



Industrial Gases **Business Performance Analysis**

Quarter 3 2004





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DEFINITIONS/LEXICON

The following terms have been used throughout the report:

LOX	Liquid oxygen
LIN	Liquid nitrogen
LAR	Liquid argon
LCO ₂	Liquid carbon dioxide
LHY	Liquid Hydrogen
GOX	Gaseous Oxygen
GAN	Gaseous Nitrogen
GAR	Gaseous Argon
CO ₂	Carbon dioxide
H ₂	Hydrogen
He	Helium
tpd	Metric tons per day
Nm ³	Normal cubic metres
MMSCFD	Million Standard Cubic Feet per Day (US Terminology)
Bn	Billion
m	Million
jv	Joint venture
SOG	Sale of Gas
SOE	Sale of Equipment
ASU	Air Separation Unit
YoY	Year on Year
BOC	The BOC Group (UK Gas Co.)
AP	Air Products and Chemicals Inc. (US Gas Co.)
AL	Air Liquide (French Gas Co.)
P	Praxair Inc. (US Gas Co.)
NSC	Nippon Sanso Corp. (Japanese Gas Co.)
Linde	Linde Gas (German Gas Co)
Messer	Messer Griesheim (former German Gas Co.)
Airgas	Airgas Inc (Major US Distributor)

Markets:

OSP	On-site supply (gas production owned by gas companies) or pipeline supply schemes
Bulk	supply in either liquid or tube trailer mode
Cylinder	supply in high pressure compressed gas

MAIN FINANCIAL CALENDAR OF EVENTS – 2004

MONTH	COMPANY	EVENT	STATUS
January			
	Praxair	28 Jan - Q4 03 results	✓
	AP	21 Jan – Q1 04 results	✓
	BOC	23 Jan – Shareholders AGM	✓
	AL	28 Jan – Q4/Year End (2003) Sales	✓
	Airgas	28 Jan – Q3 Results, 29 Jan Teleconference	✓
February			
	BOC	3 Feb – Q1 04 results	✓
	AL	27 Feb – Year end results (2003)	✓
March			
	Linde	24 Mar – Press/Analyst Brief. Annual (2003) Results	✓
April			
	Praxair	28 Apr – Q1 04 results	✓
	AP	28 Apr – Q2 04 results	✓
	AL	28 Apr – Q1 04 results	✓
May			
	Airgas	5 May – Q4 results	✓
	Linde	13 May – Q1 04 results	✓
	AL	12 May – Shareholders Meeting 04	✓
	BOC	13 May – Q2 04 results	✓
	Linde	18 May – Shareholders Meeting 04	✓
July			
	NSC	Annual 2004 Financials	✓
	Praxair	28 July –Q2 Results	✓
	AP	28 July – Q3 Results	✓
	Airgas	28 July – Q1 Results (conf. Call 29 th July)	✓
	AL	27 July – 1H Sales 04	✓
August			
	BOC	3 Aug – Q3 results	✓
	Airgas	4 Aug – Shareholders Meeting	✓
	Linde	12 Aug – 1H results	✓
September			
	AP, BOC	Year End	✓
	AL	6 Sept – 1H Earnings 04	✓
October			
	AP	27 October – Q4 Results	✓
	Praxair	27 October – Q3 Results	✓
	Airgas	28 Oct – Q2 Results	✓
	AL	28 Oct – Q3 Sales 04	✓
November			
	Linde	11 Nov – 9 monthly report	✓
	BOC	18 Nov – Year end results	✓
	NSC	17 Nov – Half Year Results	✓

[1.0] EXECUTIVE SUMMARY

[1.1] GAS INDUSTRY HEADLINES

Gas revenues grew by 12.8% year on year (constant US\$ basis) but more importantly, the underlying rate for the pool of 7 gas companies also remained strong – 8.2% up on last year. The underlying situation excludes the impact of natural gas pass-through, currency and acquisitions, which in total contributed to a net \$375m increase on last year.

The main drivers to the underlying growth are the improvement in gas volumes sold to end-users, the US economy continuing its recovery, the European economy improving and the Asian market remaining very active.

M&A activity continued in Q3 at a much lower level than Q2 but the BOC sale of its US packaged gas business was completed at the end of July 2004.

The main activity actually happened after the quarter end, with Praxair and Air Liquide announcing the \$600m acquisition by Praxair of various pipeline, on-site and merchant businesses in Germany (October).

Table 1.1.1 summarises the performance of the main players in Q3 04 compared with the previous year showing that revenues grew strongly. There was a higher increase in EBIT, resulting in a marginal improvement in EBIT margins for the industry. ROCE (pre tax) was also up by 40 basis points.

TABLE 1.1.1
SUMMARY OF GAS COMPANY QUARTERLY PERFORMANCE (GASES ONLY)
(Calendar Q3 04 v Q3 03)

Financial Metric	AL	BOC	Praxair	AP	Linde	NSC	Airgas	Peer Grp Avg
Revenue Growth (%)	14.4	2.8	19.0	21.9	4.6	0.1	30.3	12.8
Underlying Growth (%)	6.4	8.0	14.1	11.9	6.0	-1.9	9.4	8.2
EBIT (% Change)	4.8	17.6	17.5	20.4	3.7	55.0	26.0	13.1
EBIT Margin (% Change)	-1.5	2.1	-0.2	-0.2	-0.1	2.9	-0.3	0.1
ROCE	12.7	16.0	16.3	14.2	9.8	11.0	11.0	13.3
ROCE (% Change)	-3.3	3.1	2.3	1.3	0.4	3.3	0.3	0.4

Note: Constant \$ used

Airgas represents total business (gas + welding equipment)

Colour scheme – green: good performance, pink: poor performance.

(The darker the colour, the more extreme the performance)

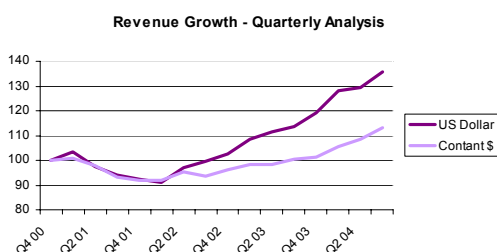
1.1.1 Gas Business Revenue Growth

Actual industrial gas revenues significantly increased in Q3. An increase of 12.8% over the previous year was boosted by the stronger volumes in the US and the weakening US\$ against other major currencies. On a constant currency basis revenues grew at 8.2%. The US Dollar against the Euro was 8% down on Q3 03.

The main boost to revenue growth came from the M&A activity undertaken in the year, which contributed to a total of \$465m. Negative currency translations for the three leading European gas companies eroded some of this gain.

The improvement in global economic activity together with the high price of oil and continued strong steel output has definitely boosted demand for gases. Project activity to cover the 2005/6 period is very much higher than a year ago.

FIGURE 1.1.1

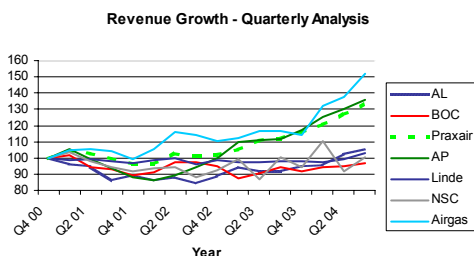


Main reasons:

The underlying improvement of 8.2% in gas revenues was mainly attributable to increased gas volumes across all regions as economies and demand increase. Several gas companies were also benefiting from the start-up of important projects during the first nine months of 2004.

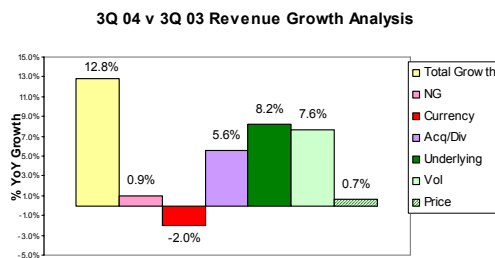
There was still a slight positive contribution from higher pricing but pricing levels have slowed, with mixed pricing even in the special gases sector (Helium up but NF₃ down).

FIGURE 1.1.2



Consolidations or acquisitions of various businesses significantly contributed to the year-on-year growth in gas revenues, up by 5.8% or \$465m in Q3. Much of that was related to the Messer business that was divested as the BOC packaged gas business was an “internal” consolidation between the peer group of 7.

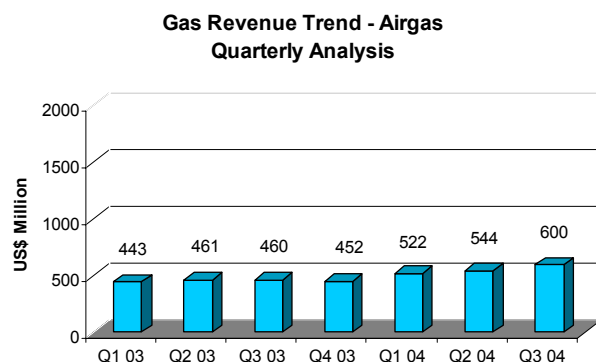
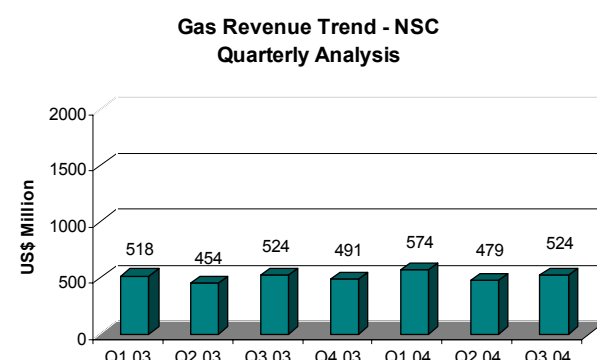
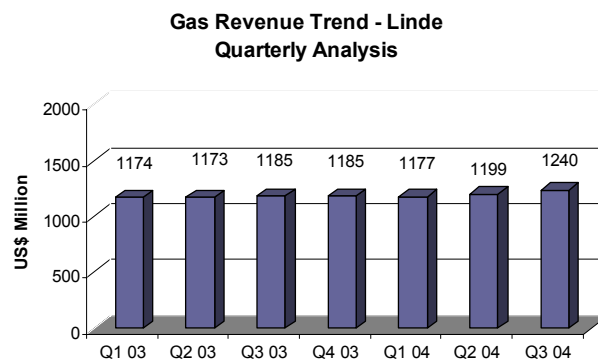
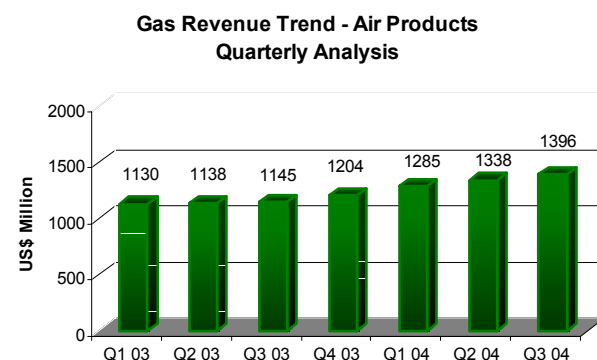
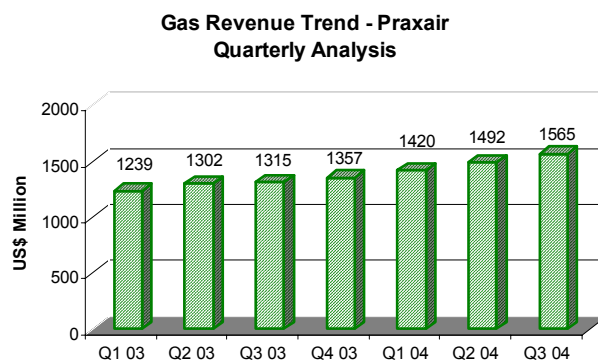
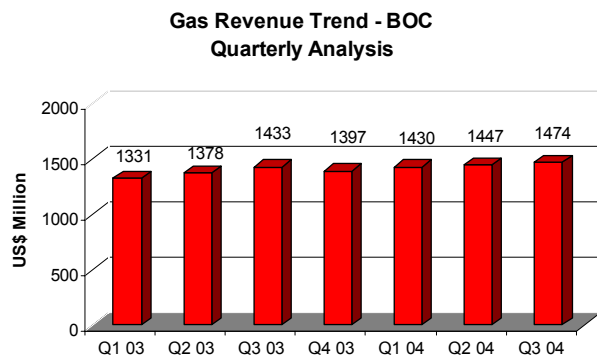
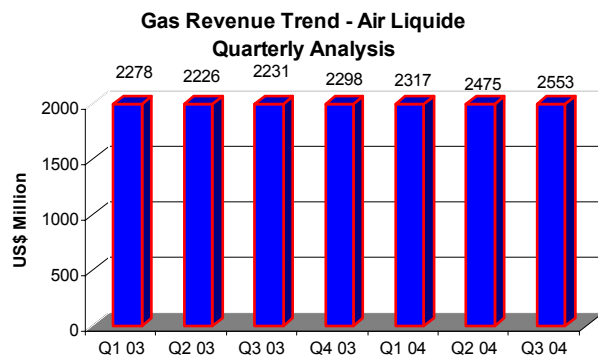
FIGURE 1.1.3



Currency translation continued to have an eroding impact on revenues, especially for Linde, BOC, Air Liquide and NSC. This amounted to some \$170m in Q3 over last year, representing a decline of 2%.

A positive contribution from a higher natural gas pass-through effect led to an increase of almost \$80m in Q3 over the same period last year.

FIGURE 1.1.4
MAJOR GAS COMPANY REVENUE PERFORMANCE – AT A GLANCE

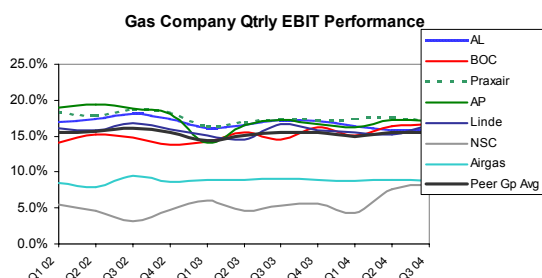


1.1.2 Profitability (Earnings Before Interest and Tax)

The gas EBIT for the industry significantly improved year on year increasing by 13.1% (in constant \$) and up 4.9% sequentially. The pick up in gas volumes, increased operating rates and continued cost reductions have all contributed to this strong rise in EBIT.

However, EBIT growth was just ahead of revenues and so there was a marginal improvement in the weighted average EBIT margin of 10 basis points to reach 15.6% of total gas revenues for the pool of 7 gas companies.

FIGURE 1.1.5



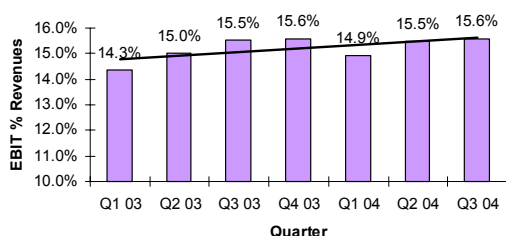
Main reasons:

There was a very good improvement in EBIT margin from BOC as their management continued to focus on profitability. The results were improved by the disposal of the under-performing packaged gas business in the US (albeit 2 months worth).

NSC was the other company that exhibited strong improvement in EBIT margins over last year (+2.9%). Again, the company is very much focused on improving the cost base and this will have added significance following the merger with Taiyo Toyo in October.

FIGURE 1.1.6

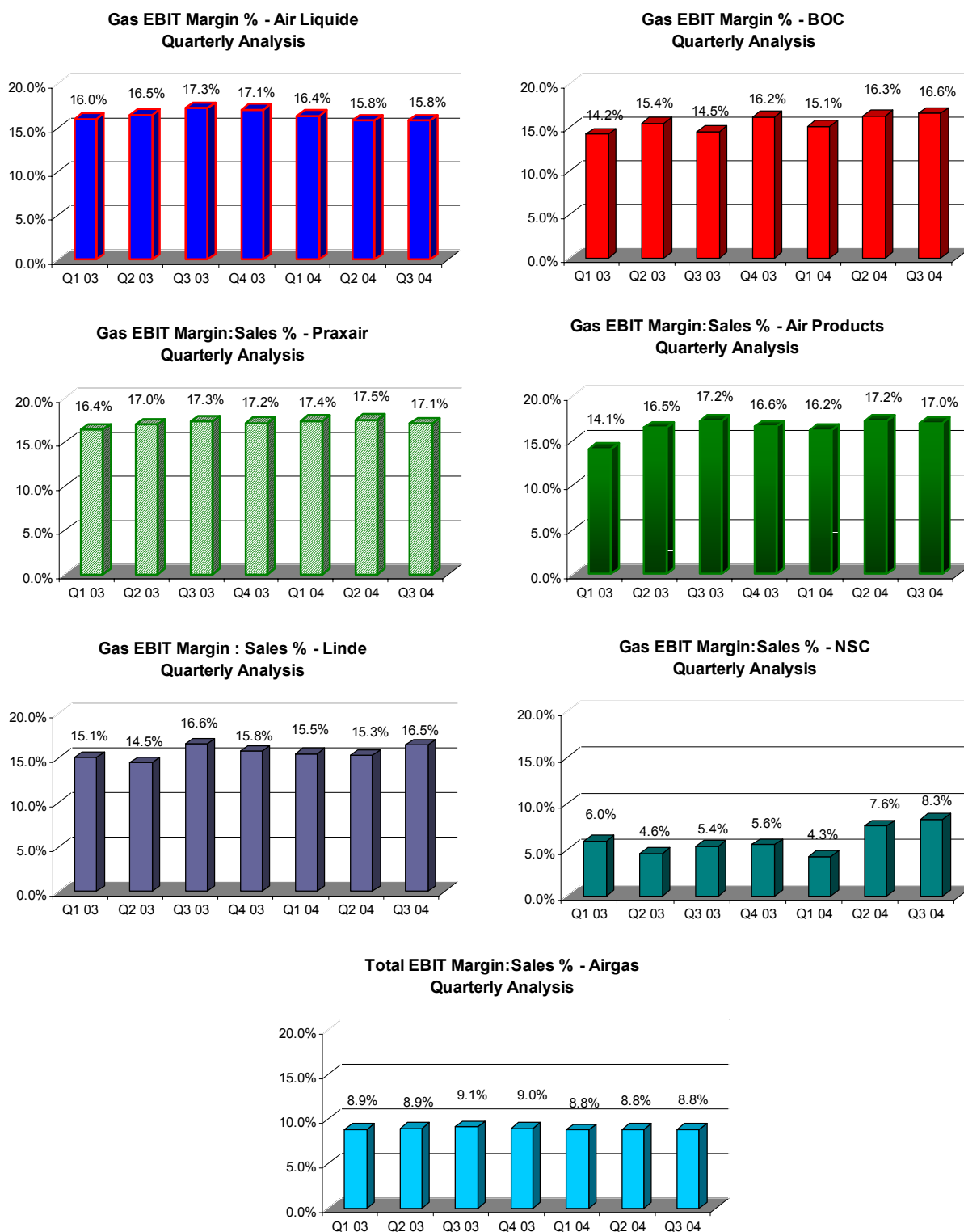
Average Quarterly EBIT %,



The EBIT margins for Air Liquide were effectively eroded by the integration of the acquired Messer business, which had inherent lower EBIT margins.

EBIT margins for both AP and Praxair were marginally down but EBIT growth was strong for both. This was boosted by the positive impact of the weakening US\$ against the Euro where both companies have very profitable businesses.

FIGURE 1.1.7
INDUSTRIAL GAS COMPANY PROFITABILITY AT A GLANCE



1.1.3 Return on Capital Employed (ROCE)

The positive trend in ROCE continued in Q3 04, the peer group weighted average ROCE reaching 13.3%¹, up 40 basis points, year on year, and 70 basis points on Q1 04.

The improvement is down to the significant rise in EBIT achieved by all the gas companies, combined with a slower rise in Capital Employed (+10%) for the pool of 7 gas companies.

FIGURE 1.1.8

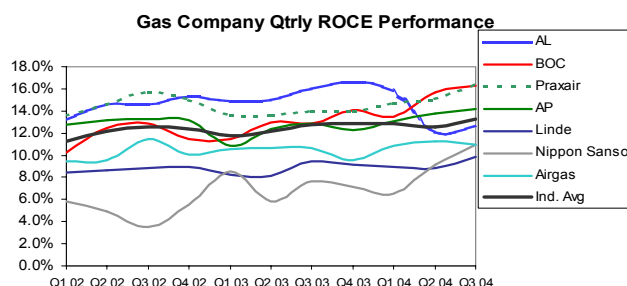
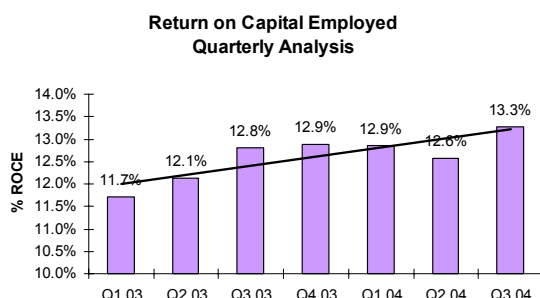


FIGURE 1.1.9



Main reasons:

EBIT has significantly grown, as explained in section 1.1.3.

Capital Employed was up by \$3 Bn in Q3 compared with the previous year, much of this relating to the acquisition of assets by Air Liquide from Messer.

The rise in Capital Employed was a significant factor in the decline in ROCE for Air Liquide in Q3.

BOC returned one of the best year-on-year improvement levels in ROCE, this being mainly down to continuing improvements in its on-site and bulk merchant gas business as well as a reduction in the CE through divestment of its packaged gas business.

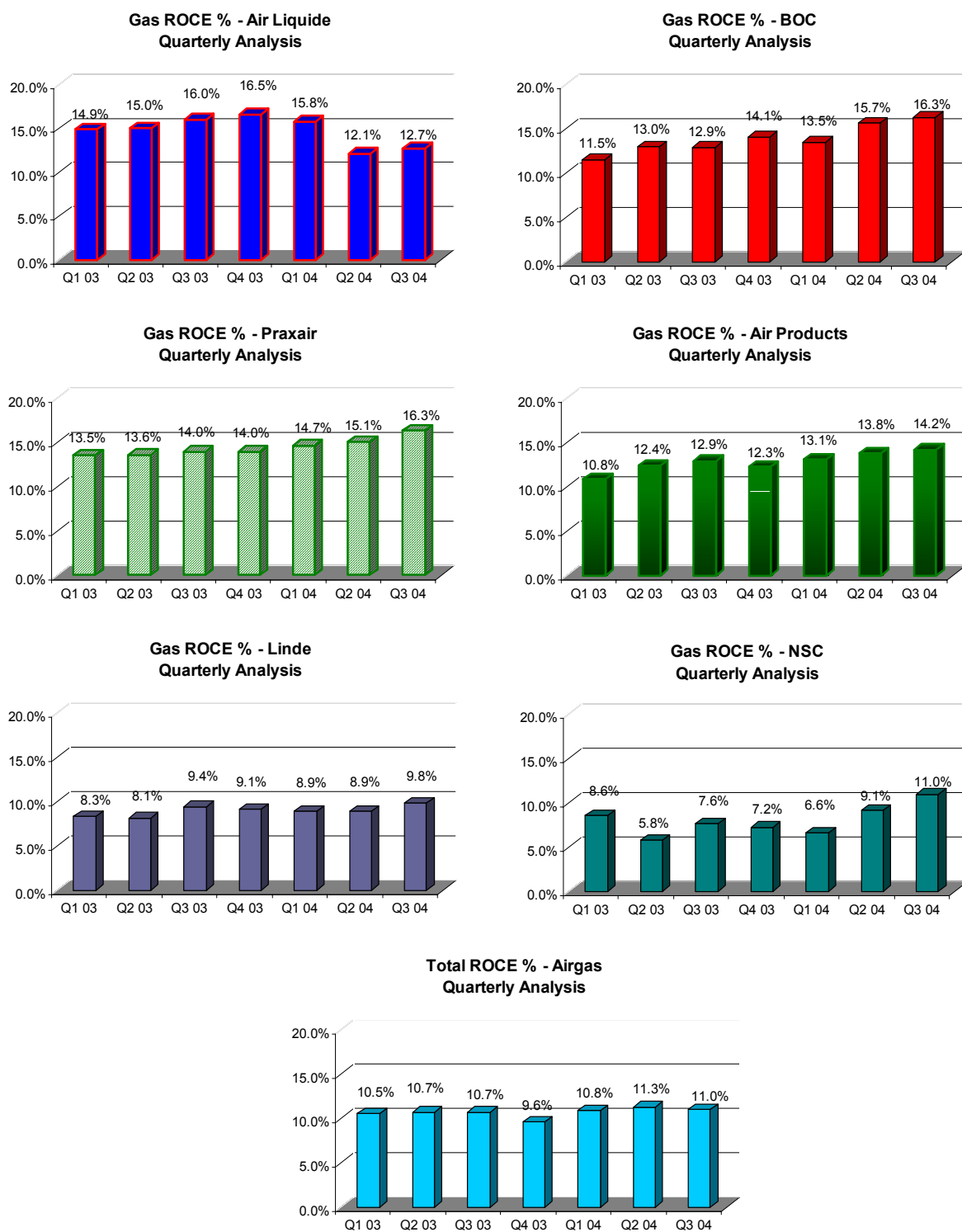
Provisional figures for NSC showed a strong improvement in ROCE for the company (+3.3%). This again reflects the management focus on improving the bottom line and asset utilisation.

CE for Air Products, Praxair and Airgas increased but improved EBIT led to a marginal increase in ROCE for the companies.

Linde continues to focus on efficiency through Six Sigma and this is starting to show positive results with an improvement in ROCE.

¹ Analysts should note that we have re-assessed Capital Employed data as better information comes available from gas companies

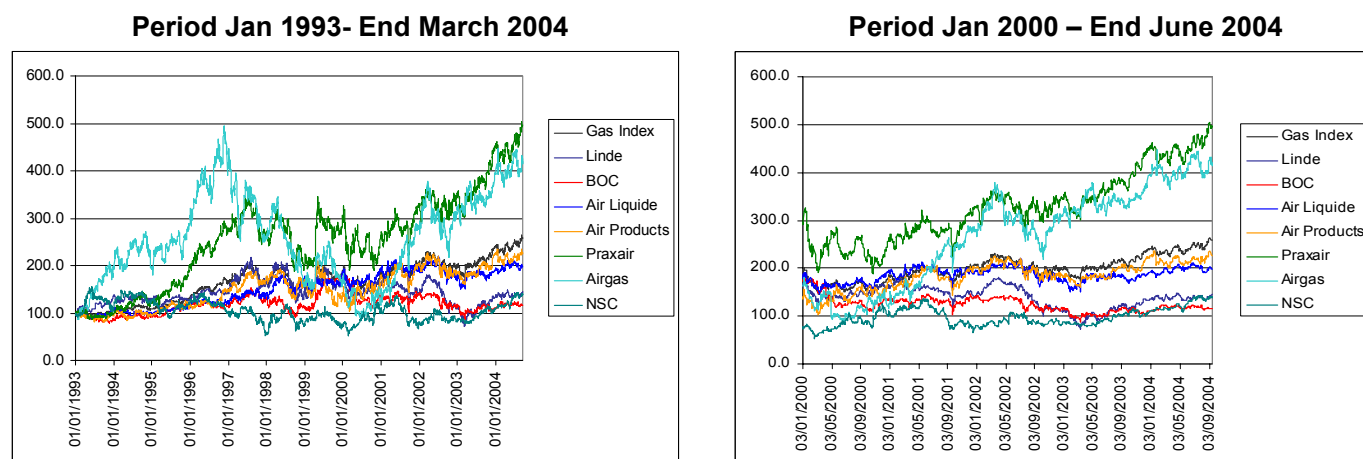
FIGURE 1.1.9
INDUSTRIAL GAS COMPANY ROCE AT A GLANCE



[1.2] STOCK PERFORMANCE

Figure 1.2.1 provides the latest stock market performance for the main gas companies for the period starting 1st Jan 1993 and a comparison from Jan 2000 through to Q3 04. Praxair and Airgas (recently included in the index analysis) remain the leading stock performers with Air Products and Air Liquide level pegging and BOC, Linde and NSC bringing up the rear. BOC's share price is still affected by the on-going welding litigation in the US. However, all stocks have performed better in 2004.

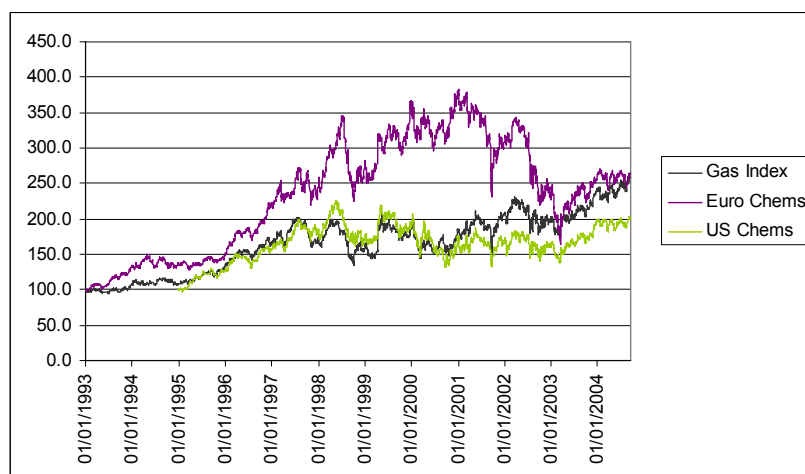
FIGURE 1.2.1
STOCK PERFORMANCE OF LISTED GAS COMPANIES



Source: Deutsche Bank/Spiritus

Figure 1.2.2 shows the gases weighted average index against the performance of the Euro Chemicals weighted average and the S&P Chemicals Index – showing that since early 2003, gases weighted index has performed in line with Euro Chems (European Chemical Stocks) and out performed US chemical stocks.

FIGURE 1.2.2



Source: Deutsche Bank/Spiritus

[1.3] MERGER & ACQUISITION ACTIVITY

The major activity in Q3 04 was the completion of sale of BOC's packaged gases business to Airgas. Smaller M&A deals also took place but the major announcement that has been made subsequent to the quarter end was that Praxair would acquire the required divested assets of Messer and Air Liquide in Germany.

We summarise the major events below (acquisitions, divestments, new projects or re-structuring) that took place in Q3 or were announced during the quarter, which have or will have an impact on the future financial performance of the major gas companies.

BOC

Divestments: BOC confirmed completion of the sale of its packaged gas business from 30 July 2004. This had sales of \$250m a year.

Major New Projects: Announced new N₂ generator (150 tpd) for a Chinese jv steel manufacturer TAGAL (Thyssen-Krupp Stahl AG, China's Angang New Steel Co) at Dalian.

BOC is to increase capacity for oxygen, nitrogen and argon to the Corus Strip Products UK plant in Port Talbot by 30%, which will involve a new plant of 1 300 tpd GOX capacity.

Announced a new 120 MMSCFD (134 000 Nm³/hr) H₂ unit to supply BP and Sunoco in Toledo, US for completion in 2006. This will result in total H₂ capacity operated by BOC in Toledo of 320 MMSCFD (357 500 Nm³/hr) by 2006, generating revenues of \$250m-280m a year.

Praxair

Acquisitions: Praxair announced in October that it had acquired the divested assets of Messer/Air Liquide (pipeline and merchant business) in Germany for \$600m.

Projects: Praxair will build a new large ASU (2 600 tpd GOX capacity) for CST – a Brazilian steel company.

Praxair signed a new 2 ASU contract with CNOOC/Shell jv in China for start-up in May 2005 (construction already started).

Projects Start-ups: Commissioned 2 new H₂ plants (total 200 MMSCFD) in the US (Texas City and Port Arthur) that will have estimated annual revenue streams of \$160-170m.

ASU start up at Caojing (merchant liquefier only) brought badly needed liquid air gases to the market in China. Meshan Steel on-site also start-up in the quarter.

Air Liquide

Divestments:

Air Liquide divested part of its CO₂ business in Germany to the Tyzcka Group as part of the divestment programme (\$12m sales). Announced in October that it had agreed terms with Praxair on sale of some of its assets in Germany.

Major New Projects:

Air Liquide (Australia) signed a 15-year contract with Comalco Aluminium Limited for the supply of O₂ and N₂ to its Gladstone refinery in Queensland. Air Liquide will install a new ASU of 70 tonnes per day capacity to meet Comalco's needs as well the local merchant market.

Air Liquide signed a new 15-year contract with AUO (AU Optronics Corp.), the world's third largest flat panel (TFT/LCD) producer. Air Liquide will supply more than 750 tpd of ultra pure N₂ (\$7m p.a. revenues) to AUO's new Fab 11 located in the fast developing new basin of Taichung (Taiwan)

Air Products

Acquisitions:

2 new "bolt-on" homecare businesses in the US (NY and PA States)

Major New Projects:

New 100 MMSCFD (115 000 Nm³/hr)² H₂ plant for Motiva/Marathon in Mississippi (annual revenue stream (\$80-85 m) to be operational end 2005

New 80 MMSCFD (90 000 Nm³/hr) H₂ plant for Suncor and Shell (Canada) (annual revenue contribution of \$65-70m) to be operational mid-2006.

Linde

Acquisitions:

Linde and ChevronTexaco announced the sale of Singapore Syngas Pte. Ltd. to Linde AG. Singapore Syngas operates a large HYCO as well as an ASU on Jurong Island (2003 sales of 64 million US \$).

Linde acquired Yara Industrial's 25 000 tons per year liquid CO₂ plant in Thailand and the associated merchant business. Sales were estimated at \$5m in 2003. This strengthens Linde's presence in Thailand.

Major New Projects:

Linde and ENAP Refinerías S.A signed a 15-year contract for the supply of H₂ to produce low sulphur diesel. The project also includes a hydrogen trailer filling station and a liquid CO₂ plant to supply the merchant market. The on-site project has a total investment of approximately US\$70 million. The plant has a capacity of 50 000 Nm³/hr of H₂ and 100 tonnes per day of liquid CO₂ and is scheduled to begin operation in mid-2006.

² Based on \$6 per mmBTU, \$55 per MW power and steam credits

Airgas

Acquisitions:

Airgas announced at the end of July that it had completed the acquisition of the US packaged gas business of the BOC Group for about \$175m cash, plus up to \$25m to be paid on or about November 15, 2005 (\$240m sales).

Airgas also announced in September that it had acquired the assets and operations of Welding Supply House, Inc., including a branch, warehouse and fill plant located in Lafayette, LA. The assets acquired generated nearly \$3 million in annual sales in 2003.

Nippon Sanso

Merger:

The Merger between Nippon Sanso and Taiyo Toyo was completed on 1 October 2004. The company has been renamed Taiyo Nippon Sanso.

1.3.1 MAJOR STRATEGY CHANGES

In the Q2 04 report we covered the main strategic events involving the sale of BOC's packaged gas business in the US and the merger of Nippon Sanso and Taiyo Toyo. In this report we have decided to comment on the events that have since been announced in October with the sale of some of the combined Messer and Air Liquide assets in Germany.

1.3.2 Praxair Acquires Some German Assets of Messer and Air Liquide.

In January Air Liquide announced that it had agreed terms with the Messer Group to acquire the US, UK and German assets of the company. However, under European Union anti-trust laws, Air Liquide agreed to divest some of the combined operations in Germany.

Why was this?:

Air Liquide had a 17% market share of the gases business in Germany and Messer had 29% giving a combined 46% market share, 6% above the EU "threshold". However, there were other issues in that by acquiring the pipeline business in Germany, Air Liquide would have dominated the on-sites business through its pipeline networks in 4 countries in North West Europe, which other gas companies objected to.

The EU Commission requested that some of the newly acquired pipeline business, together with some other on-site assets and some merchant business, be divested in order for the total acquisition to proceed.

The result:

The joint announcement made by Praxair and Air Liquide stated that business assets worth \$600m would be sold to Praxair having a total 2003 sales level of \$217m (€190m). This was equivalent to 2.8 x revenues.

Praxair would acquire the complete Saarland pipeline and the lower half of the Ruhr-Rhine pipeline network. There were some other assets involved, which included the merchant business and cylinder filling locations as well as some other on-sites facilities. The map of the activity is shown in Figure 1.4.1.

Spiritus Comment:

The anti-trust requirements have led to Air Liquide having to divest some prime on-site business in Germany. While the sale showed a revenue multiple higher than that paid by Air Liquide (for the whole package), the EBITDA multiple would have been less.

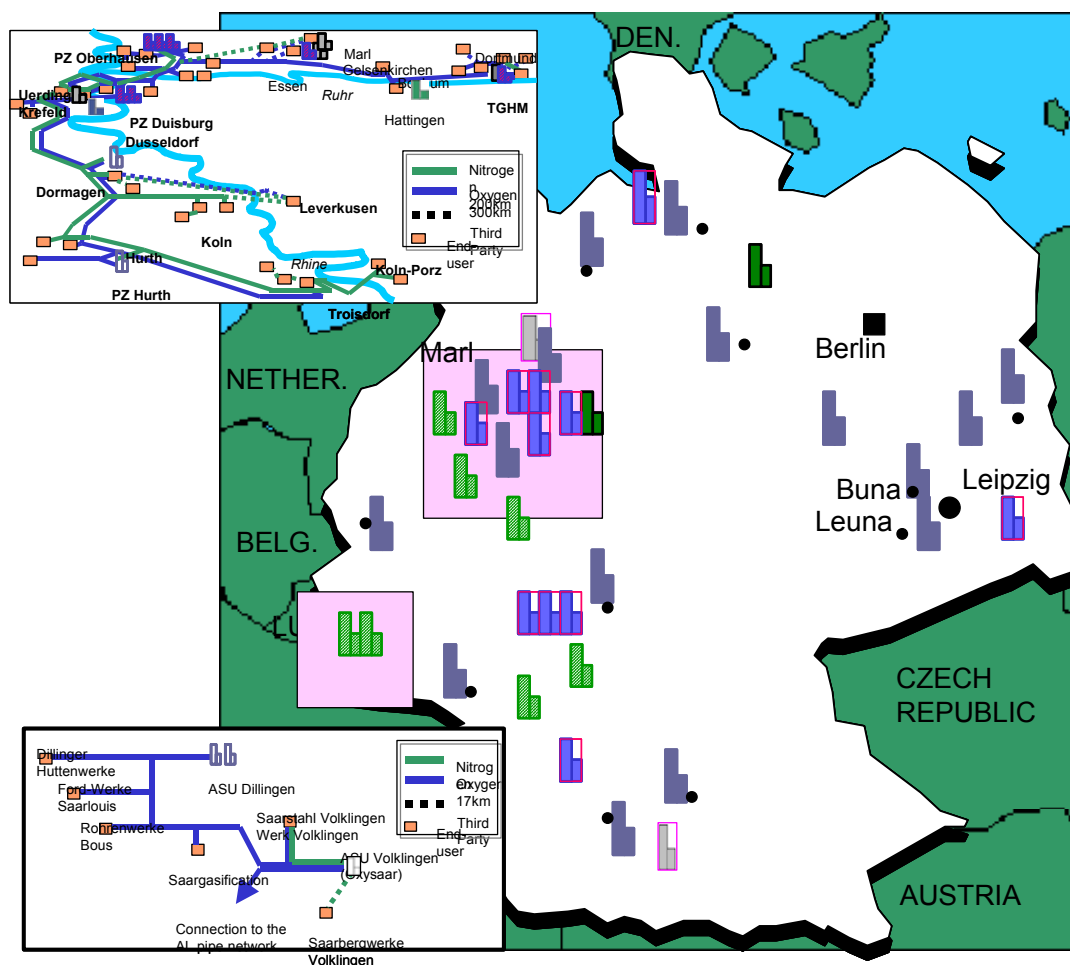
The divestment would have been a blow to Air Liquide from a cost synergy point of view as well although the company is confident that it will realise the synergies it announced. Short-term this will have a diluting impact on the key financial parameters (ROCE) for Air Liquide but analysts should note that Air Liquide has a long-term vision for this industry and is not the number one gas company from making short-term decisions.

**Spiritus Comment
(Continued)**

From a Praxair standpoint – this is a good acquisition. It provides the company with an important critical mass as it takes the company's market share from 2% to 11% (based on 2003 data) and provides good quality on-site business (good EBITDA levels) and a stronger position in the merchant market.

Both companies will also be in a position to back each other up to some extent on the pipeline business.

**FIGURE 1.4.1
ASU ASSETS IN GERMANY (Post Divestment)**



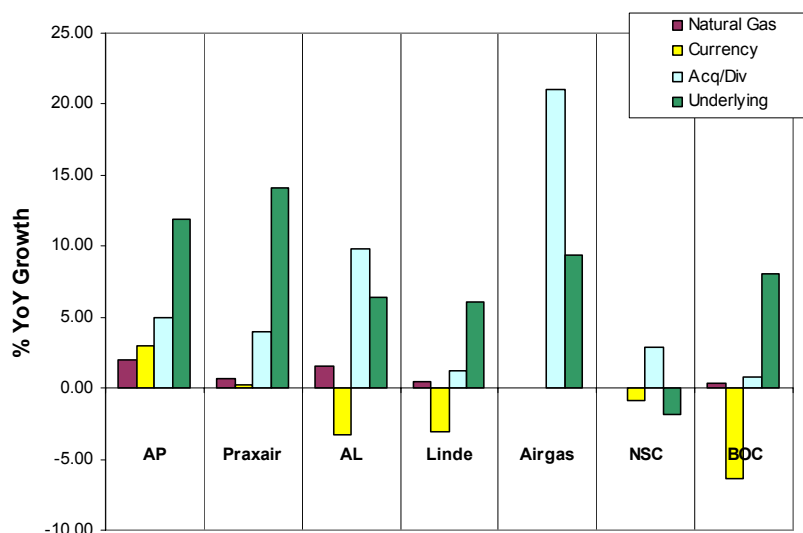
[1.4] PERFORMANCE INDICATORS

Below, we provide a summary of the drivers to the revenue growth of the pool of companies we analyse. We have also provided a summary of published or recorded data on volume and price movements by various gas companies.

1.4.1 Company Performance Drivers

We have analysed the gas revenue streams of the 7 gas companies and determined the drivers behind the performance of revenue growth for each company in Q3 04 when compared with Q3 of last year. These are summarised in Figure 1.5.1 and provided in more detail in each individual company profile in Section 2.

FIGURE 1.5.1
DRIVERS FOR REVENUE GROWTH (%), Q3 04/Q3 04



Source: Company Data/Spiritus Estimates

All companies showed a strong underlying growth – averaging out at 8.2% over the same period in 2003. The one exception appears to be Nippon Sanso. Leading the pack were Air Products, Praxair and Airgas but all companies showed solid year-on-year growth. Again the European gas companies experienced a negative impact of currency translation and reflected the weakening position of the US \$ against other major currencies.

Clearly the companies that have seen a significant contribution from acquisitions are Airgas, Air Products and Air Liquide. Some of this has been internal (within the pool of 7) but Air Liquide has gained mainly through acquiring Messer's assets (now classified as a Tier 2 gas company).

1.4.2 Volume Price Performance Indicators

a) North America

Table 1.4.3 provides both volume and price trends for the North American market, supplied by the main gas companies active in the market. There is strong evidence that bulk liquid volumes grew strongly in Q3 across all major products. Prices were varied but mainly flat for LOX and LIN.

TABLE 1.4.3
MERCHANT GAS INDICATORS – NORTH AMERICA

	LOX/LIN		LAR		CO ₂	
	Volume	Price (excl. Surcharge)	Volume	Price (excl. Surcharge)	Volume	Price (excl. Surcharge)
BOC	+3%	+1.3%	+7%	+0.4%	+2%	+2.7%
AP	+2%	-1%	+ve	-	N/a	N/a
Praxair	+12%	Flat	+12%	+ve	+12%	
Air Liquide	+20-30%		+15%			

b) Europe

There is less information expressed by the gas companies but we have captured what is available in Table 1.4.4. Most of the companies were expressing stronger volume growth across the products range, even in the summer vacation season.

TABLE 1.4.4
MERCHANT GAS INDICATORS – EUROPE

	LOX/LIN		LAR		CO ₂	
	Volume	Price	Volume	Price	Volume	Price
BOC	+ve					
AP	-1%	Unchanged	-	-	-	-
Praxair	+ve	+ve	+ve	-	-	-
AL	+ve		+ve		+ve	

c) Asia

Table 1.4.5 provides a summary of reported information from the gas companies. Merchant volumes still remain strong, especially in China but also in Taiwan and South Korea. New capacity needs to be added as liquefiers are tight/sold out in some regions. Gas companies reporting selling out in 2.5 - 3 years from start-up!

TABLE 1.4.5
MERCHANT GAS INDICATORS – ASIA

	LOX/LIN		LAR		CO ₂	
	Volume	Price	Volume	Price	Volume	Price
AP	+16%	-	-	-	-	-
Praxair						-
AL	+ve		+ve		+ve	

[2.0] QUARTERLY FINANCIAL ANALYSIS

[2.1] INTRODUCTION

Spiritus has analysed the quarterly financial reports published by the industrial gas companies. This report analyses the calendar 3rd Quarter (2004) reported by each company (in the case of Air Products, BOC this is in fact 4th Quarter results and for Nippon Sanso and Airgas this represents their 2nd Quarter results for FY 2005).

We analyse the quarterly reported figures and adjust the results to get each company on a level comparison. We only analyse the gas data although we make judgements and use a consistent allocation when analysing ROCE if only corporate capital employed data is provided.

2.1.1 Definitions

For the benefit of all subscribers, our definitions used in our analysis are as follows and may differ from those of each gas company:

Revenues: Total gas revenues of the gas companies on a consolidated basis and excluding revenues from affiliates (in the case of Airgas we use total corporate revenues).

Operating Margin/Earnings Before Interest and Tax (EBIT): Operating income excluding extraordinary items, including the proportion of affiliate income and any minority interests. The aim of Spiritus is to identify the true returns gas companies are making before they apply various adjustments or special charges. "EBIT" is absolute value; "EBIT margin" is EBIT as percent of sales revenues.

Return on Capital Employed (ROCE): EBIT over Capital Employed which is defined as Working Capital + Total Assets after depreciation. This can also be equated to shareholder equity plus long-term liabilities.

Capital Expenditure (Capex): Capital expenditure by gas companies on assets, equipment etc, but not acquisitions or divestments.

Exchange Rates: Data is presented in US\$ and local reported currencies. For the Executive Summary we use the constant exchange rate between the US\$ and £, €, and ¥ where trend information is analysed.

Exchange Rates used in Q3 04 were:

Currency	Avg Q3 04 Rate	Avg Q3 03 Rate	Difference %
\$.£	1.819	1.61	-11.5
\$.€	0.818	0.888	-7.9
\$.¥	109.9	117.3	-6.3

APPENDIX

The Spiritus Group

Spiritus is a management and business consulting company specialising in the industrial gas industry. We provide knowledge about the industrial gas industry to businesses or organisations in order to assist them in enhancing their decision making processes on issues related to industrial gases, equipment and services.

Spiritus gives independent advice based on in-depth knowledge and experience of the industrial gas industry. Spiritus also maintains a unique knowledge base of current and historical industrial gas data. Spiritus consultants have all spent most of their career in the business and have outstanding analytical skills that enable them to develop innovative solutions for clients.

The Group provides a wide range of services to its clients in planning and implementing business solutions. These include:

- Market research
- Techno-economic analysis
- Business development
- Strategy planning
- Technical audits
- M&A activity

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