Energy & Petrochemicals

Leadership through World Class
Demand/Supply Chain Management

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Theme:
Energy & Petrochemicals: a Global Perspective

Moderator
Michael Buerk, BBC, London

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CEO & Chairman of the Managing Board, Sabic Europe, Sittard,
EPCA President

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Managing Director, Clarkson Research Services, London, United Kingdom

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Author & New York Times Op-Ed Columnist, New York, USA

Panel discussion

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INTRODUCTION

EPCA 2006 - Two key themes :

- Energy & Petrochemicals
- Leadership through world class demand/supply chain management

Welcoming delegates at the opening of business sessions, EPCA President Boy Litjens said: “This year’s meeting is special for two reasons: first of all, it’s our fortieth anniversary and it’s also the first joint meeting of the general business and supply chain.” With over 2000 delegates, he noted that attendance was “an all time record”!

EPCA may be 40 years old, but it is determined to remain young in outlook, said Litjens, who is also Chief Operating Officer of Sabic Europe. This intent is being implemented with the creation of “a young think tank, which generates new ideas and approaches” and is enabling EPCA – which is much more than just a meeting - to generate reports and develop best practices.

“The main reason for holding a joint meeting,” he explained, “is that logistics and supply chain management are becoming an increasingly integral part of the petrochemical business and we also think it is important that service providers and chemical business people can meet and discuss common topics.”

Wishing all delegates a “successful and inspiring meeting,” the EPCA President also thanked the sponsors of this year’s meeting: BASF, ICIS, Port of Rotterdam and SABIC.

Michael Buerk of the BBC, said: “It’s a great privilege for me to moderate the EPCA business sessions.” He described petrochemicals as “a business that touches so much of our lives yet is so little understood by its ultimate customers. An industry that worries so much, about getting the cycle wrong, about productivity, about supply chain inefficiencies, about the huge gap between performance, so often first class, and public reputation, sometimes third class.”

Europe’s petrochemical industry “might worry about being caught between emerging petrochemical industries, where feedstock is cheap, and emerging economies like China, which are developing so fast they make Europe look stagnant, old, yesterday,” he said. But Buerk reminded everyone: “We invented this industry. We are still the biggest producers, the biggest market, and often still the brightest and the best.”
THE IMPACT OF ENERGY ON THE PETROCHEMICAL BUSINESS WORLDWIDE

Chemical sector can help solve conflict between energy, growth and environment, Dow Chairman tells EPCA

Industry’s capacity to innovate can help deliver greater, more equitable global prosperity along with environmental stewardship, says Dow Chemical’s Chairman and CEO Andrew N. Liveris.

“Energy is the indispensable element of modern civilization,” Liveris told his audience. “At a time when whole new regions of the world are taking advantage of unprecedented opportunities for economic growth with the promise of greater prosperity more equitably distributed than ever in human history to hundreds of millions of people across the globe, we need to remind ourselves that this prosperity depends on energy, most of it in the form of fossil fuels.”

By 2030, global energy use is likely to have grown by 50%-60%, and the proportion of fossil fuel is expected to be the same level as today - 80% - with the rest coming from nuclear, hydro-electric, wind, solar, geothermal and combustible renewables.

Rising fuel costs are a worry for industry, but the fact that they have been driven by economic growth in the emerging economies, means higher demand and more markets for chemical products, the Dow chairman said. However, he noted “a growing tension between rising living standards… and the daunting prospect of generating and using 60% more energy, mostly fossil fuels, including the much greater use of coal…the least clean-burning fuel.” Known reserves of fossil fuels are estimated to be 165 years for coal, 70 years for natural gas and 45 years for oil, he noted.

Increased fossil fuel use gives us reason to be even more concerned about the future health of the planet, particularly in the area of global warming, the keynote speaker continued. “Essentially, the question is, do we achieve greater and more equitable prosperity at the risk of the planet’s health - and our own – or do we deny economic prosperity to hundreds of millions of people in order to safeguard the environment?”

There is “zero chance of denying economic prosperity to the world”, Liveris continued. “But I think we have a fair chance of getting the best of both worlds: prosperity and environmental stewardship.”

The challenge ahead is to establish a global consensus on the use of energy, which requires energy efficiency, including energy saved by lowering use and wastage, and more efficient power generation and usage at home, at work and by industry.

It is also essential that all governments support energy conservation and efficiency through education and consumer motivation, by funding public and private sector R&D, implementing and enforcing standards of efficiency in all sectors, from residential, commercial and industrial to transport, and by
providing real incentives, including tax incentives.

Dow’s CEO also urged much greater emphasis on efficient deployment of energy resources, an area “sometimes overlooked by policy makers.” For example, in the US and Europe, there has been greater use of cleaner, greener natural gas, which is abundant and inexpensive. However, a preference for this fuel combined with static or declining supply, not enough competition and poorly-timed liberalization has caused a dramatic hike in prices, squeezing profits and threatening further de-industrialization.

Diversity and security of supply, particularly in the large mature economies, are key to meeting the overall energy challenge, Liveris said. The problem requires public and private sector to ask “whether we are the right fuel to the right use.” Should we, for example, be putting more emphasis on nuclear, biomass and solar energy?

Despite its flaws, Liveris described the Kyoto protocol as “a significant achievement in that it took on an immensely difficult task: bringing together the governments of the world to solve a long-term global problem. And probably its greatest single success is the development of market mechanisms to control carbon emissions, and here, once again, Europe has led the way.”

To make further progress, Liveris suggested all countries should participate to some degree, and each should set targets to produce more energy from carbon-free sources, putting people and technology to work to create opportunities in every country and every region.

Focusing on the chemical industry, Liveris said: “Given the likelihood that energy and feedstock costs will remain high by historical standards, there is every reason to believe that productive assets will continue to gravitate to regions that offer advantaged feedstock, namely the Middle East and parts of Asia. In the short term, some owners of oil and gas – whether private companies or state-owned enterprises – will forward-integrate using conventional technology,” he continued.

More partnerships will develop across emerged and emerging economies, too, Liveris said. “Dow is teaming up with partners who offer low-cost feedstock and local expertise, as we in turn offer technology, know-how and access to our global customer base. The combination brings together strengths that neither partner can offer alone, while reducing the risk and reducing the capital intensity for both.”

In the next 15–30 years, we are likely to see true breakthroughs such as the manufacture of olefins from methane, using coal and stranded natural gas, or the use of biomass as a feedstock, Liveris said. Meanwhile, bio-engineering will have a major role in altering plants to enhance performance of end-use plastic or chemical.

Some people still question both the need for chemicals and the chemicals industry, Liveris said: “The only rational answer is: ‘We cannot do without them.’ Our sector is a $2 trillion enterprise that supports virtually all others. Over 95% of the things that touch our lives every day… are made possible by the science of chemistry and the products that are derived from our industry.”

In the future, Liveris said: “Our science, our researchers, in our companies and in our universities, still have much to offer the world, although those educated in science are increasingly found in places like India and China and less in Europe and the United States. But wherever the expertise is found, the salient point for the petrochemical industry is this: ‘We can help.’”

“In fact I would say we can lead the way,” Liveris maintained. “We are about molecules. We can redesign them to create wonderful new materials and new technologies that can have a direct impact on energy efficiency such as lighter-weight cars or filters that make diesel fuel run cleaner or breakthrough manufacturing processes.”

No industry is more acutely aware of the need to reduce its dependency on oil and natural gas, the Dow executive continued. “We have already taken some important steps. From 1996 to 2005, for example, Dow cut consumption of energy per pound of product by more than 20%. It required an investment of $1 billion, but returned $4.4 billion to the bottom line. Over the next 10 years we are confident we can improve our energy efficiency by an additional 25%.”

With greater efficiency and a commitment to burning cleaner fuels, Dow has also pledged to reduce the intensity of its greenhouse gas emissions by 2.5% a year to 2015, he said.
“Because of our scale, that step alone will reduce the equivalent of CO2 emissions from 3 million cars or 6 million homes over this time period.”

But Liveris said Dow cannot be content with focusing only on its own energy and greenhouse gas footprint. “We must engage others sharing our technology and know-how with our customers and our partners wherever we do business.” He noted how two decades of Responsible Care has put chemicals “among the safest industries, safer for example than going shopping in a retail store.”

Now, he continued: “We at Dow are now expanding our commitment to the much broader realm of sustainability, including not only the energy issue, but other challenges: to sustainable water supplies, adequate food supplies, decent housing, and personal health and safety.

We will become fully engaged on these four challenges because we have the resources and technology to make a genuine difference and we believe that our entire industry has similar resources and similar responsibilities.”

To be successful and thriving, the chemical industry needs global economic growth, a healthy environment, a stable and secure political climate, and the trust of customers and its communities, Liveris concluded: “In other words, we must do our part to set the stage for a future that is just as full of promise and opportunity as our past has been. If we can apply the ingenuity of the most important element of the periodic table – the human element – we can solve the problems that confront us.”
THE IMPACT OF ENERGY ON GLOBAL SHIPPING

After super boom, energy shipping now at “another crossroads”, says head of Clarkson Research

Shipping will continue to play central role in energy industry globalization, but current uncertainty could pose major challenges, suggests Martin Stopford, Managing Director of Clarkson Research Services Ltd.

“Cheap, efficient sea transport fuels globalization,” Martin Stopford told EPCA. “Last year we moved 6.8 billion tons of cargo, about one ton of cargo per person per year. About half of this business is energy crude oil, oil products, coal, LNG, methanol and LPG.”

Shipping takes a lot of planning, he said. “Order a ship today, you’ll take delivery in 2010 and it will still be sailing in 2035.” The challenge for the energy shipping industry is to match capacity with demand and calculate how many ships will be needed. This is complicated because there are five different types of tanker ships for specific products and they are not interchangeable, he reminded the audience.

“Recently, shipping won the lottery,” he continued. “It’s had the best year since 1680! Back in the 1990s it cost around $11,200/day to charter energy ships. Today, it’s around $22,700/day, and has even risen as high as $60,000/day.” Shipping’s current “super boom” has been driven by the growth in world GDP and energy demand, Stopford noted. With today’s GDP growth of 5% a year, the highest since 1973, shipping’s order book has doubled, and so have new building prices. But he warned: “Over the last 40 years, we’ve had about 6 big [cyclical] dips and I’m sure we’re going to get another one.”

Stopford gave a rapid sketch of shipping history, which is interlaced with energy developments: “Every 20, 30 or 40 years, the industry goes through a big change and it’s up to us to deal with it.”

During the Coal dominated 19th Century energy shipping and by 1887 almost 50 million tons were carried a year. Coal powered ships cut journey times from six weeks to six days. By 1859, oil had emerged, and in 1861 the first cargo of oil was moved by sea. To the great amusement, Stopford related how the first tanker ship, Good Luck, “ran aground!”

By the 1930s, there was a lot of cheap oil, but it was a long way from consuming markets, said Stopford. However, three significant developments drove energy shipping forward: cars, air transport and power generation. “Oil trade really took off in the 1950s, with prices around $1/barrel, and increased tenfold. By the late 1970s around 1.7 billion tons was being shipped each year,” he continued.

During this period, oil transport became a core business for the oil majors, who owned or time chartered 90% of the fleet. By the mid 1970s 450,000 ton ships were the norm. But between 1974 and 1989, the super tanker business ran aground on a super recession.

This happened for two reasons, Stopford explained: oil majors squeezed shipping contracts so hard that shippers began investing in new ships causing an “investment bubble.” But this coincided with an oil shock,
and by 1986, 50% of transport shipping capacity was surplus.

For over 10 years, shipping “made nothing.” The oil majors dropped out, oil traders took over and there was a rise in flags of convenience. Energy shipping got a bad reputation due to big oil spills and environmental disasters, Stopford recalled.

Then, between 1997 and 2007, everything changed and “we have seen the gradual rise of the super boom for shipping, with second hand prices doubling and costs even hitting $90,000-100,000/day. The industry’s assets have seen their value doubled,” Stopford noted.

Now, after 25 years, the tanker market is tight, due in part to 1990s under-investment and scrapping of older vessels. During this time, shipping has been transformed through modernisation, wise investment, and a much tighter regulatory regime. Today, a third of the industry is publicly listed.

Stopford concluded that: “Shipping investors are now at another crossroads. We’ll need another billion tons of oil moved by sea by 2025.” About half will be needed by the developed economies, the rest by the emerging economies. This means we need 450 million tons extra deadweight of capacity, which will require $400 billion investment, and ship owners already have $150 billion worth of energy carriers on order.

The future depends on the key variables that will likely impact energy trade. Stopford asked: “Will there be a geopolitical nightmare? Will a high oil price regime trigger another oil shock? Will oil products peak out in 2010? Will environmental risks have an impact? How should industry respond?” Paraphrasing John F. Kennedy, he suggested: “I don’t think you should ask what we should do. I think you should ask what the market’s going to do to you.”
The Impact of Energy on Geo-Politicals and Geo-Economics

Forget the oil price surge: worry about the US economy, says a leading commentator

As GDP continues to grow despite a big jump in oil prices, Princeton economist and New York Times opinion writer Paul Krugman says a US housing slump might tip the global economy off a cliff.

This oil shock is different than others we have experienced since the 1970s, Professor Paul Krugman told the meeting. “The 1973 and 1979 crises were driven by oil supply shocks, war and the Iranian revolution. But the recessions they triggered were essentially imposed by central banks – such as the Federal Reserve and the Bundesbank – because they feared inflation.”

Today’s oil price surge has been primarily caused by a demand shock, driven by the emerging economies. In 2002, the OECD accounted for the bulk of oil demand, but today over 50% of the growth in demand is from non-OECD countries, notably China and India. This time, however, the global economy is in much better economic shape, which is why we have not seen an economic downturn, he continued.

There are structural reasons for this, Krugman explained. “For example, US oil consumption hasn’t grown in line with GDP. We’re a much less energy intensive economy. So while the price spike has been large as in the 70s, it’s much less important relative to the size of the economy.”

“Alan Greenspan [former US Federal Reserve chair] used to say GDP is ‘getting lighter.’ He meant we’re using less tons of stuff per dollar of GDP than we used to. This month, the US is ready to employ more people in health care than in manufacturing. You need petrochemicals for healthcare, but you don’t need as many barrels of oil per doctor as per steelworker.”

Inflation has also remained relatively low and stable, which is another reason the Princeton professor does not expect an “imposed” recession. “It doesn’t seem likely. The late 70s oil spike triggered double digit inflation and led to double digit interest rates. But there’s little sign of this happening again.”

Krugman then moved to discuss international credit flow and here the outlook assumed a gathering gloom. “Oil spikes cause consumers to spend less money on other products and the oil producers take a while to spend the extra money they are making. But the ability of the producers to recycle their money is important,” he added. “In the 1970s, we didn’t do that too well. Back then, oil surpluses got recycled to dodgy borrowers, particularly in Latin America, where the emerging markets were not ready to emerge. This time around, there’s a different kind of borrower.”

The key capital exporters are “those countries earning more than they spend and, one way or another, lending money out,” Krugman continued. “We focus a lot on Asian economies, particularly China,
and how big they are. But Saudi Arabia and Russia also have huge energy reserves that will generate surpluses. And where is all that money going? Well, to the US.”

Krugman pointed out that while Europe’s trade is roughly balanced, the US is running a huge deficit. “The US is borrowing money because the US seems a less dodgy borrower than others, such as some Latin American countries. But the question is: what is the US doing with this money? Is it a sustainable use of surpluses?”

He was not reassuring: “The US is spending it on a housing boom and a very large boom in consumer spending, which is very largely being paid for by borrowing against the appreciating value of houses. Two years ago, I would have said the story of the world economy was that the US had shifted to primarily making money by selling each other houses and paying for the houses with money they had borrowed from China. Now, you have to say the money is being borrowed from China and Saudi Arabia.”

“Does the housing boom make sense? Or is it a bubble?” he asked. Most people have assumed the US housing market would have to slow down, but would it be a hard or soft landing? “Well, Greenspan said it was froth in the market and anticipated a soft landing, but homebuilders’ confidence has plummeted and the housing market in US has been falling apart spectacularly in last few months. There has been a 25% decline in building starts and there’s more to come.”

Krugman now fears that the US may be moving into a recession: “The odds are 40%.” Moreover, the US, he said, has been an engine for the world economy, and if the US stopped borrowing, where will the money be recycled to now? He suggested we could be approaching a “Wiley Coyote moment,” where the cartoon character runs off the edge of a cliff, treads the air for a second or two while he realises there is no solid ground under foot, then drops like a stone. “A US recession is not just a US story,” he said.

Meanwhile, around the world there are other portents of instability. While there are no oil supply shocks on the immediate horizon, more and more oil is coming from autocratic, unstable and corrupt regimes. “These people are bad at running a broadly diversified economy,” Krugman noted.

Concluding, he returned to oil pricing, noting that levels have fallen back recently. Krugman asked: could it be that the failure of Israel’s aerial assault in Lebanon has lessened the likelihood of an attempt to force regime change in Iran, thus reducing the possibility of oil supply disruption? And what will the oil price do? Borrowing from JP Morgan, Krugman said: “It will fluctuate.”
ENERGY & PETROCHEMICALS: ASK THE PANEL!

After making their presentations on Day 1, speakers joined a panel offering further insights and observations. Dow’s Andrew Liveris suggested the industry might focus “on four Es and a D!” These, he explained, are Energy, Economy and the Environment, which are all interplaying themes, and the Efficiency and Diversity of supply. The Dow chairman also said his company expected to see “a tectonic shift in the structure and organisation of the chemical industry due to the advantaged position of the ‘owners’ of oil and gas assets.”

Paul Krugman had little comfort for anyone hoping he’d been too pessimistic on the outlook for US housing. “I can’t see a housing slump being reversed easily by cutting interest rates.” However, Andrew Liveris said he was amazed by the US capacity for consumption, noting that the boom industry was in storage, where people could store the purchases that wouldn’t fit in their homes.

Michael Buerk wondered if there was any future for European petrochemicals if the big companies were moving closer to oil and gas reserves and science education is now focused in Asia. The panel agreed that governments in Europe needed to get the message across to the public at large and young people specifically that science matters because it drives solutions to the problems we face. And while Europe and the US have long histories of scientific development and discovery, further denudation of this would drive the “tectonic shift” in the industry.
“Just about everything shifts in the world apart from petrochemical plants. And everything else in the world shifts, except petrochemical logistics,” said Dixon, as he tore into his subject. “My focus is on the outer edge of the radar screen. I’m looking for wild cards, which are low probability but potentially very high impact events that can come crashing into your petrochemical strategy, changing your entire world and in one moment destroying your margin.”

He suggested that in any business there are 300-400 such wild cards, each with less than 1 per cent risk of occurring this year: “But if you have 300-400, then - for example - a big shipping company is likely to be hit be one, two or three of them every year on average.”

Turning his spotlight onto European petrochemicals, Dixon launched a major assault on the status quo. He suggested a major crisis could overtake the European chemical industry, due to a combination of factors including high costs, a rapid eastward movement of manufacturing, a lack of consolidation in the industry and among its logistics service providers, and a lack of innovation in the supply chain. However, this could be overcome by a logistics revolution injecting new life into the industry, he said.

Currently, the European chemical industry’s internal logistics are “a nightmare,” said Dixon. The industry is spending €60 billion a year on internal transport, congestion is increasing, costs are too high and far too many tonnes of product are travelling far too many kilometres. “There is chaos in the road haulage sector,” he argued. “The largest haulier has just 2% of the market, and you have trucks driving hundreds of kilometres taking the same product in opposite directions, passing each other on the motorway, then returning empty.”

This amounts to a waste of energy, space and money, and is unlikely to endear the industry to a public increasingly focused on environmental issues such as CO2 generation and global warming, said Dixon. And he warned the industry that it would soon face competition from China, with a tonne of product shipped to Europe for the same cost as internal transport within Europe.

EU plastics distribution costs are €10/tonne higher than in the US, and there are too many finished plastics products being trucked over great distances, he added. Turning plastic pellets into bottles, then shipping those bottles, which are full of nothing but air, hundreds of kilometres is crazy, Dixon said. More hubs and spokes, better logistics integration and far more use of product exchange – which could save the industry...
$35 million a year - are the solution.

Major changes are also required in the relationships between chemical producers and between those companies and their logistics service providers, Dixon argued. Fewer players on both sides would simplify the industry's structure, offer economies of scale and make longer-term contracts and planning much easier, Dixon suggested. However, he also recognised that European government needed to play an enabling role in terms of transport infrastructure development and in terms of logistics regulation. Less competition could make logistics easier, cheaper and more efficient in both business and environmental terms, he said.

For other potential improvements in logistics, Dixon said the chemical sector should look at retailing, which gets product to the customer fast and efficiently. He noted that radio frequency identification devices (RFID) have helped Wal-Mart improve warehousing efficiency by 40% and cut thefts in transport by 70%. Gillette has ordered 500 million RFID tags, while Wal-Mart will need 10 billion!

Dixon also said more use should be made of rail and shipping. “I’m amazed by the incredible efficiency of water transport. It costs you more to move a container 120 kilometres by road in Europe than it costs to ship a container from London to China.” And when, he wondered, would we “see the equivalent of the bulk holiday operators and consolidators in the shipping business in the same way that you see in the travel industry?”

In conclusion, Dixon made a plea for a bigger, better profile for logistics. It is, he said, essential if the industry is to attract the right talent into the function. “It’s not products that make the difference in an industry, it’s the people.” He also urged the sector to find a way to enable people to bring as much passion into their working lives as they put into their private lives, often doing work for free for a greater, collective good.
LEADERSHIP IN WORLD CLASS SUPPLY CHAIN MANAGEMENT: ASK THE PANEL!

Following Dr. Patrick Dixon’s highly entertaining and thought-provoking critique of petrochemical logistics, some senior executives from both producer companies and logistics service providers had an opportunity to respond and comment on issues facing the sector in Europe.

Smoothing some ruffled feathers, Shell’s head of procurement, Kees Linse, agreed that Europe may not be in “supply chain heaven” but said substantial consolidation and rationalisation has been achieved. He was also far more optimistic than Dixon about the future: chemical production will be competitive and remain a key economic force, particularly facilities in a favourable logistics position and proximity to refinery synergies, he argued.

BASF’s supply chain head, Ralf Sonnberger agreed there are issues needing attention, but like Linse he also made a good case for the logistics achievements of the European industry. Producers were increasingly focused on adding value and on upgrading logistics performance. “It won’t be the biggest companies that survive, but the most adaptable,” he suggested.

BASF itself has many examples of leading edge supply chain management, Sonnberger added, citing the foundation of Rail4Chem in 2001 and investment in a bimodal terminal, leaner product portfolios and an award-winning mobile silo concept for engineering plastics.

All the panellists concurred on the need for much greater transparency and co-operation between players involved in logistics. Vopak Chairman John Paul Broeders said long-term planning and co-operation and a better focus on total cost concepts of service could help cement strategic partnerships between producers and logistics suppliers, which is essential for sustainable competitiveness. He spoke for all his colleagues when noting the many political barriers to creating efficient logistics, including permits, regulation and infrastructure.

Captain Pasquale Formisano, Director of the MSC shipping group, urged greater trust and transparency between logistics buyers and suppliers. “We need to share the costs and the benefits. It is not helpful when all we hear is talk about squeezing suppliers. When I have buyers saying they want to see the shippers’ blood on the floor, is it surprising that our relationships are difficult?” He said most shipping contracts were for six months to a year maximum. This makes forecasting very difficult for shippers and closer relationships harder to build.

The panel agreed that some very successful examples of collaboration have been achieved and that EPCA, Cefic and the European Chemical Transport Association have an important role to play in fostering these win-win partnerships.