, which would logically pull downwards on regional price benchmarks. That could make the east of Suez markets less attractive to sellers of incremental spot cargoes and lead to more placements into Latin America. Also, the demand growth rates of China and other Asian nations in the past few years are not considered sustainable. Any declines in those rates will tend to reduce demand disproportionately for Mideast Gulf LPG, as compared with the Atlantic basin.

Global LPG markets are still cyclical, and change is constant. But for the moment, look for ample supply and soft demand to characterise the markets in Latin America.

*The
growth in Latin
American demand has
been anaemic compared
with other regions
of the world*

Q&A: Chaco's Mardesich laments Bolivia woes

Concerns about upcoming elections, possible privatisation, and other impediments to LPG operations in Bolivia were among the hot topics at the Purvin & Gertz Latin American seminar. Argus interviewed Guillermo Mardesich, director of Chaco, one of the leading natural gas and LPG producers in Bolivia. Edited highlights follow:

The business climate is tough in Bolivia at the moment. Can you describe some of the problems you are facing as a producer?

As producers, we are taking the biggest hits. We are actually getting about \$170/t — that is the price at which we are selling. But from this we have to take various taxes. So on every tonne we sell, we are getting around \$40-50. We just cannot pay our costs.

How long can you operate that way?

Really, it is a pretty bad situation. The government has just issued a decree saying LPG production will be considered a public service and a certain guaranteed return on investment will be granted. But we had several meetings with the government, and the ways of paying this return are not that easy. If they were to allow prices around the international price and then collect 70pc in taxes, it just does not work. There is no way to get a return.

You mentioned that Bolivia is seeing an 8pc/yr growth in LPG demand. Is that sustainable?

The growth is sustainable because it is subsidised and because Bolivia is just replacing other sources of energy with LPG, which we do not have. We are just barely self-sufficient on LPG. Bolivia is producing about 360,000 t/yr and last year we were able to export about 60,000t. This year, the exports are going to be zero. Next year, if nothing is done, Bolivia is going to have to import LPG.

Even wood and electricity are being replaced by subsidised LPG — which should go only to some segment of the population, not to everybody. Even public transportation is changing from gasoline to LPG. This is something that is really not sustainable. If we were doing the right things, just by producing gas to meet the country's current commitments, we could be exporting up to about 800,000 t/yr of LPG.

How big a problem is smuggling, given that the subsidised price of propane in Bolivia is just about 11¢/kg?

Illegal exports are now 3-5pc of production. You can buy a bottle of LPG for 22 bolivianos [\$2.7] and you go to Peru and you can sell that bottle for Bs80. So you make a profit of more than Bs50 on one bottle. For a regular poor family, they can make more by exporting one bottle of LPG a day than what they can make in a whole year at a regular job.

The populist Evo Morales is standing for election, and has a good chance of winning the presidency. Would that close the door on energy development in Bolivia?

Even if Evo Morales becomes president, he will have to give the foreign investors the way to bring money to Bolivia. I do not visualise a Bolivia that tries to do things without foreign investment. It just does not work. You know our industry consumes a lot of capital. On the other side, the major oil companies are in Bolivia today. So the government has options, and Bolivia needs those companies to develop and monetise the gas, so I think even in the worst scenario, something good has to happen in the end.

Analysts talk about a lot of competing natural gas and LNG projects on the drawing board, most of which will produce LPG. Is there a chance that if Bolivia waits too long, its potential customers will have moved to other projects for their supply?

Bolivia could lose its opportunity if the new government says — “well, we will do things in the Bolivian way, we will nationalise everything, and then investment will come because we are very important.” But Bolivia, with 0.4pc of the world's gas reserves, is not that important. Everybody else is not going to sit and wait to see what Bolivia is going to do. Like Chile, if they cannot get gas from Argentina they are going to build an LNG receiving terminal. They have to supply their industry. Countries like that cannot wait around.

Those in the Evo Morales camp and elsewhere talk about nationalising the nation's hydrocarbons business. How likely are we to see nationalisation in Bolivia?

They are talking about nationalisation without having a real sense of it. They say we want to nationalise hydrocarbons, but we also need foreign investment. Those two ideas just do not fit. There is something that has to be understood. Under the current law, if you were to nationalise something, you would nationalise the expenses, because the rest of it goes in taxes. So the hydrocarbons under ground belong to the state. Once you start extracting them, the tax and royalty level is so high that there is nothing left to be nationalised.

Politically, one of the big problems the energy industry has is that it is widely perceived to be corrupt and to be stealing the wealth of the nation. Is it possible for the industry to turn that perception around?

If you look at recent history, [state-run firm] YPFB was the main company doing hydrocarbons development, and it did a good job, it just did not show it. The government did not help get the word out about how good a job the industry was doing.

Let's go back about eight years. Bolivia had about 5.5 trillion ft³ [165bn m³] of proved gas reserves. What happened was that Bolivia found more gas because the firms came in, invested a lot of money, brought in technology. It is not just coincidence that 5.5 trillion ft³ suddenly became 55 trillion ft³. But the lack of continuing investment is starting to show. To keep building reserves, you have to keep investing.

European butane loses ground

Butane prices in northwest Europe have tumbled after hitting record highs in October, when supply threats shook a market at the peak of the price rally.

Since reaching its highs of mid-to-late October, the European large cargo (cif ARA) field-grade butane price has dropped by nearly \$90/t to just over \$510/t, as the restoration of supply at Norway's Karsto terminal on 29 October coincided with the virtual disappearance of demand.

A fire on 15 October on the Norwegian Asgard B platform in the North Sea caused product shortages. Asgard B's production of 16,000 b/d of oil, 42mn m³/d of gas and 69,000 b/d of condensate was immediately shut in. Karsto has northwest Europe's largest LPG storage facility and the terminal loads around 5mn t/yr of LPG for export.

Touching the heights

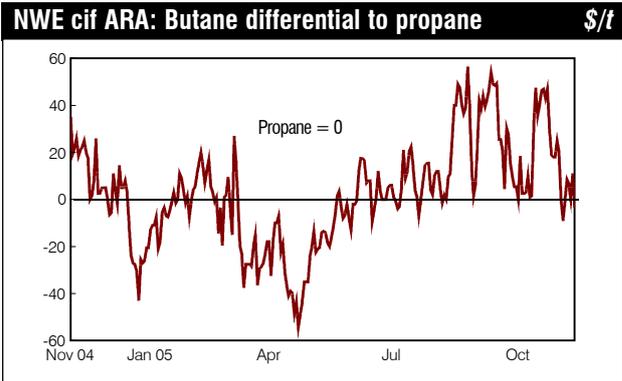
European butane prices surged as a result — coming within 50¢ of hitting \$600/t on 20-21 October, and on 20 October one smaller-sized cargo loading out of the Mongstad terminal in Norway for early November actually traded at a formula price, equivalent to just over \$601/t. The market faced an acute shortage of prompt product. Karsto then faced reductions in loadings during November, further boosting buying sentiment.

Butane has enjoyed a sometimes hefty premium to propane since early June, the premium strengthening since Hurricane Katrina hit the US Gulf coast on 29 August.

But what made it trace a different path to propane is its link with gasoline. The US Gulf refining outages before the end of the peak summer driving season in particular saw the price of gasoline soar, and with it, that of gasoline additives such as butane.

So it then became economic for European blenders to blend butane into gasoline on the other side of the Atlantic and export it to the US for a profit. But this opportunity no longer exists.

The season for winter-grade gasoline blending started on 15 October in the UK and Scandinavia. But as the gasoline price has fallen, with the markets settling back after the hurricanes, so has blending demand for butane. Nor is there much demand from the other great consumer of butane, the petrochemical industry. This is because the alternative feed-



stock of naphtha is substantially cheaper.

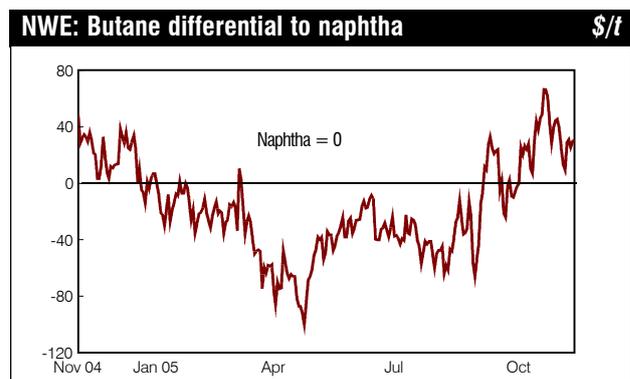
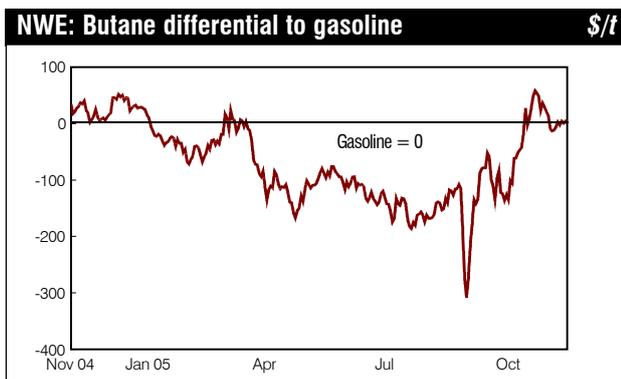
This combination of factors has left the European market long on butane. The drop in butane prices finally saw its premium to propane eroded. In early November, propane briefly commanded a premium over butane again, despite the weakness in propane prices because of unseasonably mild weather in October and early November across northwest Europe.

Coaster butane prices, for small refinery lots shipped under pressure instead of refrigeration, have tracked those of field grade material. Fob northwest Europe butane jumped \$83/t in one day, and soared from just over \$400/t at the beginning of September to nearly \$590/t on 18 October, when the coaster cif ARA price topped \$622/t.

But having moved to a premium to propane coaster prices in early September, butane then returned to a discount on 2 November.

Butane cif ARA coaster prices were in the \$510s/t at the time of going to press, with the only notional buying interest coming from petrochemical consumers at sub-naphtha levels. And with naphtha in the low \$480s/t cif, most market participants saw a lot of potential downside.

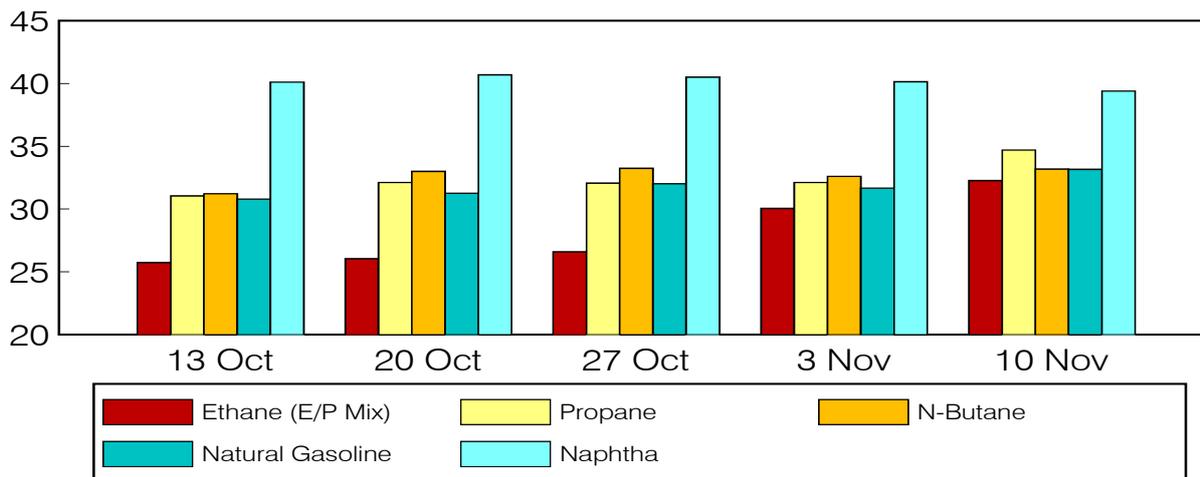
The only bright spot on an otherwise gloomy horizon for butane sellers is that arbitrage from northwest Europe to the Mediterranean is just about open, as prices in the Mediterranean have not fallen as far or as fast. A 20,000t North Sea cargo has headed south in the last few days. The arbitrage is likely to keep the northwest Europe market more balanced for the rest of the month.



Purvin & Gertz: ethylene plant costs and margins (¢/pound of ethylene)

Ethylene plant total variable cash cost (as at Mont Belvieu, Texas)					
	13 Oct	20 Oct	27 Oct	3 Nov	10 Nov
Ethane (E/P Mix)	32.47	32.16	31.61	28.16	25.94
Purity Ethane	32.94	32.95	32.43	28.56	26.75
Propane	27.17	26.11	26.14	26.09	23.52
N-Butane	26.93	25.14	24.91	25.54	24.95
Natural Gasoline	26.43	25.97	25.21	25.55	24.06
Naphtha	17.10	16.53	16.71	17.07	17.81
Gasoil	48.84	48.00	34.12	30.33	28.32

Ethylene plant gross margins (graph below) (as at Mont Belvieu, Texas)					
	13 Oct	20 Oct	27 Oct	3 Nov	10 Nov
Ethane (E/P Mix)	25.75	26.06	26.60	30.05	32.27
Purity Ethane	25.28	25.26	25.79	29.65	31.46
Propane	31.05	32.11	32.07	32.12	34.70
N-Butane	31.22	33.01	33.25	32.60	33.19
Natural Gasoline	30.80	31.26	32.02	31.68	33.17
Naphtha	40.11	40.69	40.51	40.14	39.40
Gasoil	8.38	9.22	23.10	26.88	28.89



— Purvin & Gertz

Shipping news

Greek LPG shipping company **Stealthgas**, which is expanding its fleet, is on course to take delivery of four vessels this month. Early in November, the company took delivery of one 3,211m³ vessel, and is expecting the arrival of another three. It is also scheduled to receive another vessel in February.

Monaco-based **MC Shipping** announced profit of \$2.9mn for the third quarter ended on 30 September, an eightfold increase from the same period last year. The company's earnings growth was bolstered by an exceptional gain from the sale of some vessels. MC Shipping operates 16 vessels, of which 10 are LPG carriers ranging in size from 3,000-78,000m³. The company says it was in the process of negotiating for new contracts for vessels that have charters that expire in the near term.

Shipping rates look set to stay firm, which is interesting shipping owners "flush with money from the boom in shipping rates in tankers and other markets", according to the latest annual survey on shipping from consultants Poter & Partners, called *LPG in World Trade: market outlook for 2005-2015* (see p7).

Shipping market-watch

The very large gas carrier (VLGC) sector is now seeing falling rates. The Mideast Gulf-Japan rate has tumbled to just \$40/t, which is roughly the same level seen this time last year. It is still a strong level compared with recent years. But as shipbrokers E A Gibson points out, the overall shipping market looks in need of a stimulus, which could come from the onset of winter weather in northwest Europe and north Asia.

LPG shipping rates

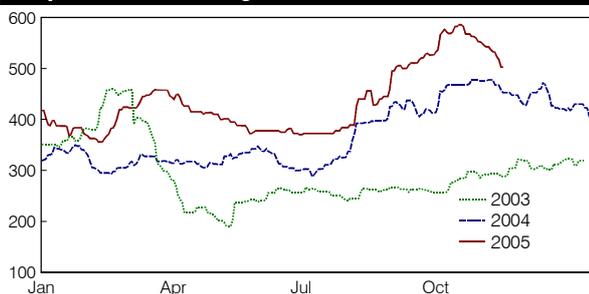
Spot			\$/t
43,000t	Mideast Gulf /Japan	↓	41.00
3,000t	Tees/Lisbon	nc	69.00
1,800t	Tees/ARA	nc	44.00
1,800t	Tees/Lisbon	nc	75.00
12-month time charter			\$/pcm
75,000-78,000m ³ (modern)		nc	1,100,000
75,000-78,000m ³ (older)		nc	950,000
57,000m ³ (modern)		nc	975,000
35,000m ³		nc	950,000
15,000m ³		nc	700,000
3,200-3,500m ³ pressurised (west)		nc	260,000
3,200-3,500m ³ pressurised (east)		nc	225,000

— EA Gibson

EUROPEAN PROPANE

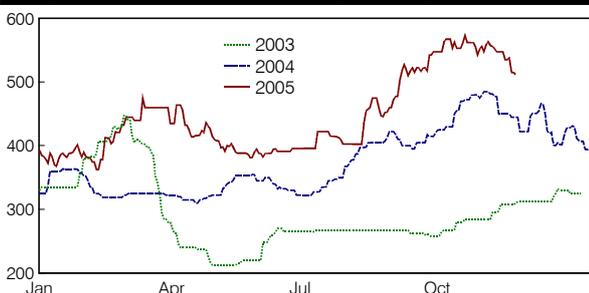
Propane fob NWE cargoes small

\$/t



Propane cif Mediterranean cargoes large

\$/t



WATCH FOR

Flat demand

● Prices fell dramatically as October's unseasonably mild weather across the region dragged into November, stifling inland demand and leaving the market long and storages full to the brim. The lack of seasonal demand kept prices tied to volatile crude and plunging naphtha.

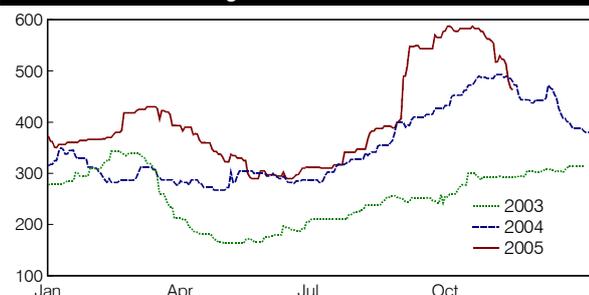
● Refrigerated prices in northwest Europe fell by nearly \$60 to \$500/t cif ARA. So 20,000t vessels had to do two and three-port discharges, with demurrage costs at every port, to offload propane into terminals that could only take a few thousand tonnes at most. Handy-size vessels commanded a substantial premium, but shipping availability was tight. Most of the November programme has now been covered.

● Coasters followed the bearish pattern, falling \$50/t to just over \$500/t fob NWE as a seller of up to 3,000t at Tees in the UK found no buying interest over the course of several days.

EUROPEAN BUTANE

Butane fob NWE cargoes small

\$/t



WATCH FOR

Weak coasters

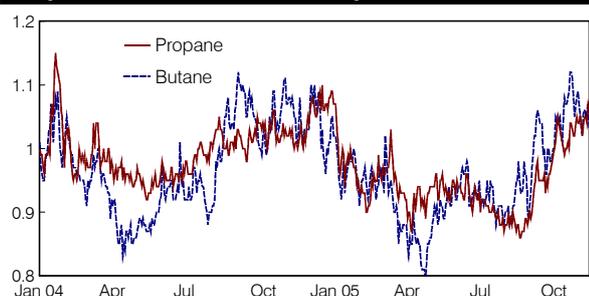
● Prices tumbled with demand stifled by mild weather and an absence of buying for both winter-grade gasoline blending and petrochemical consumption.

● The only notional buying interest came from petrochemical consumers at naphtha-related level. With naphtha prices tumbling daily, the prices that petchems were prepared to pay for butane also kept dropping.

● Refrigerated prices fell by \$80/t to below \$500/t cif ARA. Once a petchem consumer had covered a requirement into Stenungsund in Sweden, prompt demand evaporated. A seller has a cargo for 20-25 November delivery, but one buyer wants slightly later dates and another was too wary of falling prices to buy before it had to.

● Coaster prices fell even more dramatically, by nearly \$100/t, as a seller of top-quality refinery tonnes offered down to \$470/t fob, but still no buyers emerged.

Propane and butane ratios to naphtha NWE

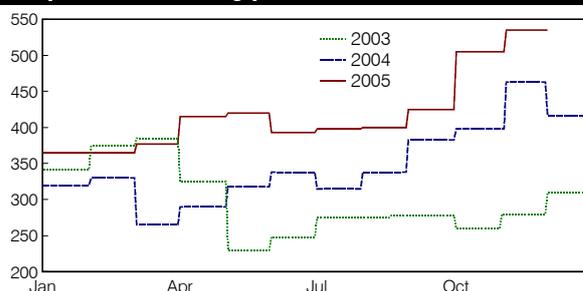


ASIAN PROPANE

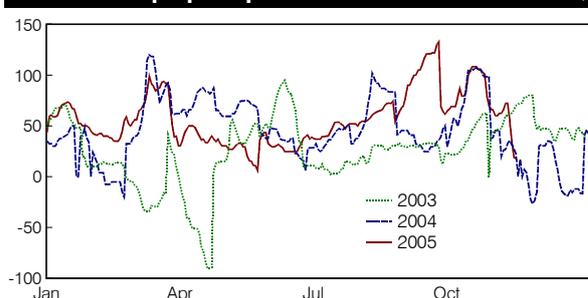
WATCH FOR
Weaker Saudi CP

- Asian spot prices crashed, reflecting the price falls in both the crude and European LPG markets.
- Spot demand from Japan and South Korea is limited. The demand showing up came from a European major's Japanese affiliate needing to top up its LPG stocks.
- Other Japanese importers look to be in no rush to build stocks. November and December spot prices are currently trading at a sharp backwardation.
- Inventory in Japan is only moderate, so strong buying could resume if the weather turns cold in north Asia over the next few weeks.
- Some Japanese importers also forecast that spot buying could surface for second-half December arrival cargoes if the December Saudi Contract Price (CP) is slashed from November levels, as expected.

Propane Saudi selling price \$/t



South China propane premium \$/t

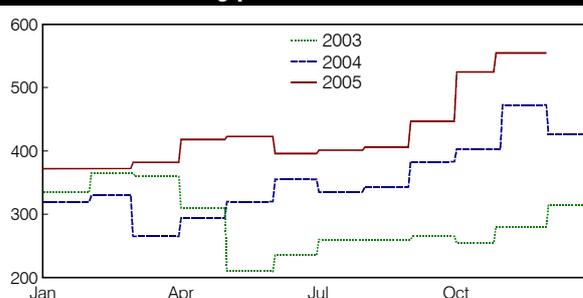


ASIAN BUTANE

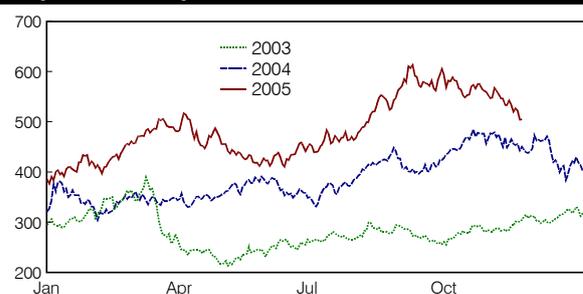
WATCH FOR
Bearish pressure

- Tumbling Chinese domestic prices are expected to curb China's spot import demand. One Chinese importer was heard seeking to resell a spot 11+11 cargo that it had bought previously from a Japanese trading house, for end-of-November delivery.
- Prices are expected to come under further downward pressure for cargoes arriving in the first half of December. At least 80,000t of spot cargoes were still unsold for arrival up to mid-December. But main demand in China was already covered with most importers holding back purchases, until domestic prices improved.
- Falling refrigerated and wholesale Chinese values have knocked down pressurised prices as well, with the latest deals for end-November arrival cargoes reportedly done at the low-to-mid \$550s/t CFR south China, compared with the \$600s/t CFR level seen a week ago.

Butane Saudi selling price \$/t

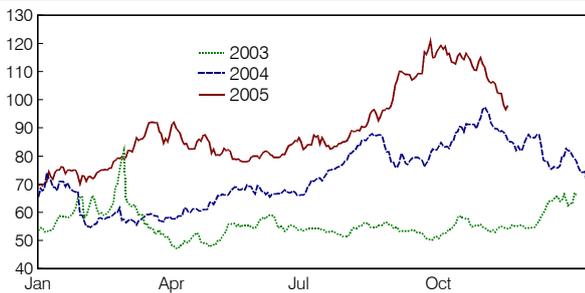


Naphtha c+f Japan \$/t

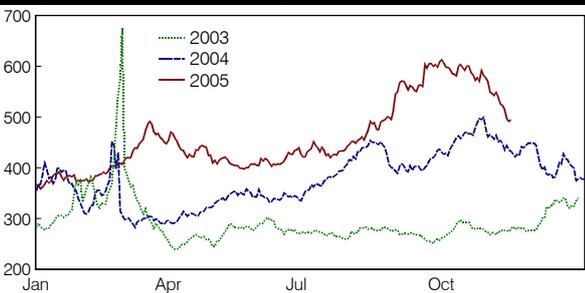


AMERICAS PROPANE

Propane Nymex ¢/USG



Propane US Gulf coast import \$/t

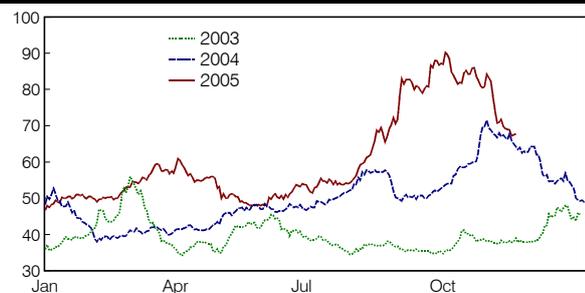


WATCH FOR
Onset of colder weather

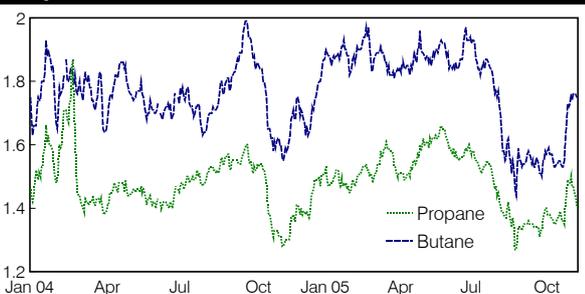
- The forward contango in the Mont Belvieu Tet propane market has strengthened, as is usual for this time of the year. December Tet propane is commanding a 0.50¢/USG premium to November, and January is at a hefty 2¢/USG premium to December.
- Propane prices have so far been drifting downward because of a dearth of cold weather in the US northeast, but that is expected to change.
- Weather agencies are predicting colder-than-normal temperatures at the end of November, which should boost prices.
- In the midcontinent, demand has been dented by not only mild temperatures, but also a lack of crop drying activity. 2004 was an unusually strong year for crop drying, but demand has been practically nonexistent this year.

AMERICAS BUTANE/ETHANE

Ethane Mont Belvieu ¢/USG



Propane and butane ratios to ethane



WATCH FOR
Ethane demand

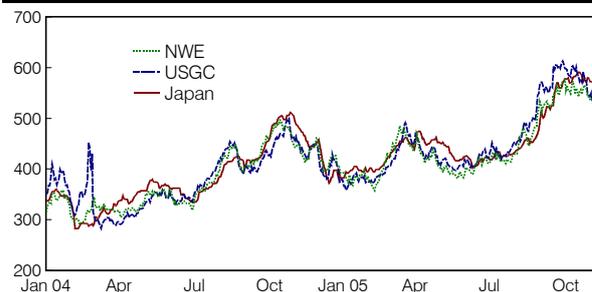
- The spread between non-Tet purity ethane and E/P mix widened sharply to 1.875¢/USG from 1¢ a month ago. Ethane demand has strengthened as petrochemical plants resume normal production after a brief disruption last month as a result of Hurricanes Katrina and Rita.
- The spread between Tet propane and non-Tet normal butane widened sharply to about 22¢/USG from 16¢/USG a month ago.
- Normal butane prices have continued to edge up on the back of gasoline blending demand, whereas propane demand in the heating sector has been weak.
- Paraffinic prices are maintaining a healthy premium of more than 9¢/USG to natural gasoline, making it an uneconomic petrochemical feedstock. Producers prefer the light feedstocks to the heavy liquids because of cheaper prices.

INTERNATIONAL LPG

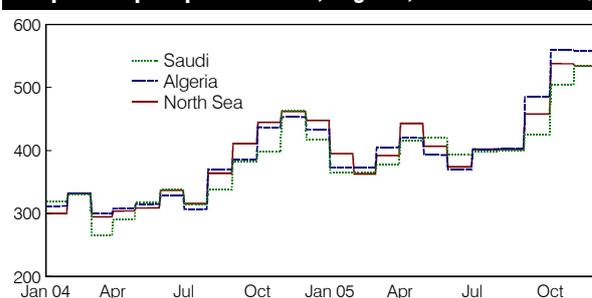
WATCH FOR
High US stocks

- In an unusual move for this time of year, US propane inventories rose by 926,000 bl to 70.4mn bl in the week ended 4 November. Stocks are at their highest level in almost four years, due to weak demand, strong imports and rising production. Propane inventories are up by almost 5pc, compared with a year ago.
- The Saudi December propane CP is now expected to be at least \$30/t lower than the November CP.
- The Mediterranean region has been one of the few bright spots in the international LPG markets. Refrigerated price falls in the region have not matched the rate of prices in north Europe. This has left a \$25/t premium between the two regions, which is just enough to open arbitrage from the north, potentially removing some length from there and providing support. A 20,000t North Sea cargo headed for the Mediterranean in early November.

Propane NWE, USGC, Japan \$/t



Propane export prices Saudi, Algeria, North Sea \$/t



Chinese domestic prices Yuan/t

	*Sep 05	Oct 05
East China terminal		
Ningbo ex terminal	4,932	5,370
Wenzhou ex terminal	4,916	5,303
Taicang ex terminal	5,238	5,654
Shanghai ex terminal	5,274	5,684
Zhangjiagang ex terminal	5,236	5,652
Fujian ex terminal	4,997	5,502
East China refinery		
Shanghai ex refinery	4,848	5,201
Zhenhai ex refinery	4,931	5,370
Yangzi ex refinery	4,812	5,153
Fujian ex refinery	4,976	5,399
Gaoqiao ex refinery	4,760	5,182
South China terminal		
Zhuhai ex terminal	5,229	5,577
Shenzhen ex terminal	5,221	5,558
Raoping ex terminal	5,165	5,577
Nansha ex terminal	5,219	5,579
Shantou ex terminal	5,178	5,573
Yangjiang ex terminal	5,171	5,491
South China refinery		
Maoming ex refinery	5,070	5,410
Guangzhou ex refinery	5,162	5,516
Northeast China refinery		
Daqing ex refinery	4,296	4,705
Dalian ex refinery	4,427	4,746
Northwest China refinery		
Urumuqi ex refinery	3,582	3,698
Inland China refinery		
Lanzhou ex refinery	4,270	4,291
Yan-An ex refinery	4,590	4,652

*Sep 2005 monthly average prices are effective from 5 Sep 2005

Chinese price quotations

The China domestic prices table opposite will appear in each issue of *LPG World*, reflecting the wide range of new Chinese price quotations carried in our sister publication, the daily *Argus International LPG Report*.

The figures are the monthly average of the daily price assessments carried in yuan/t. The table begins with the monthly average for September, taking into account the fact that the assessments were first introduced on 5 September.

In time, this table will be expanded to cover the whole two columns, as it collates each monthly price change.

Argus LPG World has introduced the additional data to reflect the growing importance of the Chinese domestic LPG market. Last year, China overtook Japan as Asia-Pacific's largest consumer, which means that it is now, after the US, the world's second-largest LPG market — and still growing at over 6pc/yr. China is also a crucial element in international trade flows, drawing imports especially from the Middle East.

Looking ahead

- *Cop/Mop 1, UN Framework Convention on Climate Change*. 28 November-9 December. Montreal. <http://unfccc.int>
- *Intergas III 2005*. 17-20 December. Cairo, Egypt. Intergas. + 44 20 7089 4200. www.intergasegypt.com

PROPANE	NOV 04	DEC	JAN 05	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Middle East \$/t													
Saudi Arabia	463.00	417.00	365.00	365.00	377.00	415.00	420.00	393.00	398.00	400.00	425.00	505.00	535.00
Kuwait	463.00	417.00	365.00	365.00	377.00	415.00	420.00	393.00	398.00	400.00	425.00	505.00	535.00
Mediterranean \$/t													
Algeria (Sonatrach)	453.00	433.00	373.00	373.00	405.00	420.00	393.00	370.00	402.00	403.00	485.00	560.00	558.00
North Sea \$/t													
Argus fob Index	462.00	427.00	395.00	372.00	392.00	443.00	407.00	374.00	402.00	402.00	458.00	538.00	536.00
BP Agreed Price	452.00	448.00	377.50	363.00	411.00	422.00	392.00	366.00	397.00	399.00	492.00	559.00	534.00
Spot Prices \$/t													
Large cargo cif ARA	438.45	410.14	383.35	389.18	456.43	428.90	393.20	407.57	420.52	463.41	540.52	557.26	
Large cargo cif Lavera	444.50	413.98	384.33	397.18	451.67	429.43	391.23	392.86	410.50	454.18	534.41	557.40	
Large cargo USGC	442.45	397.50	376.50	387.66	449.86	436.83	408.00	418.89	434.05	483.30	580.03	585.62	
Large cargo Japan cfr	464.13	397.22	396.89	406.44	448.25	458.50	431.89	416.61	426.62	451.61	535.07	579.63	
Large cargo East China cfr	463.85	395.50	397.06	404.47	451.61	462.07	432.17	415.52	425.86	449.61	533.02	577.11	
Large cargo South China cfr	463.48	395.50	396.86	403.09	449.68	460.07	430.72	414.75	425.29	448.25	531.64	575.47	
Large cargo Far East Index	463.80	396.70	397.28	404.76	448.97	459.29	431.31	415.68	425.95	449.93	533.36	577.55	
Asia Spot Premiums \$/t													
Mideast Gulf	-0.15	-3.09	-1.45	-0.06	3.16	2.02	-0.22	0.66	0.33	-0.27	8.74	9.39	
East China (pressurised)	5.05	8.65	60.42	43.26	72.52	39.40	27.33	30.77	46.14	62.73	na	na	
South China (pressurised)	13.93	8.65	60.34	43.26	72.52	39.40	27.33	30.77	46.14	62.73	98.29	87.00	
East China (refrigerated)	9.75	-10.57	31.55	38.12	64.00	45.88	18.67	21.84	27.86	44.39	88.74	66.58	
South China (refrigerated)	9.38	-10.57	31.55	36.74	62.25	43.88	17.22	21.07	27.29	43.02	87.36	64.95	
Taiwan	28.13	19.22	30.05	37.82	45.34	41.31	25.94	24.30	25.95	37.32	63.74	56.18	
Japan	28.13	19.22	30.42	39.56	44.05	42.64	28.75	25.11	26.43	39.23	65.55	58.03	
Mont Belvieu in ¢/USG													
Tet	86.31	77.72	73.69	75.82	87.75	85.24	79.71	81.80	84.71	94.15	112.70	113.77	
Non-Tet	86.26	77.61	73.61	75.82	87.63	85.24	79.71	81.65	84.14	93.64	112.68	113.57	
Nymex 1st month	86.20	78.05	73.10	75.11	86.18	85.69	79.80	82.16	84.84	94.51	112.96	113.90	
Europe \$/t													
Coasters fob NWE	449.43	427.67	387.08	380.00	442.10	421.83	388.15	375.30	374.19	431.77	514.70	569.07	
Barges fob NWE	455.59	432.40	392.85	396.25	461.31	412.71	381.15	419.70	430.24	446.25	529.41	555.02	
Coasters fob Med	466.82	453.69	426.88	452.45	481.90	460.14	416.68	388.86	375.00	445.66	541.41	585.36	

BUTANE	NOV 04	DEC	JAN 05	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Middle East \$/t													
Saudi Arabia	473.00	427.00	372.00	372.00	382.00	418.00	423.00	396.00	401.00	406.00	447.00	525.00	555.00
Kuwait	473.00	427.00	372.00	372.00	382.00	418.00	423.00	396.00	401.00	406.00	447.00	525.00	555.00
Mediterranean \$/t													
Algeria (Sonatrach)	473.00	435.00	375.00	375.00	405.00	415.00	398.00	380.00	407.00	408.00	493.00	572.00	578.00
North Sea \$/t													
Argus fob Index	479.00	431.00	369.00	374.00	391.00	417.00	365.00	367.00	404.00	410.00	494.00	560.00	569.00
BP Agreed Price	482.00	448.00	356.50	360.00	406.00	400.00	360.00	360.00	400.00	408.00	514.00	563.00	559.00
Spot Prices \$/t													
Large cargo cif ARA	450.80	398.45	379.10	392.80	439.50	397.05	380.73	411.00	428.10	485.70	570.23	580.50	
Large cargo cif Lavera	460.18	402.90	380.93	401.25	441.90	392.07	382.35	397.86	415.00	474.00	571.77	586.90	
Large cargo USGC	456.53	397.29	393.20	412.66	448.39	438.67	388.07	411.16	433.10	462.80	557.83	558.07	
Large cargo Japan cfr	473.98	401.46	397.00	406.97	448.25	460.60	434.56	417.75	431.19	468.36	560.29	595.45	
Large cargo East China cfr	473.70	399.79	397.31	405.00	451.61	463.98	434.94	416.66	430.48	465.77	558.24	592.61	
Large cargo South China cfr	473.33	399.79	397.11	403.62	449.68	461.98	433.50	415.89	429.86	464.00	556.86	590.71	
Large cargo Far East Index	473.65	400.99	397.46	405.29	448.97	461.29	434.03	416.82	430.52	466.18	558.57	593.08	
Asia Spot Premiums \$/t													
Mideast Gulf	6.35	1.37	-0.21	0.74	3.75	3.02	-0.03	0.75	2.83	6.30	12.86	13.47	
India cfr	35.00	35.00	33.89	37.06	42.75	47.00	32.56	29.07	33.10	47.93	75.12	53.50	
East China (pressurised)	-4.70	-0.52	55.26	36.50	67.80	36.12	24.33	27.77	43.14	53.91	na	na	
South China (pressurised)	3.93	-0.52	55.18	36.50	67.80	36.12	24.33	27.77	43.14	53.91	76.56	68.05	
East China (refrigerated)	9.60	-15.72	26.00	31.88	59.09	44.50	18.44	19.98	29.48	51.75	92.19	63.13	
South China (refrigerated)	9.23	-15.72	25.82	30.50	57.16	42.50	17.00	19.20	28.86	49.95	90.81	61.24	
Taiwan	27.98	16.02	26.84	32.35	41.57	40.12	25.50	23.25	27.90	41.89	66.86	56.08	
Japan	27.98	16.02	27.21	34.09	40.20	41.55	28.47	24.07	28.24	43.84	68.48	57.97	
Australia	1.50	1.15	2.39	2.00	7.20	-0.31	0.25	2.75	2.64	4.20	na	na	
Mont Belvieu ¢/USG													
Tet	105.03	91.91	91.01	95.32	103.23	101.07	89.86	94.97	99.85	106.41	127.45	127.48	
Non-Tet	105.61	93.18	93.54	95.92	105.06	103.86	93.02	97.27	101.86	109.02	129.70	128.81	
Europe \$/t													
Coasters fob NWE	456.00	400.95	360.30	383.48	416.88	359.05	310.38	302.00	318.17	374.43	539.23	578.43	
Barges fob NWE	456.61	398.10	364.98	396.65	424.43	378.10	330.55	325.57	355.19	424.61	537.93	574.57	
Coasters fob Med	487.73	429.83	368.75	408.28	413.76	363.10	327.13	321.14	330.00	387.02	544.93	594.60	

NAPHTHA \$/t	NOV 04	DEC	JAN 05	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Cargoes cif NWE	429.80	383.36	392.15	415.28	476.98	470.21	419.15	437.23	467.05	527.36	571.00	545.07	
Cargoes c+f Japan	456.24	410.54	405.71	429.83	483.45	476.73	428.88	437.67	466.47	541.09	583.41	560.64	

ETHANE	NOV 04	DEC	JAN 05	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Mont Belvieu ¢/USG	64.97	54.14	49.58	50.58	56.54	55.95	49.24	51.71	54.48	67.59	84.00	82.45	