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EPCA President Boy Litjens, Chairman and CEO of SABIC Europe, welcomed attendees to the 42nd EPCA Annual Meeting in Monaco.

The Chemical Industry on the Horizon 2030 and Beyond

The topic of this year’s meeting – The Chemical Industry on the Horizon 2030 and Beyond - he stated, was a challenging one but one designed to put the current situation in the right context. It would address the challenges of global population growth, the role of oil in the Middle East and what this means for Europe, availability and composition of energy sources, climate, but also the importance of the chemical and plastics industry in the world.

“The petrochemical industry is currently facing a difficult time and a lot of challenges”, he said, referring to the oil price and its volatility; the biggest financial crisis for 60 years, with GDP growth slowing down; and, last but not least, geo-political instability in the world.

“We have got used in the last four years to strong growth, high operating rates and high returns in our business.” But fortunately the industry has learnt from the past. “It has not only invested in expansions but also in the improvement of the competitiveness of its assets,” with ‘scrap and build’, the improvement of its infrastructure and energy efficiency and also a lot of investment in climate protection. This has required, he said, the industry to take a long term view with short-term action.

He concluded by stressing that the chemical industry has to maintain the long-term view and said that he hoped the conference would provide such a perspective.

EPCA serves to initiate, facilitate and promote projects that are of interest to the total industry and its service providers.

EPCA President Boy Litjens, noted that this year there was an all-time record of 2300 delegates but said that more important than the numbers was the quality of the programme at the event, which EPCA strives to build on each year. EPCA, he explained, is more than just an Annual Meeting.
Cornélis stated that he was happy to share his views on challenges for 2030, and even happier not to be commenting on the outlook for 2009, “because that would have been sad,” he said, in a reference to the expected cyclical downturn next year and into 2010.

But what are these challenges? Cornélis set them out as follows: population growth, energy supply and demand, and global warming.

By 2030, he said, the world population will have grown from 6.5bn to exceed 8bn people, with growth coming from emerging countries, which will account for 85% of the world’s population.

World GDP should exceed $150 trillion, having grown at an average rate of 4%/year. But, thanks to energy efficiency improvements, energy demand will grow by only 1%/year and reach 324m barrels of oil equivalent per day (boepd), an increase of 85m boepd on 2005. Half of this increase will come from power generation; 20% from transport, 18% from residential and 9% from petrochemicals. And 70% of this incremental demand will come from developing countries, mainly China, India and the Middle East.

But, he stressed, oil resources are not exhausted, even though 1,000bn barrels of oil have already been produced, another 1,000bn barrels of oil is known, evaluated and producible, at less than $30/bbl. And there are probably between 1,000bn and 2,000bn additional barrels to be produced at higher costs, above $50/bbl, by increasing recovery factors from producing fields, by extracting the extra heavy oil from tar sands in the Athabasca basin in Canada and the Orinoco basin in Venezuela and by addressing new frontiers for the oil industry: the Arctic and the oil shales.

Looking at other sources of energy, Cornélis explained that the contribution of liquids produced from gas and coal will remain limited because of poor energy efficiency. Ethanol from Brazil will remain the largest source of biofuels.

Total gas resources are equivalent to oil and proven gas reserves are 5,500 trillion cubic feet TCF, or 55 years of current production, mainly located in Russia, in Qatar and in Iran. An additional 3500 TCF may be produced, coming from new discoveries, increases in the recovery factor, which is 60% of gas in place today, and unconventional resources like coal-bed methane, tight gas and gas shales.

The LNG chain is under intensive development and tens of billions of dollars are invested in new plants in Qatar, Australia and West Africa and in new terminals in the US, Europe and Asia. The liquefied natural gas business will triple before 2030 and its market share of the gas traded will jump to 17%.

However, he explained, coal is by far the largest available resource. It is also the fastest growing form of energy. Total reserves amount to 160 years of current production and additional resources may represent five times more. Reserves are located in the US, Russia, China and India, which are the largest consumers. Growth, mainly attributable to China, is constrained by the lack of infrastructure and will be handicapped by the CO₂ emissions deriving from its use.
Investment in nuclear capacity is picking up momentum because of its competitiveness and absence of emissions. In order to keep the present nuclear market share, the life of existing power plants needs to be extended to 50 years and 450,000MW of new capacity are to be built. This is a 20% increase compared to the capacity built between 1970 and 2000. Renewables, starting from a low base, should experience 15%/year growth in the coming decades. Biomass and hydroelectricity and to some extent wind energy will be limited by their environmental impact.

On the contrary, solar energy will continue to prosper, even if it is many times more expensive than nuclear power. Solar is particularly attractive because of the promises of technological evolutions.

But, by 2030, 76% of energy mix will still be derived from fossil fuels.

Cornéliis pointed to the study made by McKinsey and Vattenfall that evaluates the size and the cost of measures to reduce greenhouse gas emissions. At the low end of the curve are, for the most part, measures that improve energy efficiency. Higher up the curve are approaches for adopting more greenhouse-gas-efficient technologies (such as wind power and carbon capture and storage) in power generation and manufacturing industry and for shifting to cleaner industrial process.

The curve also represents ways to reduce emissions by protecting, planting, or replanting tropical forests and by switching to agricultural practices with greater greenhouse gas efficiency.

“The results are noteworthy, first because it seems technically possible to capture 26.7 gigatonne of abatement by addressing measures costing no more than €40/tonne. But they require an effective global system because possibilities are highly fragmented across sectors and regions and more than half of the potential abatements are located in developing economies.”

The study also shows that some of the most cost-effective solutions come from the chemical industry. “New insulating materials, innovative coolants and improved membranes for carbon capture and storage, could all have a huge impact on carbon emissions.”

Plastic, too, is a material for the future, stressed Cornéliis, “because it uses less to do more.” It is, for example, the best material for packaging, for weight reduction in modern cars and for building insulation. And finally, he added, it is the best material for piping. “The new polyethylenes are cheap, easy to install and have enormous resistance capabilities; they will help the world towards its Millennium Development Goal of halving the number of people without access to water supply and sanitation by 2015.”

But the industry has to overcome the poor image of plastics with the public. “Plastics are only 1% of total waste in Europe, but their image, far from being bad, is terrible. The image of plastics should be our biggest concern because we run the risk of destroying our product by negligence and bad communication.”

In some of the most developed countries 100% of plastic material is already recycled either mechanically or through energy recovery. “Why aren’t we advocating the same everywhere and rejecting landfills? Our goal for 2030 will be to lift

"The continued dominance of fossil fuels will contribute to the increase in greenhouse gas emissions, although it is worth remembering that emissions linked to fossil energy use represent only half of the total; the other half being attributable to agriculture and deforestation. Industry itself represents less than 10% of GHG emissions."
from 50% to 100% the amount of recycle in Europe, the US and Japan; two-thirds converted in energy, one-third converted to other uses. The Swiss, the Germans and the Scandinavians are already there."

Despite being an oil man who only entered the chemical sector nine years ago, Cornélis has acted as president of Cefic for the last two years. In its dealing with the European Commission, through the High Level Group on the Competitiveness of the Chemical Industry Cefic has, he explained, centred on three themes: the chemical industry as solution provider for a world confronted by climate change; the chemical industry's contribution to innovation and the Lisbon agenda, and the place of energy and infrastructure in the competitiveness of Europe’s chemical industry.

On its role as solutions provider, he noted: “Our industry, thanks to the qualities of its products is a contributor to the reduction of CO2 emissions. Our ecobalances over a complete cycle, cradle to grave, are positive and our industrial processes should not be unduly penalized. We are against CO2 taxation and against full auctioning because we will not be able to pass those additional costs to our customers.”

On innovation, he said: “The chemical industry is at the centre of all industries and as such, at the source of most innovations. The Lisbon agenda is our agenda and we can only applaud Europe promoting research and entrepreneurship… Don’t we need technological progress to guarantee food, water, energy and comfort of living for 9bn people in the world?”

And on competitiveness, he warned that: “The grand vision of Europe centred on high-tech firms, while the rest of the world produces commodities and base chemicals is nonsense. Chemicals is a highly integrated activity that will not perform in the downstream without the backing of its upstream.”

The Commission, he said, now recognises that reliable and affordable energy supply is a priority for the European industry. “The backbone of the petrochemical industry is energy and infrastructure. An extended ethylene and propylene pipeline network linking the nine major European hubs would provide the opportunity to run plants at higher operating rates, trigger growth in trade with eastern Europe, decongest our roads, reduce our costs, develop polymers activity, improve safety and enhance competitiveness of all actors. This network has to be favoured by the authorities; we need harmonised standards, public/private financing partnerships, and friendlier permitting procedures.”

Finally, Cornélis turned to his own company, Total which, in its character, has a strong will to continue to lead in terms of growth and technology. It would, he promised, grow its production, aiming at producing 3m boepd well before 2030.

“We have accordingly doubled our exploration effort to $2bn/year… and have doubled our development programme to $13bn/year, building on our technologies to work in ultra-deep waters, to extract heavy oil from the tar sands in Canada, to produce tight and sour gas in China, to face the complexity of a large-scale development in the Caspian Sea or under the Artic Sea in Russia.”

Total also, he said, researches other forms of energy, such as solar, biofuels and clean coal technologies.

But, he concluded: “We believe in the future of oil and in the future of petrochemicals. We have excellent synergies, good technologies, reliable partners and trustworthy customers. We expect to grow and prosper in this business, undeterred by the difficult market that may affect us in 2009 and 2010.”

"The chemical industry is at the centre of all industries and as such, at the source of most innovations."
Hammond presented seven key drivers for the future:

- **the world population explosion** – “this will reach 9-12bn people by the middle of the century, which will be a real problem.”
- **the climate crisis** – “not climate change, which implies winners and losers, but a crisis as most people will suffer.”
- **the energy crisis** – “now with us, and we need to be very inventive to find new resources.”
- **globalisation** – “although some people cheer and some protest, this can be a force for good if pursued ethically and sustainably.”
- **medicine**
- **accelerating technological development** – “now moving so quickly that the next eight years will see as much change as in the last 20. It is very difficult to know what technology will be used by 2030 – very clever computers are on their way.”
- **the bottom one billion poor people in the world** – “these are not taking part in, but we ignore them at our peril.”

Richter picked up on Hammond’s comments on globalisation, saying that today Asia and China are competing for wealth and value in the global economy, while the news from the developed world is quite gloomy given the economic disaster. And in the future the BRIC economies (Brazil, Russia, India and China), and even Mexico, South Africa and the Middle East, will dominate the world by 2030, “as they represent the new engines of globalisation with their lower costs and faster growth rates.”

Outsourcing and efficiency will also be big drivers, he noted, citing the trend to outsource business process operations to India. “In the EU we have too high costs, too long holidays and too short hours”, he said, “and the emerging countries are hungry for wealth.”

In terms of the impact on the chemical industry, which can’t outsource manufacturing as it needs an integrated production base, there will still be change, as the customer base will change and move to China and the other BRIC countries. “There are two scenarios for Europe – in one, the EU will fall; in the other, it will adapt and rise up,” he stated.

Faris then turned the discussion to the environment and particularly climate change, which he said will affect us all in many ways. “The effect will be overwhelmingly negative, even for Canada, which is not yet prepared, and also Pakistan, Latin America and...
In the EU we have too high costs, too long holidays and too short hours”, he said, “and the emerging countries are hungry for wealth.

Stephan Faris

India. It will make the world less predictable, in terms of diseases and natural disasters.” But why should the chemical industry worry? he asked. Because climate change will be disruptive and it needs to plan ahead and remain flexible.

Cornélis then remarked that this opened up key opportunities for Europe, which has three central strengths: proximity to energy resources, located in Russia, North Africa and the Middle East but which need infrastructure to exploit; a well educated population which can produce innovators; and the best infrastructure in the world, serving a region of high population density and small area – factors which can overcome the impediments of long holidays and short working hours.

“Cost reduction and energy will remain key priorities. And, we need to promote science and technology amongst the population, as there is too much risk aversion in the public,” he added.

Hammond commented that Europe today is a different continent to 10 years ago. The enlarged EU is the largest economy on the planet and he does not see a reversal of globalisation. Instead, he said, by 2030 “we will have a much more balanced global economy, with three main centres: North America, Europe and Asia.”

Richter agreed, arguing that the West would no longer lead the way with its Anglo-Saxon economic approach. “Other areas are developing their own approaches… and we have to accept that emerging markets have things to say.” He said he worried that a new type of protectionism was springing up in Europe, preventing Indian and Chinese companies pursuing M&A in the region. Also, he pointed out, the Doha Round of talks had failed, largely because EU agricultural product exports are so highly subsidised.

Europe, said Faris, is also better placed from a climate change perspective, in that it has the infrastructure and educated population to cope with the shocks it might bring, for example, tropical diseases. The BRIC economies will find it harder to cope with global warming challenges.

The discussion then turned to use of resources, notably fossil fuels and water, both seen as in tight supply in the future. Hammond, describing himself as a fan of the chemical industry, said it was foolish merely to burn fossils fuels for power and transport. “But it is a noble use for oil to turn it into polymers.”

We need, he said, to find new ways of generating electricity and running transport. But, he said, he is against the use of nuclear option, not on grounds of safety but because the true economic cost is elusive given the political aspects to waste storage costing. However, “I feel we will have to use nuclear to get to the [carbon emission] targets.”

Plastics have a great role to play fighting global warming. And, often, he noted, “the least glamorous applications give the greatest benefits. Insulation is a prime example – if applied aggressively, it would go further to reaching [climate] goals than a lot of the fancy stuff.”

Commenting on water resources, Richter described these as “a new great game in the making… China and India need more and more. It is the conflict of the future and I am very pessimistic on this and foresee wars.” Already the Chinese are making infrastructure
investments in Africa in return for access to energy and there is growing criticism of it meddling in the continent’s affairs.

Said Faris: “Water management is the real challenge of the future. It’s energy now – but water will take over. Biofuels are taking up a lot of water and here you can begin to get conflicts between water and energy.” Demand for clean, fresh water is doubling every 20 years, added Hammond. “The plastic pipe makers have big plans for water networks in Africa to transport water over long distances. Also, I foresee a time when water tankers will sail around the world, but also new technology for desalination using low energy techniques.”

Finally, the discussion moved on to the topical but vexing issue of carbon emissions and the competitiveness of Europe’s chemicals industry. Referring to the EU’s Emission Trading Scheme (ETS), Cornélis said he believed the use of emission allocations via an auctioning process was “pure taxation.” We are, he noted, “in competition with other producers in the world” and extra costs would have a big impact. Also, the industry argues the scheme will be less efficient, as plants will be closed and manufacture moved elsewhere. “We have been trying to prove to the European Commission that we are prone to global competition and to get a benchmarking system”, whereby the better performing plants would not be penalised in the ETS. But, it seems, with little success so far.

Hammond commented that he believes there is a problem behind the problem here, and that is lack of leadership on the issue of carbon emission from the US, the leader of capitalism. Today there is slightly more hope as both presidential candidates want a new Kyoto Protocol, but progress might go by the board given the credit crisis.

Responding to a question from the audience on the volatility of petrochemical pricing, Cornélis commented that it is up to the industry to absorb this volatility and work with customers who want a flat price. Monthly changes in price are not good for this. But the producer can hedge on the naphtha price to drive out volatility. He noted that he was surprised that there had been so much support for a monthly settlement. In his view the quarterly settlement is a good one and again, he was surprised to see it so heavily criticised.

Cornélis also responded to a question on the need for improved European pipeline investment. He said industry would like to see Europe’s nine major petrochemical hubs linked in this way, but that this needed the help of governments, as the payback period is very long. But the benefits, he explained, would go beyond companies alone and there is a case for private/public investment and partnerships to get things moving. Also, he added, there are permitting issues and public authorities need to be involved and to use their powers. “The subject cannot be dealt with solely by companies”, he explained.

Faris fielded the next question on how to encourage energy companies to take up technologies for carbon capture. Some form of carbon tax or cap is necessary to drive change, he answered, and he acknowledged that Europe has to show willingness to tackle emission reductions first, as it has been a major polluter in the past. This will be difficult for businesses in EU and the US.

China is now surpassing the US as the leading emitter, on an absolute if not per capita basis, and Cornélis added that it is clear to him that China will be the first adopter of carbon capture and storage (CCS) technology, as it builds a lot of coal-fired power plants to meet its booming energy requirements.

"Other areas are developing their own approaches... and we have to accept that emerging markets have things to say."

Frank-Juergen Richter
Jan Hammer stated that the chemical industry is clearly global and depends on ocean transportation, or shipping, which is a more commonly used term in this context, both of raw materials, intermediates and finished goods. He said the session would focus especially on chemical tankers, but also look at other forms of shipping.

The current growth projections for the petrochemical industry and for international trade in general, and the associated need for shipping, must be considered against the “growing and alarming concern about our extended use of energy, emissions of carbon dioxide, and other greenhouse gases, pollutions in general, and ultimately the effect of it all in terms of global warming and a rising climate crisis.”

Jan Arthur Hammer, President of Odfjell and EPCA Treasurer

Can we afford to continue running our business with the same type of vessels, that we operate today, and is our way of trading them or operating them sustainable in the long run.
Sustainability hinges on overcoming efficiency, environmental and economic challenges... structural changes have pushed rates and costs out of balance and adjustments are required to justify further investments.

Hans Feringa pointed out that bunker costs had soared recently to $600-700/tonne and were possibly going towards $1,000/tonne, compared with $100/tonne at the start of 2002.

With such high costs of fuel, now amounting to 40% of Stolt’s revenue, up from 10% just six years ago, might sails make a come back? he asked. These high costs are “not a temporary situation, but are structural and demand driven, and the costs will be passed on,” he warned.

Feringa set out three challenges of sustainability in chemicals shipping: efficiency issues, encompassing fuel efficiency, port efficiency and terminal efficiency; environmental issues and economic issues, given current tight credit and high costs. Safety has to play a crucial part, he added, and the ship/terminal interface also has an essential part to play. What can shipping companies do in this area, he asked.

But before answering the question he offered a definition of sustainability as “the capacity to maintain a certain process or state indefinitely”. Applied to the human community, he added, sustainability has been expressed “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”

Addressing the issue of fuel efficiency, Feringa noted that fuel consumption needs to come down and that there is a need for a dramatic step up in innovation in this area. A broad range of initiatives is underway, in terms of hull design, propulsion and power generation, all aimed at enhancing voyage efficiency.

For instance, modern coatings on propellers can save 1.0-1.5% of fuel. Much research is being carried out into better propulsion, including use of kites and Flettner rotors to take advantage of the wind. And in power generation, research is looking into dual fuel engines, fuel cells, solar cells and so-called cold ironing, to avoid the need of ships to run diesel engines while in port.

Some innovations will lead to near-term applications, but many are still longer-term, he said. Ships have 25-30 years of life and there are plenty of older ships still about with older technologies.

Other approaches to more efficient use of fuel include better ship performance management, weather routing – to take better advantage of currents and wind conditions - voyage and bunker planning, and hedging of bunker costs. Tight use of auto pilots can also play a part in fuel efficiency.

On the issue of port efficiency, Feringa noted that in shipping scale is an advantage, but that many ports were now simply not deep enough to take the larger ships. “Port depths commonly max out at 10-11m, which puts a limit on the use of the most efficient big ships, of 45,000 dwt. We need to get the world’s major ports to a uniform 12m depth by 2030 – not easy, but do-able.”

Another area where port efficiency could be improved is in the reduction of waiting times to dock for unloading. These, he said, have lengthened and have become unacceptably long. “Costs of $50,000/day can be incurred, and even a day’s wait is too long.” It does not make sense, he added,
steaming at a great rate towards the port and burning up fuel, only to have to wait outside for a slot to dock. Better scheduling could save fuel and waiting costs.

And on terminal efficiency, Feringa pointed out that there were still opportunities to reduce port congestion and speed up turnaround times. “Modern parcel tankers can handle 1,000 tonnes/hour with simultaneous loading [and unloading], but the average is still closer to 200 tonnes/hour. Cooperative approaches can solve this.”

Turning to the environmental challenge, Feringa highlighted a number of areas where there must be improvements from the shipping community. Emissions of sulphur and nitrogen oxides must be cut, and will be, he noted, as the number of sulphur emission control areas (SECAs) continues to grow. However, there is currently a shortage of suitable fuels and refining capacity for low-sulphur fuels must be expanded.

Ballast water controls are also required, to limit the spread of invasive animals, plants and microbes, and there is an urgent need for more tank cleaning and waste-water treatment facilities in ports and harbours. “We need less cleanings at sea and elimination of cleaning in coastal waters, but, more investment is needed.”

Feringa also remarked that carbon dioxide emissions from shipping are important and need to be addressed and cuts incentivised, probably through some form of carbon trading scheme.

Finally, he moved to the economic challenges to the shipping industry, which is, he believes, undergoing fundamental and structural changes. “New ships are being built to meet demand, but at a high cost, with the use of stainless steel making a big impact. Historically, rates are good, but costs have soared, especially for fuel, and freight rates must adjust to compensate”.

With the cost of newbuilds and the price of secondhand ships soaring to high levels, he sees freight rates rising, but costs going up even faster. In the past freight rates have increased over the long-term by an average of by 2%/year, but Feringa believes there will a step change upwards in this trend line unless innovation really kicks in. “It’s an industry-wide phenomenon and a cooperative approach is best.”

In summary, he concluded that “sustainability hinges on overcoming these efficiency, environmental and economic challenges… structural changes have pushed rates and costs out of balance and adjustments are required to justify further investments.” He also pointed out that shipping and shipbuilding are conservative industries and “major step up in innovation is required.”
Panel Discussion: How to Achieve Greener Shipping

Following Feringa’s key note presentation, moderator Nadine Dereza again introduced a panel discussion, asking “What the vision for chemical shipping looks like for 2030?”. Joining Feringa in the informative discussion were, again, futurologist Ray Hammond, Jan Kopernicki, Head of Shipping at Shell Trading and Shipping, Dr Joseph MacInnis, a Canadian Underwater Research Expert, and Ken Bloch Soerensen, President and CEO of United Arab Shipping.

Hammond took the lead in answering Dereza’s question, commenting that “shipping will look exactly the same in 2030, but behave very differently. Whereas globalisation is the life blood of the global economy, shipping is the heart and cardiovascular system – and we need it to be ultra-efficient.”

Shipping, he explained, will be more efficient, through the use of sails and focus on improved propulsion, but ships will also be much smarter. “Every part of the ship will be talking to global networks, reporting its location, performance, the weather… everything from moment to moment will be under smart control.”

Jan Kopernicki answered Dereza’s question by holding up a car magazine listing car models by their engine carbon dioxide emissions. “The shipping industry needs to align itself with what other industries have already done,” he advised. He said that in future ships would also be similarly rated and customers would be able to look at their emissions profile and choose which ones to use. He added that the IMO is already talking about a design index for ships, but an operational index is also required.

“The industry needs to ferret out innovation – it’s no good ships staying the same for 25 years – you can’t easily change the engine on a ship today, but in the longer term we will get to engines you can change, turbines you can lift in and out.”

Jan Kopernicki

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“All players in the region realise there will be a surge of exports, both of dry and liquid goods, but also because of a higher level of [downstream] manufacturing taking place.”

Dereza then pointed out that there will be significant shift in trade flows by 2030, and asked why should we pay attention to the Middle East. Responding, Ken Bloch Soerensen explained that the Middle East will play a major role in the future as there is a major shift in production to the region.

In this, he added, industry needs to get involved and work with governments. “The future is in our hands and we need to work in a cooperative mode.”

Dereza then pointed out that there will be significant shift in trade flows by 2030, and asked why should we pay attention to the Middle East. Responding, Ken Bloch Soerensen explained that the Middle East will play a major role in the future as there is a major shift in production to the region.

“All players in the region realise there will be a surge of exports, both of dry and liquid goods, but also because of a higher level of [downstream] manufacturing taking place.”

He also sees major challenges taking place. Port and terminal infrastructure will be pushed offshore or
placed further away from civic centres, with implications for the supply chain in future. “I see it happening already”. Bigger boxes, he explained, will be delivered to offshore port facilities, and smaller boxes will be distributed to the shore for onward delivery. “Trucks will not be allowed in cities– Switzerland is already moving in this direction by reducing the size of trucks… 2030 is not that far away – it is happening already.”

But, he added, there will be continued innovation. Some shipping lines are already carrying smart containers, giving information on their location, and this movement will continue, “driven by industry and regulators, who are putting a lot of effort into making sure we don’t have security issues.”

Also, on new shipbuilds, there will be progress as owners are seeking to install waste heat recycling systems, to ensure heat is re-used and emissions are reduced. With energy prices as high as they are, said Soerensen, “I’m not even sure if we can run such fuels on ancient ships in 2030… we need new energy types such as the military is looking at now, such as nuclear and solar energy. We certainly need to be at the forefront of these developments.”

MacInnis, who has long experience in exploring the deep sea, commented that two words attracted him from the conclusions of Feringa’s presentation: leadership and cooperation.

He went on to say “in future, the most important ship will be leadership”, but here he explained he was talking about a different type of leadership. He has, he said, “worked with astronauts who when working in life-threatening situations show a fierce innovation or fierce ingenuity, and a kind of savage lateral thinking to solve what seems to be insurmountable problems.”

On cooperation, he explained, for an astronaut or deep sea diver cooperation is not just another word. “They have a very competitive cooperation, giving rise to a series of shared solutions with mutual benefit, made by competition and in an atmosphere of random acts of humour and kindness.”

Turning to the wider issues around shipping and the environment, MacInnis said that the noted diver and environmentalist Jacques Cousteau had believed that the human family depends on the ocean for its very survival. It was, he said, the very life blood and life support system of the planet. So, today, advised MacInnis, don’t just think of the ships, think beyond of the ocean and how it could change dramatically through global warming.

“There will be big changes. The Greenland ice shelf is melting faster and if it accelerates we could see some substantial rises in the sea level by 2030. There will be real problems for ports and terminals and we will have to rethink the concept of ports as people retreat to higher ground.” Also, there will be more severe weather and unpredictable weather patterns in future.

The Artic, too, he suggested, is opening up now and by 2030, perhaps, there might be no more summer ice, which opens up all kinds of possibilities but also brings risks. So keep the ocean in mind as you think about shipping in future.

Soerensen then turned the discussion back to urgent problems with shipping and ports. From a tanker perspective, size is important, he noted, and the industry would move from 45,000 dwt to 60,000 dwt as the next size, to gain economies of scale. But many terminals are at the limit now and there will be problems as ships get bigger, even more so with container ships than chemical tankers.
The sheer volume of shipping is also an issue. “We used to get great services in Asia and great efficiencies throughout the Middle East, but the fact is that these ports are strangling themselves due to growth in business. In Europe there are also big challenges. There are developments like the London Gateway and Wilhelmshaven, but they are coming too late and the ports are full up even before they get started.”

So, as the ships get bigger, there needs to be more investment in terminals and not just that, but in facilities to get the goods off the terminals effectively. As offshore and inland terminals are developed, the connective routes need to be developed even further. In Europe, Soerensen said, nothing has been done to improve the rail network for many years, except some small developments. To improve the situation calls for cooperation between industry, governments and the regulatory authorities, as industry alone cannot afford to finance such investments.

Kopernicki agreed that governments need to play a coordinating role, especially on matters with a global extent, such as emissions. “They have the tricky job of coordinating economies and sectors that are running at different speeds. We see Europe, North America and Australasia wanting to move more quickly, but the BRIC economies moving at a different speed, and with very legitimate reasons for this. As they move up their development curves they are entirely free to do that.”

When you come to talk about emissions trading, he continued, which is the way forward to drive innovation on ships, you need a hermetic box which contains the two groups. He believes the IMO has a key coordinating role in developing a single model but one that will tolerate countries joining the scheme at different times – but being open about this will take global leadership.

Feringa stressed, however, that he would like improvements in shipping to be driven economically and not by regulation. He wants customers to demand higher standards and for good shipping companies to get the rewards for being a quality player with a differentiated offering in terms of improved shipping performance through investment. Regulation, he added, is often very difficult to do in an efficient way. For instance, “you don’t want to spend a lot of money to cut emissions in Europe by 5% by 2030 if the same amount will halve emissions somewhere else.”

Soerensen said he believed the shipping industry will be operating under a global emissions regulatory framework by 2030, as the IMO is doing a lot of things to push it forward. “If quality shipping becomes the standard operating procedure, owners will be forced to follow suit.”

There is, pointed out Kopernicki, a key opportunity around the Copenhagen summit to make progress. The shipping industry has tackled nitrogen and sulphur – “job done!” – and the question now is carbon. Copenhagen should set the long-term framework and a realistic target to get a wide range of countries on board. It is vital, though, to get an international agreement, even if accession is delayed for some countries.

Conversation then turned again to the melting of the Arctic ice and the potential for commercial shipping in the region. MacInnis pointed to the race to open up the oil and gas reserves in the Arctic and asked whether there were move afoot to open up shipping in the Arctic.

Soerensen stated that studies were certainly being made by industry players to use the Northwest passage, and Feringa added that the shorter route from Asia to Europe would save time and fuel. But, there was a concern over the risks involved and it was not certain the industry would want to send hazardous cargo tankers through such a difficult environment. There would also be a big difference between summer and winter, making scheduling – which is key to efficient operation - difficult.

But Kopernicki said that because of the oil and gas, there would inevitably be a lot of shipping activity due to exploration for these resources and ultimately production, which would lead to shipping infrastructure
developing and thus open up the zone for conventional maritime traffic.

On a negative note, Hammond was of the opinion that if the Arctic seas were open by 2030, it would be the result of a huge environmental problem, overshadowing any benefits. “There would be huge population movements in Europe and I can’t buy into this as a wonderful thing for shipping as there will be much more important things to worry about.” This, added Kopernicki, points up the importance of carbon talks now. “If we get to the stage we are talking about now, we have failed.”

Dereza brought the panel discussion to a close by asking each participant what they saw as bringing about key changes for 2030. Feringa said he believed customers need to be clear in what they demand of ship operators and that companies must work together across the shipping industry in the most efficient manner possible. MacInnis said their will be a great shift in the way the oceans are regarded – not as a frontier to be exploited but as something to be conserved. He encouraged shipping companies to play an active role in this respect.

Hammond said that multiple energy sources would play a key role in improving the efficiency of shipping. Sail, kites, solar, wind turbines, hull efficiencies would all play a part. He quoted Al Gore as once saying, “there is no magic bullet, but there is magic buckshot.” Kopernicki agreed, adding that electric power would also be a major factor, as long as it was sustainably produced. But there also needs to be much more development around marine engines, were the technology has lagged behind other transport sectors. Innovation and development is hindered, here, explained Soerensen, because of the very low numbers of engine manufacturers and lack of competition, especially at the larger end of the scale.

Feringa also highlighted the slow rate of innovation in the shipping industry that was something that had to be improved if the next generation of ships were to show any advancement. Partly this is down to thin margins at the ship builders, he explained, but also to lack of financial incentives in the past, such as the high fuel tax on cars that had driven energy efficiency in this sector.

Finally, the panel agreed that it was essential that the shipping industry trade bodies had to work together and provide a unite voice to governments and regulators, if they were to succeed in influencing regulation in the future. There are just too many representative bodies for them all to have their say individually, pointed out Kopernicki.

Jan Hammer ended the session with a short summary, highlighting the fact that the shipping industry cannot simply continue on the same path that it has been on for years and that the industry is due for changes. “We need to develop new types of ships and re-evaluate our way of operations and particularly the way ports and terminals are operated.”

“Innovation is necessary. But the key question is whether we can do this on our own or if new and much stricter rules and regulations may be required. Maybe the answer is that we need both and that the key to it all is more cooperation and a stronger and more visionary global leadership.”

Jan Arthur Hammer
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