

DNV Forum

no 02 2008

A portrait of Fotis Karamitsos, a middle-aged man with grey hair and a mustache, resting his chin on his hand. He is wearing a dark suit jacket over a blue and white striped shirt. The background is a blue flag with yellow stars, resembling the European Union flag.

Fotis Karamitsos
Director in the
European Commission:

Shaping European Shipping

Also inside:

- > Pioneering cruise ship design at RCCL
- > Dealing with climate change
- > Gazprom increases its environmental focus

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A dedicated focus on climate change

This spring, the Kyoto Protocol's Clean Development Mechanism (CDM) registered its 1,000th project, an energy efficiency project in India. The project was validated by DNV, just like 50% of the other registered CDM projects so far.

The Indian project is expected to reduce CO₂ emissions by more than 34,000 tonnes annually. The flexible mechanisms introduced by the Kyoto Protocol, in particular the CDM and Joint Implementation (JI), are powerful tools for achieving global emission reductions. These mechanisms have succeeded in enticing the business community to invest in greenhouse gas mitigating projects in the developing countries as well as in Eastern Europe and Russia. DNV has supported these mechanisms since their introduction, and has contributed to them delivering real, measurable and additional emission reductions in a cost-efficient and reliable manner.

DNV was in 2004 one of the first companies to be accredited by the United Nations Framework Convention on Climate Change (UNFCCC) CDM Executive Board to validate emission reductions from projects in the developing world. This accreditation consolidated DNV's strong position at that time in the international climate change arena.

CDM projects have so far generated more than 135 million certified emission reductions (tonne CO₂ equivalents). The mechanism is currently anticipated to generate more than 2.7 billion certified emission reductions in the Kyoto Protocol's first commitment period, 2008-2012.

Close to 50% of the registered CDM projects have so far been validated by DNV. Our involvement with climate change projects is increasing from month to month. Today, we have more than 200 trained climate change auditors worldwide, providing technical expertise and a local presence.

Our current strong position in the field of CDM and JI validation and verification gives us a fantastic starting point for future growth. Now, it's time to take our involvement one step further. To demonstrate an even stronger commitment to the role we wish to play in the climate change arena, I have established a separate organisational climate change unit reporting directly to me. I want to give this service area the best opportunity to focus, grow and be innovative so that it can make a strong global impact in this rapidly expanding area.

Another aspect is that after 1,000 projects, useful experience of the market mechanisms established under the Kyoto Protocol has been gained. Taking into account that they were established more than ten years ago, it should come as no surprise that improvement areas are now beginning to show.

Our experience has given us valuable insight. We have been able to objectively observe what works and what does not work. We intend to use our experience to contribute to the development of the mechanisms, including beyond 2012 when the first Kyoto period runs out. It is vital that the mechanisms deliver the emission reductions that are necessary to combat climate change, while having the environmental and social integrity that is needed to gain acceptance by all stakeholders.



Henrik O. Madsen

HENRIK O. MADSEN
President and Chief Executive Officer

Strong performance for DNV in 2007

2007 was a remarkable year for DNV. Contracts for 720 new vessels to DNV class – equal to 29 million gross tonnes – were signed.

Never before has DNV signed so many contracts for newbuildings. The total ships in operation fleet at the beginning of 2007 was 113 million gross tonnes (GT); by the end of the year the fleet was 121 million GT and the total order book contains 58 million GT.

2007 will be remembered as the bulkier year. Every third ship (in number) and almost every second gross tonne signed to DNV class during 2007 was a bulk carrier. Next on the list were offshore supply vessels and oil tankers. In 2008, DNV will pay special attention to the container ship segment, where DNV has its lowest market share compared to its competitors.



"I am impressed by what has been achieved and by the outlook for the years to come," said Tor E. Svensen, COO of DNV Maritime.



DNV issues ISO 9001 certificate to ENAV

DNV has certified Italy's National Entity For Flight Assistance ENAV according to ISO 9001 in compliance with the timing requirements of the Single European Sky Legislation.

The work was concentrated on planning, management and navigation service supply systems (air traffic control activities) and the associated support services, in addition to in-flight control systems for radio navigation, radio transmission and surveillance for air traffic control.

"The activities performed by DNV have been quite complex as ENAV has a large number of sites – 39 airports and 4 area control centres," says key customer manager Francesco Di Sarno.

ENAV has about 3,300 employees: 2/3 of them are in charge of operational activities. It manages more than 2 million flights per year with an average of 6,000 flights per day.

Siemens Transportation System group receives ISO 9001 certification

Achieving certification to the ISO 9001 standard, covering all sites of Siemens Ltd., China, Transportation Systems Group (SLC TS), indicates the significance of quality commitment in the company.

DNV's country manager Sharon Guo recently handed over the quality management system certificate to the president of SLC TS in Beijing, Mr Dirk Hoke.

Since its formation in 1989, the Transportation Systems Group (TS) of Siemens AG has emerged as one of the worldwide leading international suppliers to the railway industry.



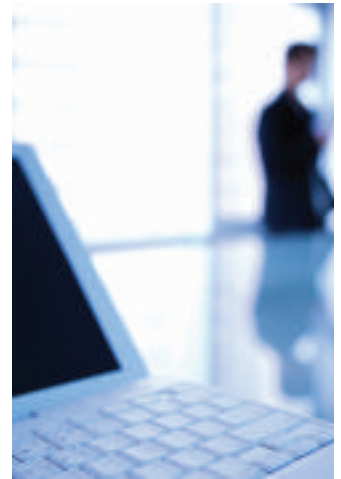
"We are delighted that a large multinational company such as Siemens Ltd., China, Transportation Systems Group has publicly committed itself to continue to improve its quality performance," says DNV's country manager in China, Sharon Guo.

First IT Service Management Certificate issued in Poland

The Information Processing Center of KGHM Polska Miedz S.A., a major producer of copper and the second largest producer of silver in the world, has been certified according to the IT Service Management System standard ISO/IEC 20000.

"The Information Processing Center of KGHM demonstrated that their IT Service Management system was compliant with the requirements of the standard," says DNV's country manager in Poland Włodzimierz Biel.

DNV has a leading position in the IT service management system market in Poland with five qualified auditors. DNV also issued the first accredited ISMS (BS7799) certificate in the country in 2003.



MSC Napoli – not an industry problem

DNV concluded in April that the *MSC Napoli* design is not an industry problem.

Following an extensive investigation into the *MSC Napoli* accident in January 2007, DNV's conclusion was clear: The accident's cause is not a general problem for the container shipping industry at large. However, minor structural modifications have to be made to a very restricted number of the existing container ship fleet.

DNV concluded that the buckling strength in the forward part of the *MSC Napoli*'s engine room was insufficient. In addition, the newbuilding rules and procedures are being looked at, and DNV has invited all members of the International Association of Class Societies (IACS) to cooperate on a unified approach to dealing with the newbuilding rules.

"Our best resources – both people and cutting-edge computer tools – were put on the job from day one. We've left no stone unturned and I'm convinced that this accident and the investigation following it have made the shipping industry even safer," said Olav Nortun, DNV Maritime's technical director, at the press conference in London.

CIRCADIANTM and DNV to collaborate

DNV in the UK has entered into a strategic partnership with CIRCADIANTM, a global leader in providing 24/7 workforce performance and safety solutions for businesses that operate around the clock.

DNV's partnership with CIRCADIANTM brings decades of experience from high-risk and capital intensive industries, and advanced cross-disciplinary competence within management and technology to the challenge of 24/7 workforce management.

Whether it concerns oil and gas installations, transportation systems, process facilities, ICT, food safety or patient safety, the partnership can provide integrated risk management solutions to the global 24/7 workforce. As experts in shift work management for over half the Fortune 500 companies, CIRCADIANTM researches, designs and helps implement optimum shift patterns and fatigue risk management programmes for customer operations.

Chief Executive officer in CIRCADIANTM, Dr. Martin Moore-Ede, says, "By coupling CIRCADIANTM's best-in-class solution to workforce scheduling with DNV's world leadership in risk management, we can provide a new level of operational efficiency and safety for companies that operate 24-hours a day."





Providing training for large IT programme

DNV has won a two-year contract to provide training for 1,000 people in the major English healthcare project, National Programme for IT.

National Programme for IT seeks to digitalise medical records in England in order to improve information management and ultimately patient care. The governing body, NHS Connecting for Health, a National Health Service agency, awarded DNV a contract to assist them in controlling the human risk element in the major change programme enabled by IT. The task is to educate 1,000 clinicians and other personnel involved in the design and implementation of the programme, and have a focus on patient safety and the importance of human factors.

"Controlling human risk is the most important aspect regarding the new information system," says Mark Boulton, principal consultant for DNV's UK healthcare division.

DNV's previous experience in the healthcare sector and their past work with NHS Connecting for Health were crucial in securing the contract.

Dedicated focus on Climate Change

DNV will create a new organisational unit dealing specifically with Climate Change related services.

"By making this move, I want to demonstrate an even stronger DNV commitment to the role we shall play on the Climate Change arena. The strong position we have established today in the field of CDM (Clean Development Mechanism) and JI (Joint Implementation) validation and verification gives us a fantastic brand and starting point for future growth. We therefore want to give this service area the best opportunity to focus, grow and to take a strong global position in this rapidly expanding market" says CEO Henrik O. Madsen.

The new DNV unit will be headed by Bjørn K. Haugland, who will take up his new position as of 1 September. He will have a direct reporting line to CEO Henrik O. Madsen. At the outset, the unit will consist of approximately 70 people.

"I really look forward to work with one of the world's most pressing challenges. Our position within quota trading is very strong – in all main markets – and the future outlook is exciting," says Bjørn K. Haugland.



New LNG safety approach

DNV has developed a risk-based approach which analyses the risk of accidental spills from LNG transport.

A recent DNV study reveals that the focus regarding LNG transportation should primarily be how to manage port activities to prevent situations where actual collision energies cause damage to a vessel's inner LNG tank. The controls that should be in place include appropriate carrier operations, potential speed restrictions, tug pilot and escort controls, effective port management and regulatory controls.

First US Gulf of Mexico FPSO to DNV

The FPSO will be converted, installed and operated under DNV Class.

DNV and Petrobras have signed a Certified Verification Agent (CVA) contract for the first FPSO in the US Gulf of Mexico. *BW Pioneer* will be a converted 1992-built double hull aframax tanker that will be installed on the Chinook and Cascade fields at the beginning of 2010. BW Offshore, one of the world's leading FPSO operators, has signed the contract with Petrobras for the conversion, installation and operation under DNV Class.

DNV will perform the verification work during the design, fabrication, and installation phases.



Dealing with dilemmas

In Singapore this spring, DNV colleagues from South East Asia discussed ethical conduct and integrity at a 'Dealing with Dilemmas' workshop.

The participants examined dilemmas complicated by cultural and political differences. Often, what could be acceptable in one context is not in another.

Project manager Bente Pretlove, said: "All employees must follow strict sets of instructions for ethical business practices. This is in line with our commitment to the UN Global Compact and is essential in order to protect our DNV brand."

DNV carried out an internal fraud and corruption resistance profile last year and found there was a need to focus on awareness building, training and auditing.

"These issues must be managed in a responsible and transparent manner so that DNV's integrity is not compromised," said DNV's Corporate Social Responsibility project manager Bente Pretlove.

Frame contract with EADS

The European Aeronautic Space and Defense Company (EADS) has signed a three year frame contract with DNV.

EADS has decided to implement a strategic training programme for managers to improve software and systems development processes. EADS is a global leader in aerospace, electronic and related services. Its products are recognised worldwide including Ariane, Airbus, Eurofighter and the Tiger helicopter.

Because of its global presence, EADS faces quality, time and market constraints, as well as the difficulties of distance and cultural barriers. DNV will do an in depth risk assessment providing thorough process development improvement recommendations," explains Alain Bloch, global sales manager for DNV IT Global Services.

"In all the domains where software is safety critical, DNV has proved the efficiency of using the Capability Maturity Model Integration approach, and will provide EADS with training until 2011," says Alain Bloch, global sales manager for DNV IT Global Services.





Huge potential in spare part management

DNV has conducted a benchmark study addressing spare part management in the German power industry and Norwegian offshore industry.

“Both industries have been reviewed with the objective of identifying gaps in performance between industry players,” explains Atle Stokke, project manager at DNV. Major savings potentials were identified, particularly in terms of reducing and harmonising spare parts inventories.

One of the German respondents made savings corresponding to 15-20% of its inventory value by harmonising spare parts across plants.

The survey identified two important impediments to optimal spare part management for the Norwegian offshore industry.

Next generation corrosion tool

Corr MD is a state-of-the-art data management and integration tool that will prevent corrosion and increase the availability of pipeline data.

A study conducted by DNV CC Technologies and NACE International estimates that corrosion is costing US pipeline operators approximately seven billion USD per year. The pipeline industry has long been asking for an integrated decision tool to manage corrosion data and data for integrity assessments.

“Corr MD maintains vital information regarding the integrity of both onshore and offshore pipeline systems. It provides guidance for collecting the data as well as directions for proper usage and data management,” says project manager Lynsay Bensman from DNV CC Technologies.



Global wind leadership

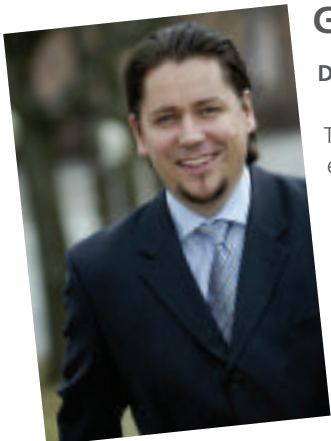
DNV has acquired the US-based wind consultancy company Global Energy Concepts (GEC).

The combination of DNV's global energy risk management expertise and GEC's engineering and technical services establishes a leading player within the global wind power consultancy market.

GEC is a global leader in the wind energy industry and has conducted direct work on wind projects representing more than half of the new installed wind energy capacity in the US.

DNV has considerable expertise in wind energy and is the world's leading provider of offshore project certification services. DNV's current wind centre in Denmark has more than 20 years of wind energy experience.

DNV Energy's COO, Remi Eriksen, explains: “With GEC on board, DNV will be the wind world's leading service provider.”





Red Cross water project completed in China

A grand ceremony was held in the Xiaowudao village to celebrate the successful completion of DNV's fourth water and sanitation project in China, in collaboration with the Norwegian and Chinese Red Cross.

The project started in 2007 and consisted of bringing spring water from a nearby mountain through a gravity tank and modern pipeline system to each household and constructing an ecological sanitation facility for the Xiaowudao village. Training and education were also an important part of the project.

The ceremony was attended by the vice governor of the Yanbian Korean district, the Norwegian ambassador to China, Svein Saether and DNV's regional manager Bjørn K. Haugland, in addition to local officials and representatives of the Norwegian and Chinese Red Cross.

One of the villagers said: "We now have clean and safe drinking water and improved sanitary conditions. The most important thing is that we feel much happier and have more confidence in the future."

280 vessels contracted in China last year

China is challenging Korea as the world's largest shipbuilding nation. According to the latest figures from UK shipbroker Clarkson, Chinese shipyards signed more new contracts than Korean yards in 2007. DNV China last year celebrated the new "DNV record" – 280 vessels and 23.4 million deadweight tonnes (dwt) in one year.

"The 280 ships will be built for shipowners all over the globe," explains regional manager Bjørn K. Haugland. "But Chinese shipowners building in Chinese yards often look to DNV for Class. Chinese shipowners alone have contributed 30% of the new DNV orders."

"Teamwork, strong support from DNV in the shipowners' regions and DNV' support units, mixed with a lot of hard work, has resulted in these new contracts," says Bjørn K. Haugland, DNV's regional manager for Greater China.



DNV's largest university collaboration ever

The Norwegian University of Science and Technology will receive between NOK 50 and 60 million from DNV for professorships and collaboration projects.

DNV will finance ten professorships, and four main areas of cooperation have been decided on: Arctic technology, marine transport, renewable and environmentally friendly energy, and integrated operations. DNV will also assist the university by providing guest speakers, contributing to student projects and providing professional collaboration on many levels.

The financial framework is more than NOK 10 million per annum and is initially valid for 5-6 years. This is the largest university agreement DNV has ever entered into.

The cooperation agreement was signed by DNV's CEO Henrik O. Madsen, right, and NTNU's Vice-Chancellor Torbjørn Digernes.

“Yes, we want to take the role as the engine in the future maritime picture. We are leading today, and we want to keep it that way,” says Director Fotis Karamitsos of the European Commission’s Directorate-General for Energy and Transport.

Making Europe a maritime engine

Can Europe take the role as the engine in the future maritime picture? Director Fotis Karamitsos of the European Commission’s Directorate-General for Energy and Transport thinks so. **TEXT: EVA HALVORSEN PHOTO: NINA EIRIN RANGØY**

The European maritime industry has an important role to play. Europeans import two tonnes of cargo per person every year. Ninety per cent of Europe’s international trade takes place by sea while 40% of transport between EU member states is carried out by short-sea shipping.

“Yes, we want to take the role as the engine in the future maritime picture. We are leading today, and we want to keep it that way,” says Director Fotis Karamitsos of the European Commission’s Directorate-General for Energy and Transport.

He has worked for the Commission in Brussels for 27 years. With a background as a Civil Engineer and transportation planning, he has over the years been responsible for several areas, even tourism. In 2001, he became Director for Logistics, Innovation, Co-modality and Maritime Transport. This means that he is challenged to view the maritime industry as a part of a bigger picture.

“Today China receives a lot of attention as it has very many shipyards, an overwhelming proportion of goods and a gigantic workforce,” says Mr Karamitsos, continuing: “But the fact is that most of the technological input to the International Maritime Organisation (IMO) comes from European countries. As much as 40% of the global fleet is EU owned, and 27% of the ships sail under European flags.”

The question he asks is how Europe not only can retain this position, but how these figures can be increased?

THREE KEY FACTORS

To stay in the lead there are three key factors to be dealt with, Mr Karamitsos points out.

Firstly, the EU must make sure to keep jobs in Europe and prepare the ground so that enough people – and the right people – are attracted to the maritime industry. It

is vital that young people are aware of the potential for multiple career opportunities that exist under the maritime umbrella.

Secondly, the European maritime cluster must stay competitive, especially within technological innovations, and he adds that the Norwegian maritime cluster has an important role to play here. European shipping must also operate within a stable economic environment.

The third aspect is quality and fair competition. “We must do our utmost to raise the quality bar and establish a level playing field for operators globally. This will make the European industry more attractive and profitable, and will also preserve the maritime environment,” he says. He underlines that quality labels sell, and this is an issue to be given more attention. The European quality aspect must be used to gain a higher market share as well as to attract more ships back into the European registers.



"Although shipping is by far the most environmentally friendly mean of transportation, even this industry will have to accept its responsibilities and come up with smart solutions. The classification societies, with their technological expertise, are in a perfect position to take the lead. Together with the industry, they can bring forward innovative and workable solutions that will benefit all of us," says Fotis Karamitsos.



He states that a lot has been accomplished within all these three key areas during the past ten years, but there are still important measures to be taken.

WHITE PAPER UNDER WAY

In 2006, the Vice-President of the European Commission, Jacques Barrot, who was in charge of transport, issued a White Paper on the future European transport policy ('European transport policy for 2010: time to decide') which highlighted the importance of maritime transport for the Union. Furthermore, last October the Commission published its views towards an encompassing maritime policy ('Towards a future Maritime Policy for the Union: A European vision for the oceans and seas'). Now Mr Karamitsos is following up the requirements set up in these two policy documents to formulate the future targets for shipping.

"We call it our Blue Horizon for European maritime transport," he says with a smile. Here the focus will be on how to take advantage of European strengths, such as quality culture, qualified personnel and technology to make the European maritime

industry more efficient and competitive.

As part of this work, he has initiated wide consultations with participants from across the European maritime cluster looking at different defined questions, such as: What are the challenges ahead? What can be done? At the European Union level? At a national level?

In the Blue Horizon, the European maritime transport industry will be seen as a part of a bigger picture, meaning that the interface with the environmental and social aspects will be taken into account, as will be the interface with other aspects, such as fishing, tourism and offshore wind farms.

Mr Karamitsos hopes that the European Commission will issue the Blue Horizon in October.

QUALITY CHALLENGES IN GLOBAL SHIPPING

Looking past the EU borders, he acknowledges that the quality aspect is not only a European challenge, but also a global challenge. Although conventions are in place and the rules are clear, there are too many dishonest players to be found.

"We must get rid of the sub-standard operators," he says. "We must gain respect for the rules that people have agreed on in the first place."

He regards flag-state responsibilities and respect of international conventions as the priority, but also the port state control regime as a driving force for quality, and draws attention to the Paris Memorandum of Understanding and the US Coast Guard as the best in class.

"We should have equally minded administrations all over the globe and they should all try to have their flags at 'white list' level," he says.

CHALLENGING NEWCOMERS

The vast number of newcomers in the shipbuilding industry also poses a challenge, according to Mr Karamitsos.

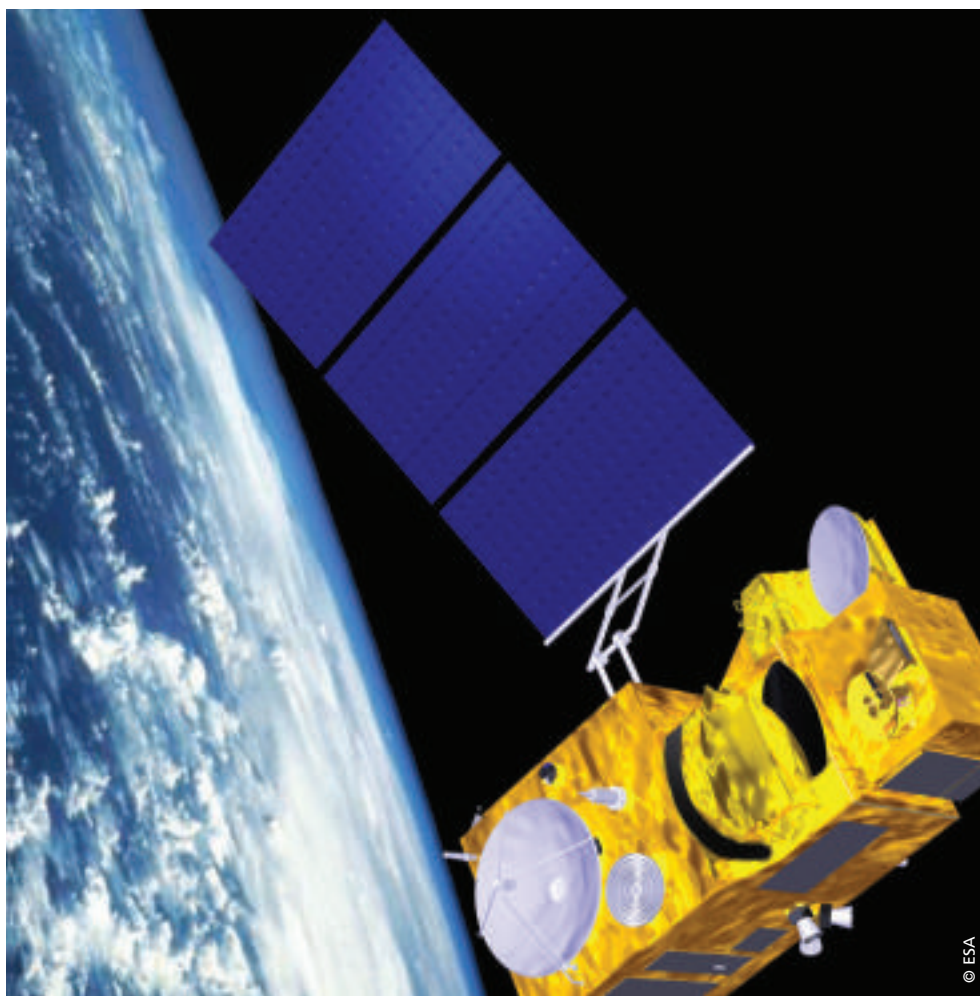
"In countries in the Far East, there are too many new shipyards and we have no guarantee that all these ships will be built properly. The classification societies have a vital role to play here. Our fear is what can happen with poor quality ships built at these shipyards; ships that are classified

by societies that do not meet the standards such as those of the International Association of Classification Societies (IACS). We have heard some terrible stories already. However, a proposal has been submitted to the IMO for the introduction of a new code for classification societies, built on the model used in the EU," he says.

ENVIRONMENTAL INNOVATIONS

He has one more challenge for the classification societies as well; environmental emissions and climate change are on everybody's agenda these days, and Mr Karamitsos is no exception. Although shipping is by far the most environmentally friendly mean of transportation, even this industry will have to accept its responsibilities and come up with smart solutions.

"The classification societies, with their technological expertise, are in a perfect position to take the lead. Together with the industry, you can bring forward innovative and workable solutions that will benefit all of us," he concludes.



Galileo – operational from 2013

The Galileo satellite navigation system, the European counterpart to the US Global Positioning System (GPS), has been developed using the utmost of technology.

Director Fotis Karamitsos of the European Commission's Directorate-General for Energy and Transport is also responsible for Galileo, which will be under civil administration control (the GPS is under military command).

"The Galileo satellite radio navigation system will become an integral part of the everyday life of Europeans and, we hope, for the rest of the world. The system will be used in mobile phones, air traffic management, car and maritime navigation, public services, safety and environmental management, and many other applications such as for 'Search and Rescue' with the specific telecommunications capacity that it will incorporate," he says.

The 30 Galileo satellites will provide global coverage and cost about Euro 3.2 billion to deploy. It will be 100% financed and owned by the EU. However, it has been estimated that the total commercial benefits of the system for European companies over a 20-year period to be about Euro 60 billion. During this period, Galileo will enable a broad range of everyday applications and, by some estimates, create more than 25,000 new jobs.

DNV has been involved in several projects relating to Galileo, such as the design of the Galileo System Certification Scheme.

Pioneering cruise ship design



The world's largest cruise ship
Independence of the Seas has just left
the Aker Yards, Turku shipyard in Finland
and is now on its way to impress cruise
passengers around the world.



Kulovaara the catalyst

Catalyst, enabler and Finnish ‘glue’ – those are some of the many roles Harri Kulovaara takes on at RCCL, heading a team that is constantly pioneering cruise ship design.

TEXT: KAIA MEANS PHOTO: RCCL AND KAIA MEANS

As the world’s largest cruise ship, brand new *Independence of the Seas*, is busy in Oslo harbour impressing the locals with its sheer size and brilliant white magnificence, the man who led the team responsible for bringing those 160,000 tonnes to life, so to speak, is already two steps ahead. Harri Kulovaara, executive vice president, maritime of Royal Caribbean Cruises LTD (RCCL) has a hectic schedule of meetings with DNV at its headquarters in Oslo concerning the next generation of cruise ships.

As giant as *Independence* is, the coming Genesis series – the first of which will be delivered by Aker Yards in Turku next year – will be an awe-inspiring 50% bigger. It will be the 9th generation of RCCL cruise ships, with room for 5,400 passengers and almost as many crew members.

For Mr Kulovaara, the RCCL ships represent both tradition, years of evolution and cutting-edge technology. RCCL has come up with such new and innovative

ship designs that DNV has had to change its methods to keep up with the constantly changing technology.

“Every ten years the size of the ships has been approximately doubled,” says Mr Kulovaara. He has been at RCCL since 1995. Today he lives in Miami, but spends half his time in Europe.

“The ships today are the result of continual evolution. It’s a wonderful story – it tells about us,” says Mr Kulovaara.

40 YEARS TOGETHER

RCCL placed its first order for a 700-passenger cruise ship (*Song of Norway*) in 1968 – the starting point for the warm-weather cruise business. Even then, the project was a collaboration between RCCL and DNV. “Our bonding with DNV is exceptionally important,” he says. “Class can provide help, not only with compliance, but also in fulfilling design visions. DNV is a partner in developing projects. I’m pretty passionate about this.”

The process of shipbuilding has been revolutionised in the last 10 to 20 years, and RCCL has been at the forefront. “The biggest thing that has happened is the use of technology in the overall design process. It’s an enabler. We can handle safety aspects better. We can handle new challenges and calculate new structures. We can build larger ships and know how to operate them,” says Mr Kulovaara.

Today’s ships also have improved environmental standards in many ways. One

example is the use of fluid dynamic calculation models that helped perfect the hull. “With 2% improvement here and 3% there, it adds up to a 30% improvement, all translating to lower carbon footprints. It’s actually amazing how much can be accomplished,” he says.

VIDEO RENDERINGS

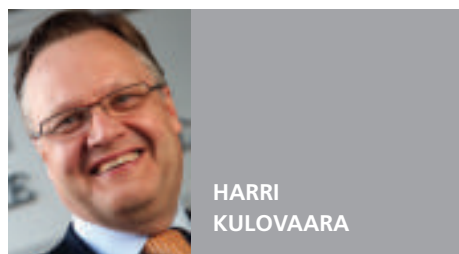
“Twenty years ago it was much more experimental. Designers were still using pens, pencils and models. Now we use video renderings, and we can walk in and see and feel the rooms. Even the ambiances – already at the design phase we know what the outcome will be.”

Another very important change is customer centricity. “We are really designing cruise ships based on guest experience, based on what they prefer,” he says.

During the 18-month design phase, the key players – including CEO Richard Fain and the top designers – will get together every month for sessions that last one or two days. Every aspect of the design, down to the smallest detail, will be scrutinised by the team.

Mr Kulovaara speaks enthusiastically about brainstorming – throwing the best minds together in a creative spar. Groups can spend three or four days together to discuss just one topic, making mock-ups of the best ideas. “The way we interact, we’re able to pick up the best ideas,” he says.

It’s important to have an open mind, that is if you’re going to come up with ideas



Executive vice president, maritime of Royal Caribbean Cruises LTD (RCCL)

that will ‘wow’ the public, such as the towering rock climbing wall on *Independence of the Seas*.

“I got that idea from a restaurant in Åre,” says Mr Kulovaara, readily admitting that the Swedish concept of combining climbers and diners appealed to his taste. In the cruise business, you have to think big – even beyond tonnes.

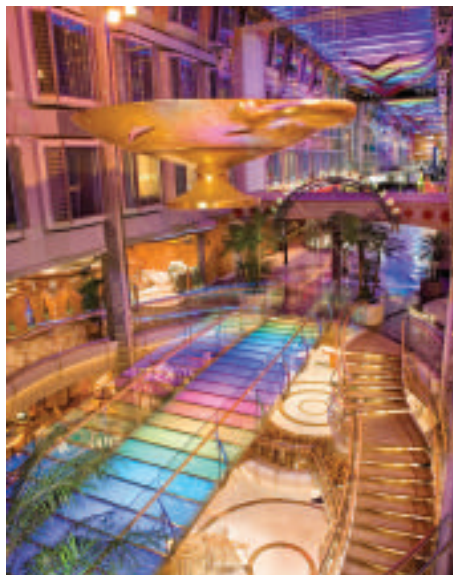
CEO ON TEFLON

“We had the idea of having a Teflon skating rink, and we tried it out. Our chairman skated on Teflon. But then we thought, ‘Why not real ice?’ We spoke to people who do the ice rink at Rockefeller Center.”

And so it came to be that *Independence of the Seas* was outfitted with a skating rink – with real ice. The *Genesis* series, of course, will outdo that. One of the main features of the ship will be a ‘Central Park’ in the very centre of the ship – five decks high with open sky above.

“The idea of opening up the ship even further has been in my head since the early 1990s,” says Mr Kulovaara, who gets inspiration from vacations with his wife in Provence, where he loves the ambience, colours, food, smells, and the slow pace of life.

Life on the *Genesis* ships will perhaps have a different pace. The atrium in Central Park will feature a living green wall, lush gardens, real trees, plants and bushes, and fashionable shops and restaurants. The ‘Rising Tide’ bar will have a



THIS IS THE ROYAL PROMENADE ABOARD INDEPENDENCE OF THE SEAS. ROYAL CARIBBEAN INTERNATIONAL IS THE FIRST TO INTRODUCE AND STILL THE ONLY CRUISE LINE TO OFFER A BOULEVARD OF RESTAURANTS, SHOPS, BARS AND LOUNGES THAT RUN NEARLY THE LENGTH OF THE SHIP.

mechanism that slowly moves the entire locale up and down between three different decks. Certainly Provence has a hard time matching that.

CLEAR VISION FOR ALL

How does Mr Kulovaara manage to inspire his team, get the best from them, and get everything done?

“I understand that with my own two hands I cannot build a ship. It’s a tremendous team effort,” he says, listing the endless categories of people involved – from engineers to specialists in sound and lighting. Today’s ships bring in components from suppliers all over the world. “We have more than 100 architects and 200-300 technical designers. My job involves making sure that people have a clear vision of what we’re trying to accomplish so mistakes are not made, so it all happens

in synch in the right time and place. If it takes 5,000-6,000 people one year to build a ship – it would take me 5000 years!” he says with a smile.

“My role is to try to be a catalyst, to think outside the box. I’m glue – trying to glue together various pieces of the puzzle.”

Asked if he has a message for the industry, he immediately focuses on the economy, and how it has affected the industry.

“We’ve had a record five years. Shipowners worldwide have 8,000 ships on order. There are 40 cruise ships on order. There are backlogs. The market is exceptionally overheated. All the various segments in shipbuilding have been peaking at the same time. There is a shortage of materials, and of design engineers. We are experiencing some delays in production, and in getting components.

“It’s important for us all that while we experience this overheated situation, we still maintain quality, live up to expectations, and make sure contracts are fulfilled. It’s challenging,” he says, admitting that if anything makes him uneasy, it is this.

“I think we’ll see the industry is going to cool down a little bit, and adapt to normalcy,” he continues.

What does he see in the crystal ball, looking beyond the *Genesis* series?

“I believe we are currently building tomorrow’s ships. Those ships will be 225,000 tonnes – 50% larger than today’s. I have a hard time thinking beyond this.”

Uncontained growth

“Since the container industry is only 50 years old, the growth opportunities are substantial,” says John Coustas, president and CEO of Danaos Corporation.

John Coustas doesn't just talk the talk, he definitely walks the walk. Danaos is one of the largest containership owners in the world, with a fleet of 38 ships. But a full 34 new ships will be added in the next few years.

“We have seen that the containerisation growth is consistently in excess of two

times the annual world GDP growth, consequently very much related to the world demand for finished goods,” says Mr Coustas.

He has been at the helm of Danaos Corporation for more than 20 years, taking over from Dimitri Coustas in 1987. The company began in shipmanagement operation in 1976, and it took another 15 years before it entered container shipping in the 1990s.

Danaos headquarters are in Piraeus, Greece. The company was listed on the New York Stock Exchange October 6, 2006 after a successful USD 200 million public offering, and is now the largest US listed containership company.

upside and downside of the listing. “Also the introduction of a corporate culture in a historically private company will assure effective leadership succession. You can, however, assume that a downside risk might be if the stock will trade well below the net asset value.”

When he decided to commit Danaos heavily into the containership industry about 15 years ago, the charter owners were mainly the German KG companies.

“Container shipping is related to long-term planning, and the charter rate fluctuations are flatter compared to the traditional shipping sectors that are fully exposed in the spot markets,” says Mr Coustas. “Multi-year charter agreements are the state of the art, and although they inherit lower opportunity cost, they assure at the same time lower risk.”

Some analysts are predicting an oversupply of large container ships in the next two to three years, but this isn't preventing



JOHN COUSTAS

President and CEO of Danaos Corporation

NEW CORPORATE CULTURE

“Access to the capital markets will support our newbuildings programme and will provide great growth opportunities,” says Mr Coustas, when asked to comment on



Mr Coustas from doubling the size of his fleet.

“Our average time charter coverage including the ships on order is about 11.2 years,” he says. “Therefore any oversupply of large containerships will not affect our company as we stand at present. Although we may see in the next three years a correction in ship prices, we should not forget that in our industry the charter rates of large vessels are related to asset prices. All in all, the next low in the cycle will provide more opportunities than threats to our company” he says.

HEAVY CARGOES IN CONTAINERS

He is confident that world GDP will continue to grow driven by emerging and undeveloped economies.

“We have a good reason to believe that containerisation will continue to grow as a multiple to world GDP,” he says. “In addition we have seen more and more heavy

cargoes, such as steel products, bagged cement and grain shipped in containers. The existence of Ultra Large Container Vessels has encouraged shippers to containerise more and more heavy cargoes, which can be shipped at lower cost.”

LONG-TERM COMMITMENT

Danaos is looking for long-term commitment by charterers. This means more than five years for panamax newbuilds and more than eight years for post-panamax newbuilds. They also wish to include clauses in the charter party that cover and protect owners and charterers as being joint venturers rather than opposite parties.

Mr Coustas believes that his company’s revenue risk is protected. “Our revenue risk is depending upon the performance of our customers. The portfolio of our customers at present has 11 out of the 20 major liner companies. We rely upon our operational excellence to control the risk

of our operating costs. Finally, we have presently hedged the interest rates of almost 100 % of our debt.”

THINKING BEYOND THE CONTAINER

Obviously, the business goes well, and the group’s reputation as a container shipping company is higher than ever. This goes hand-in-glove with Mr Coustas’ commitment to technological leadership.

“Part of our ability to manage our growth is our ability to understand technology better than others,” he says. With a formal background that includes MSc and Phd degrees in computer science, he has during the past two decades put a lot of emphasis on the technology aspect and has taken part in various research and development projects.

“I strongly believe that technology, including IT, is a source of competitive advantage for us as a shipping company,” he concludes.

Blue skies ahead

The Turkish shipping and shipbuilding industry is in a bullish mood. Backed by a buoyant market, they are investing and expanding their businesses and fast becoming a major player on the international scene. **TEXT: STUART BREWER PHOTO: SCANPIX/DUNYA SHIPPING**

Turkish shipping is sitting pretty at present as is the industry generally. Shipowners are earning well and keen to expand their business but at the same time focusing on clearly defined core activities weighs a lot in future plans.

Dunya shipping, the Istanbul-based tanker company, currently operates a fleet of 12 oil/product tankers and, judging by how chairman and president Suay Umut puts it, the company is unlikely to diversify into new trades "because we prefer to stick to the tanker business; it's more demanding and requires high technical expertise which not all owners have resources to handle."

Formally known as Dunya Denizcilik ve Ticaret AS, Dunya Shipping has 9 oil tankers slated for delivery from Korean and Turkish shipyards between now and the end of 2010. When delivered they will bring the total deadweight (dwt) under Dunya's management to in excess of 1 million tonnes; a sizeable and modern fleet (average age less than two years) in the international product tanker sector.

COMMITMENT TO QUALITY

Through Dunya's ongoing strategic partnership with the leading Swedish tanker operator, Brostrom, the company's tankers regularly perform voyages for the likes of Chevron, Shell, BP, ExxonMobil and Total,

"among the most demanding customers in the business," says Suay Umut and adds, "This is further evidence of our commitment to quality as well as to our international outlook."

Further growth is part of the company's policy but to an extent this depends on how the market develops. "It is our tradition to study everything and evaluate all the time," says Suay Umut. "At present there is some uncertainty in the market due to the future supply-demand situation, freight rates, and increasing steel prices. We are therefore content with the number of new vessels we already have on order."

Commenting on the shipping industry's bull run since 2003, Mr. Umut says "The buoyant market has allowed Turkish owners to invest heavily. Last year alone almost 10m dwt were ordered. This represents a significant figure and also reflects the fact that owners no longer have to seek finance abroad since the local banks are showing interest in the domestic shipping sector as never before."

MASSIVE ORDERS

Geden Lines, another Istanbul-based shipping major, has grabbed the headlines more than once in the recent past. It has a bumper 76 vessels on order, the majority of which are to be built in Korea and China.

Its expansion plans are to strengthen its tanker fleet which currently stands at 18 vessels, despite the fact that is the dry bulk market that is booming at present.

"For tankers the spot rates are particularly weak compared to the dry bulk," says Orhan Karademir, Geden's fleet manager. "That said, we believe that the tanker asset values will remain strong in spite of earnings as any geopolitical supply chain disruption could very quickly add to tanker earnings."

FACING CHALLENGES

The deals that both Dunya and Geden have inked in over the past 12 months reflect the general bullish mood of the Turkish shipping industry. However, both companies acknowledge that the shipowners are facing challenges. An over-valued lira, rising running costs and social security contributions for Turkish crews are forcing about half the 15m dwt. Turkish ownership to migrate to foreign flags to offset these. In addition, there's the lack of seafarers and, in Geden's case, this has led the company to use third-party ship crewing management offices to tackle the shortage.

"No doubt in the near future things related to the human factor will dramatically change, says Orhan Karademir and adds, "Continuous training is very much



BLUE SKIES AHEAD



"The buoyant market has allowed Turkish owners to invest heavily. Last year alone almost 10m dwt were ordered," says Suay Umut, Chairman and President of Dunya Shipping.



"We're on the right track to strengthen our position for top-quality special-purpose shipbuilding," says Mehmet Taylan, Vice president of the Turkish Shipbuilders' Association and board member of the Celik Tekne shipyard.



Orhan Karademir, Geden's fleet manager, emphasizes the importance of quality, "It's a bit like when you choose your airline. You feel safe when you know that they take quality and safety seriously."

on our agenda because we will know that a lack of seafarers is a serious problem which could directly affect safety and environmental protection."

Orhan Karademir also emphasized the importance of quality operations and would welcome the emergence of a two-tier market whereby good quality translates to higher earnings, as this would drive the less competent operators out of the market.

"It's a bit like when you choose your airline. You feel safe when you know that they take quality and safety seriously. You don't take another airline which is sub-standard just because it's 10% cheaper than the good one," comments Orhan Karademir.

BUILDING BOOM

The Turkish shipbuilding industry is also enjoying busy times. It currently has a significant order book comprising some 240 ships of about 3m dwt in total. The yards are building most vessel types, including chemical/product carriers, container and dry cargo ships ranging from 3,000 dwt to 180,000 dwt. Highlights would have to

include over 180 orders in the chemical tanker niche.

"The market is particularly buoyant at the moment," says Mehmet Taylan, vice president of the Turkish Shipbuilders' Association and board member of the Celik Tekne shipyard.

"Turkish yards are winning more export newbuilding orders and moving up in vessel size and complexity, thanks to the strong demand for new ships and lack of capacity at Far Eastern yards."

RAPID EXPANSION MODE

According to Mehmet Taylan, Turkey currently has 53 shipyards and a large percentage of them are booked till 2010. In addition, there are over 60 new yards under construction, mainly in Yalova, Mersin, on the Black Sea coast, and the Aegean Sea coast just north of Izmir.

"We're talking about 6.5m dwt order book with a total value of USD 10 billion making Turkey the fourth largest shipbuilding nation in the world," says Mehmet Taylan. "The industry is very

bullish and we expect the busy times time to last until 2010-11."

The Celik Tekne yard in Tuzla is also experiencing busy times. The yard has three slipways and can build vessels up to 30,000 dwt. It is contracted to build 14 vessels due for delivery before 2010, including the two tankers for Dunya.

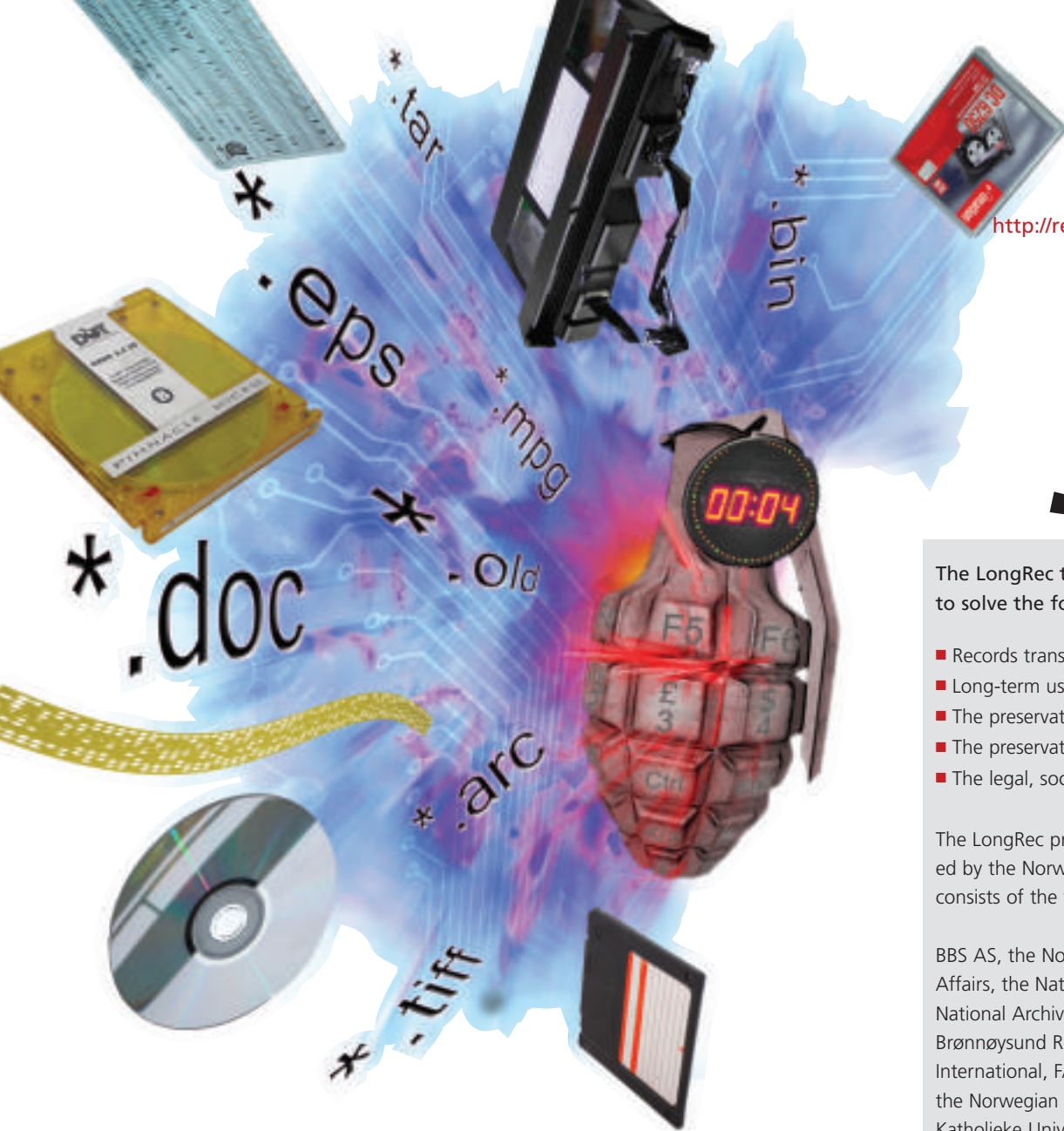
"We're on the right track to strengthen our position for top-quality special-purpose shipbuilding and at the same time also retain an effective presence in standard shipbuilding," says Mehmet Taylan and adds, "Our ability to custom-build vessels will ensure we're competitive in the future."

Prospects are indeed looking up for both Turkish shipowners and yards. As Mehmet Taylan says: "It's a very challenging market but the potential is there. We are building for the future – Turkey's future."

A collage of various digital file formats including .lar, .eps, .mpg, .bin, .doc, and .Old, along with a digital bomb with a red digital display showing '00:04'. The bomb has buttons labeled F5, F6, F7, F8, F9, F10, F11, F12, and a button with a red flag icon. The background is a blue and purple abstract shape.

Defusing the digital time bomb

While most of us praise technological developments and the ever-changing digital revolution, professionals depending on repayable digital records are waving the red flag, drawing our attention to the digital time bomb. TEXT: **OLE MAGNUS GRØNLI**



<http://research.dnv.com/LongRec/>

The LongRec three-year project sets out to solve the following main challenges:

- Records transitions survival
- Long-term usage
- The preservation of semantic value
- The preservation of trust and security
- The legal, social and cultural frameworks

The LongRec project is financially supported by the Norwegian Research Council and consists of the following partners:

BBS AS, the Norwegian Ministry of Foreign Affairs, the National Library of Norway, the National Archival Services of Norway, the Brønnøysund Register Centre, CSAM International, FAST Search and Transfer, the Norwegian Computing Centre (NR), Katholieke Universiteit Leuven in Belgium, and the Norwegian University of Science and Technology (NTNU), where LongRec sponsors three PhD students. The project also constitutes the Norwegian branch of the global InterPARES project, which is based in Canada.

What is a blessing in terms of new, better, faster and cheaper software and computers epitomises a threat to future-proof digital data. Those who have tried to open and read a 10 or 15 year old digitally generated document have an idea of what is meant here. The future is even more frightening: how can we ensure that our digital work processes generate documents that will be recognisable in the decades to come?

These are among many questions addressed by the LongRec – Long-Term Record Management – research programme. “The primary objective of this joint-industry project is to ensure the persistent, reliable and trustworthy long-term archiving of digital information,” says project

manager Inger-Mette Gustavsen of DNV Research. She emphasises the availability and use of information when the lifetime exceeds 20 years.

“New versions of databases, spreadsheets and word processors are released every two to three years and computer hardware becomes obsolete after a few years. This has prevented us from developing universal preservation methods that guarantee readable and understandable records in the future,” says Ms Gustavsen.

“The overall research challenge for LongRec is to establish theory, mechanisms and technology that ensure trustworthy long-term storage and use in terms of context, semantics and presentation information,” says Ms Gustavsen.



**INGER-METTE
GUSTAVSEN**

Project manager of DNV Research

1,000 years perspective as Norway's living memory

The National Library of Norway is facing several challenges to avoid a future digital dark age.

TEXT AND PHOTO: **OLE MAGNUS GRØNLI**

There is more to the National Library of Norway than just books. The institution defines itself as a living recollection of the Norwegian written, spoken and visual heritage. This means that every single published newspaper, periodical, radio and TV programme, photo, map, webpage, piece of music and film is a part of the vast library collection, making this one of the first truly multimedia libraries in the world.

Although some of this material is produced in a digital format, the library has undertaken an immense digitisation process to become a fully digitised library. Even for a small nation like Norway, this entails the digitisation and storage of 60 million newspaper pages, 90 million book pages, one million hours of radio broadcasts, 250,000 hours of TV and film and 4 million manuscripts – to mention only a few figures.

Looking at the 1,000 years' perspective for storage and retrieval, the library is facing several challenges to avoid a future digital dark age. As a partner in the LongRec project, the National Library is seeking to develop a minimum set of requirements for the procedures and digital formats used in order to ensure sustainability and no loss of information. "For us it is also important that we use formats which are easy to convert to future standards," says national librarian Vigdis Moe Skarstein.

EIGHT TERABYTES ADDED DAILY

Every day, eight terabytes of digitised information are added to the library's database,



Vigdis Moe Skarstein, national librarian at the National Library of Norway.

which today consists of three well-protected storage units, each containing three petabytes. "Migrating this huge amount of data from one standard to another will in itself be a huge challenge," says Ms Skarstein.

Another focus area for the National Library is the development of future-proof search and retrieval processes by adding meaningful metadata. In this context the library is concerned about the fact that the meaning of certain words changes over time. There is also an issue about how to date certain types of information to ensure the most relevant search results. For example, how do we label a picture taken in 1960 of a church dating from the 14th century?

What differentiates the National Library from other partners in the LongRec project is that the documents must also be available

to the public. "This means that all the records are stored in both a preservation format and a distribution format," says Ms Skarstein.

This systematic approach to the digitisation of a whole national library places Norway, together with France, the Netherlands and the UK, at the forefront in the efforts to create a modern multimedia library. Participation in the LongRec project will further ensure the success of these efforts.



Dealing with climate change

Our climate is changing, and the world is beginning to realise the real consequences of climate change. The Clean Development Mechanism defined under the Kyoto Protocol has so far generated 1,000 projects and certified emission reductions of more than 135 million tonnes CO₂ equivalents. DNV has been involved with either validation or verification of close to 50% of these projects.



Growing up green

“From the word ‘go’ we were sort of international” says Pedro Moura Costa, musing over his company’s humble beginnings. “We’ve grown organically during the years.”

TEXT: LEILA ASDAL PHOTO: GETTY IMAGES

In just over 10 years, EcoSecurities has gone from the idea of two men, to a heavyweight, global player in the carbon credits trading market; specialising in the sourcing, creating and trading of carbon credits from greenhouse gas emission reduction projects.

“We’re pretty much a one-stop-shop in terms of creation and delivery of carbon credits in this sector,” says Pedro Moura Costa. “Half of the company works in developing countries, helping project developers access finance for projects that reduce emissions. The other half of EcoSecurities deals with developed countries, or corporations in developed countries, that need to reduce their emissions.

“We run a diversified portfolio of carbon credits with credit sources from around 400 projects in close to 40 countries around the world. We are one of the, if not the main, supplier of carbon credits to the international carbon market.”

WIN, WIN, WIN

The idea for EcoSecurities began simply enough. “I ran one of the first projects funded by carbon credits in Southeast Asia,” says Pedro Moura Costa. “We had the chance to finance a large reforestation project with funds from a power plant in

Europe that wanted to be carbon neutral. It was cheaper for this plant to do so through the planting of trees in Asia. It was a phenomenal concept: win, win, win: A win for us in Malaysia because it was a cheap source of capital; for the European power plant because it was the cheapest way for them to reduce emissions; and a win for the environment.

“My partner, Marc Stuart, was involved in a similar project. It fascinated me that this had the potential to catalyse change in the engagement of environmental activities in a much larger scale than through voluntary donations to NGOs. After running the project, I wanted to replicate and multiply what I had experienced in Malaysia. Marc and I realised the carbon credit market was a lucrative industry, both in terms of business and helping the environment, so we spent a lot of time in the early days conceptualising where we would take it.”

“We created EcoSecurities in early 1997, working with one of the first national level greenhouse gas projects in the world, the Costa Rican greenhouse gas mitigation programme. When the Kyoto Protocol came into force later that year, it vindicated our view that carbon trading was here to stay.”

CLEAN DEVELOPMENT MECHANISM

EcoSecurities deals with carbon trading under the Clean Development Mechanism (CDM). The CDM is an arrangement under the Kyoto Protocol allowing industrialised countries wishing to reduce their greenhouse gas emissions to invest in emissions reduction projects in developing countries. Under the Kyoto Protocol, all large scale CDM projects must be both verified and validated but by two separate, independent third parties.

This is where DNV comes in. DNV is accredited by the UNFCCC (United

Nations Framework Convention for Climate Change) as a Designated Operating Entity (DOE) and was one of the first DOEs to be accredited for the verification of all major CDM scopes. For most of EcoSecurities’ projects, DNV provides validation services of the project design and determines whether or not a project is eligible for participation in the CDM. This includes validating the “additionality” of projects, confirming they wouldn’t occur without the additional incentive provided by emission reductions credits. In some cases, DNV may provide verification services instead however, with EcoSecurities, DNV generally validates projects.

ESSENTIAL THIRD PARTY VALIDATION


“DNV’s role is essential for carbon trading,” says Pedro Moura Costa. “For example: a ton of greenhouse gas emission reductions is not something you can see, smell, or hold and put in a container. It’s only as credible as the documentation behind it. So it’s important that all the processes utilised to reduce emissions are well documented and validated by an independent body.

“We chose DNV for the validation process as it’s a leader in this area,” he continues. “DNV probably has the largest presence internationally, is knowledgeable and is accredited to provide these services for a wide range of CDM projects. CDM is a complex process and it’s important that the validator understands it for validation to be smooth. The technical capacity of DNV is very strong and we don’t need to educate the company as we might others. DNV’s job in this process is essential in maintaining credibility in this somewhat ‘virtual’ market.”



PEDRO MOURA
COSTA

President, EcoSecurities

A photograph of a young green plant with a white outline, growing from soil held in a person's hands. The plant has a long, thin stem and two large, broad leaves. The soil is dark and rich, and the person's hands are visible at the bottom, holding the soil. The background is blurred, showing a person in a red shirt.

"Greenhouse gas mitigation is here to stay," says
EcoSecurities President, Pedro Moura Costa.



An innovative environment

Through the creation of their carbon bank in 2007, Morgan Stanley has aimed to bring the voluntary carbon credit market up to par with the regulated one.

TEXT: **LEILA ASDAL** PHOTO: **GETTY IMAGES**

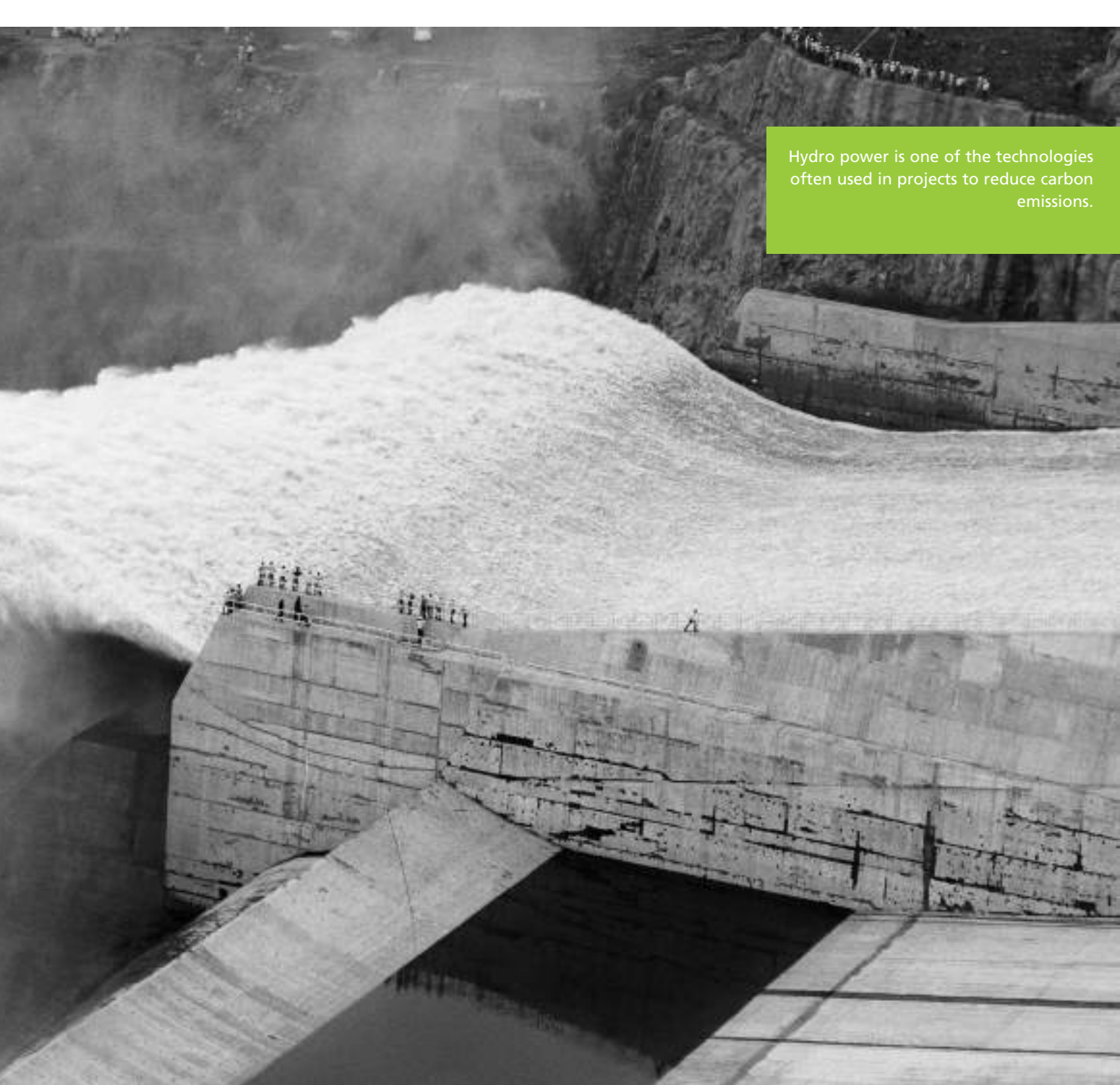
“With companies that aren’t required to do anything by regulation, there has clearly been a growing interest in choosing to address their carbon footprint,” says Vice President, Olivia Hartridge. “That’s partly because shareholders are beginning to

exert some pressure. And partly because customers are beginning to ask questions about the carbon intensity of the products they buy and the services they use.”

So in 2007, Morgan Stanley stepped in to make sure the reputations of the com-

panies taking voluntary measures would be safeguarded with high standards.

“A lot of the services that existed prior to the Morgan Stanley carbon offsetting service were small scale services that weren’t guaranteeing a certain quality



Hydro power is one of the technologies often used in projects to reduce carbon emissions.

level,” says Olivia Hartridge. “In addition, the degree of transparency that existed, didn’t meet the level you’d expect in a regulated carbon market like the EU emissions trading scheme. There’s no particular reason why you can’t meet that regulated market standard. In fact, it’s in large brand names’ interest to meet the standard of the regulated carbon market because otherwise they are taking a risk with their reputation. We decided to launch the offsetting service as a means of

filling that gap and meeting the needs of our customers.”

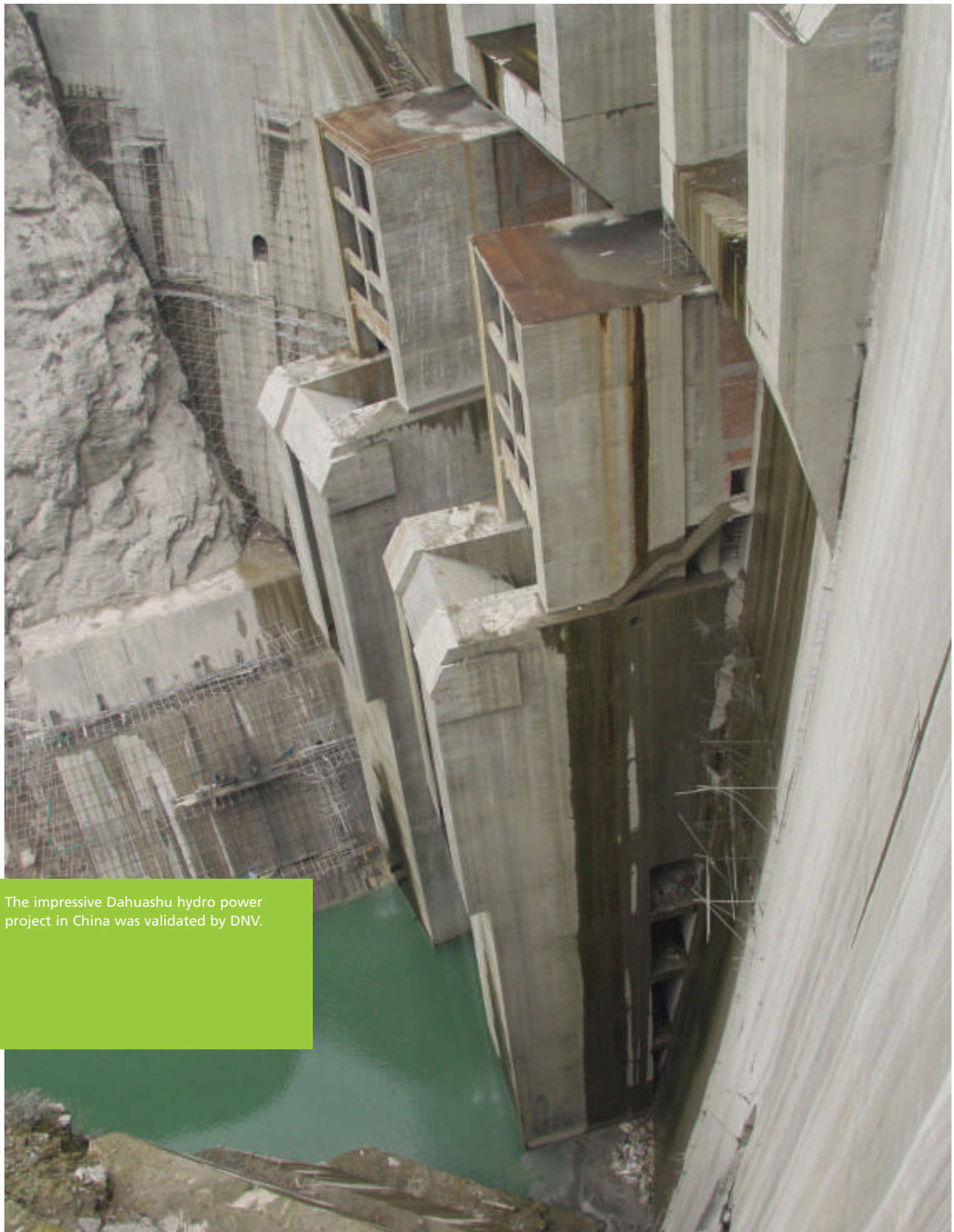
There has also been a growing concern that not setting standards of quality in the voluntary market would lead to the perception that there was a problem with carbon trading in general.

“People were getting confused between the voluntary and regulated carbon markets and thinking there was a problem with the carbon market as a whole, which isn’t the case,” says Olivia Hartridge. “That

confusion was dangerous because if you damage people’s faith in the regulated carbon market, you’re dealing a hammer blow to the best chance we have of dealing with climate change cost effectively.”

THE DNV CONNECTION

DNV is involved in the verification stage of Morgan Stanley’s carbon offsetting service. After assessing the customer’s emissions inventory (their current emission sources) DNV verifies the total greenhouse gas



The impressive Dahuashu hydro power project in China was validated by DNV.



"The imposition of impartially administered and verified standards is a key to any market. DNV is well positioned to provide that service in the carbon market," says Managing Director at Morgan Stanley, John Woodley.

"I think there's been a real seismic shift in the way in which people think, and the way they think about energy and the future," says Vice President at Morgan Stanley, Olivia Hartridge.

emissions from this inventory (their current carbon footprint). Morgan Stanley will then ensure that high-quality carbon credits equal to the verified carbon footprint are procured and cancelled on behalf of the customer. DNV is also often chosen by project developers to validate the design of an emission reduction project and/or verify the total quantity of carbon credits generated by that project.

Throughout each step of a customer offsetting its carbon footprint, and for each emission reduction project in the carbon market, maintaining DNV's independence from both Morgan Stanley and the customer is critical. As Managing Director, John Woodley, says, "The implementation of impartially administered verification standards is key to any market. DNV is well positioned to provide that service in the carbon market."

"We work together through the carbon offsetting service in providing an A to Z service that meets international standards," continues Olivia Hartridge. "But part of

meeting those international standards is that both of us maintain our distance and DNV maintains its independence. It's extremely important that when a verifier does its job, it does so completely independently. That's why DNV has such a high reputation. DNV's independence from Morgan Stanley and the customer is 100% protected throughout our carbon offsetting service."

EMPOWERING PEOPLE

As he gets more in depth on what effect the carbon market has globally, John Woodley's passion about it is evident.

"The concept of real investment for real projects and real value transfer to less developed regions of the world, to communities that otherwise would be largely dependant on aid... it's fantastic," he says. "It's a far better result than simply providing aid. We're providing real value to the world at large. It's a wonderful result."

Olivia Hartridge continues where he leaves off. "Carbon flows are likely to be much more financially meaningful than aid

flows in the future, should a global carbon market develop," she says. "In fact, they already may be in some parts of the world.

"To give an example, there is a community of farmers in India that are now aware that manure and waste biomass have monetary value, whereas before, it may have just been dumped. Now they are apparently watching to see where the price of carbon is when they charge a price to the local utility for the biomass, which burns it in place of fuel in order to sell those emissions reductions into the EU."

"It's empowered them in a fantastic way," says John Woodley, "giving them meaningful negotiating power with a local utility. Now local farmers know that if the local utility doesn't give them fair value they could go elsewhere and get someone else to fund a project that they could, as a community, own and operate.

"A general interest of ours is bringing a level of simplicity and faith in markets," he summarises, "both for participants and regulators, and for the public at large."



"It's an effective partnership," says MGM President and Chief Executive Officer, Marco Monroy. "Morgan Stanley is a world class financial institution and we are knowledgeable about the development and implementation of projects."

A partnership in innovation

Morgan Stanley is a partner and part owner (38%) of MGM International, a global organisation specialising in the development and commercialisation of projects that reduce greenhouse gas emissions.

"It's an effective partnership," says MGM President and Chief Executive Officer, Marco Monroy. "They are a world class financial institution and we are knowledgeable about the development and implementation of projects. For example, one difference between us is that they take the financial risks in guaranteeing credits, while we work more in the field, bringing

new types of projects to the primary market."

MGM International works on the technical side to the carbon credit market, helping its clients to recognise and monetise established types of emission reduction projects, as well as working on innovative types of projects which are new to the carbon market. Morgan Stanley often

provides the financial backing needed to bring these projects to completion.

"We're very proud to work with Morgan Stanley," continues Marco Monroy. "Together, we are in the forefront of the market and will continue to contribute through innovation."

No solution without CCS

Carbon capture and storage (CCS) will become a trillion dollar business in the future, reaching the same scale as today's oil business. However, normal market mechanisms will not work. Governments must provide incentive schemes in order for CCS to take off. **TEXT: PER BUSK CHRISTIANSEN PHOTO: ELISABETH TOLLISEN**

These were some of the clear conclusions stated by Lord Oxburgh, the former chairman of Shell who now works in numerous energy and environment organisations, when he addressed the Global Leadership and Technology Exchange forum in Oslo in April.

Coal stands for 40% of CO₂ emissions from fossil fuels and, for geopolitical reasons, coal will remain a vital energy source for a long time because it is available in the US, China and India. Lord Oxburgh underlined that, although not a solution on its own, there is no way to achieve the desired emission cuts to stop global warming without capturing and storing CO₂ from coal-fired plants – at least as a transitional solution for about 50 years or so.

Says Lord Oxburgh: "There is no doubt that CCS is too expensive today to become a viable solution. It will lead to a 30% increase in electricity costs and requires a 20-25% increase in the physical footprint of power plant facilities. But the technology is immature and can only improve by the installation of demonstration plants so that we can learn how to make it more efficient."

A NEW BONANZA

For CCS to really take off, one solution suggested by Lord Oxburgh is to make it cheaper for emitters to apply CCS than to pay the carbon price. The point at which



"It's impossible to reach our global CO₂ reduction targets without carbon capture and storage," says Lord Oxburgh, the former chairman of Shell.

CCS will become economically viable is when a stable carbon price of around 60 Euros per tonne is reached. That will not happen overnight, so other mechanisms and some brave action on the part of politicians are required. And these are already much overdue, says Lord Oxburgh, who leaves us in no doubt that the CO₂ accumu-

lation in the atmosphere is most certainly causing rapid and dangerous climate change.

Once CCS does take off, it will be a billion dollar market, and international oil companies are well positioned to take part in a new bonanza.



“We have to push, push and push”

“It’s urgent to make CO₂ capture and storage become a reality,” says Chris Davies, a British Liberal Democrat who is a Member of the European Parliament and its Environment Committee. TEXT: HARALD BRÅTHEN PHOTO: LAURENT POMA

Chris Davies is impatient. He wants action. He wants to see the directive adopted in record time before the European elections in June 2009. “The European Parliament and Council of the EU have to find rapid agreement on the proposals from the Commission,” he says. He was recently appointed as a Reader to the Parliament for a directive on the geological storage of CO₂ (the ‘CCS directive’), following a proposal by the European Commission. The CCS directive aims at allowing and regulating the capture of CO₂ from industrial installations and its storage into suitable geological formations. On 23 January 2008, the Commission submitted a package of implementation measures for the EU’s objectives on climate change and renewable energy, which includes this directive.

“We don’t have much time,” Chris Davies states. “If we are to have the 10-12 full-scale demonstration plants that the EU has decided should be built up and running by 2015, we must hurry up. Even more so since the need for energy will just keep on increasing, and very many countries will then have to use coal- or gas-fired power plants that do not treat CO₂. This means the situation will become even worse before we can hope to reach a turning point and the laborious work of CO₂ capture and storage can start.”

He can see bright spots, both in the UK and in Norway, which he believes is at the forefront of both the political and technological developments in this area. The Netherlands is also supportive. In addition, he is very pleased that France has now fully joined the team, and he points to the joint

UK-France declaration following a summit earlier this year.

SUPPORTED BY SARKOZY AND BROWN

President Sarkozy and Prime Minister Brown state that they will together undertake joint work to accelerate the development and deployment of Carbon Capture and Storage (CCS) in the EU through an agreement on a CCS Action Plan during the French EU Presidency.

“We call for the Commission to bring forward a proposal for a mechanism to deliver 10-12 demonstration plants by 2015,” say the two heads of state, who round off their common statement on Climate Change and Energy by declaring that “We agree to work together to promote CCS both inside and outside the EU, notably in China, through accelerating the

"If we are to have the 10-12 full-scale demonstration plants that the EU has decided should be built up and running by 2015, we must hurry up," says Chris Davies, who is a Member of the Environment Committee of the European Parliament.



'cooperation action within CO₂ capture and storage' and the Near Zero Emissions Coal Initiative ."

NO WAY BACK IN 20 YEARS

"Yesterday!" replies Chris Davies when we ask for the ideal date by which the demonstration plants should be built.

"We're already on overtime," he says. "I've spent most of my time during the past few months to get knowledge. I am in no doubt: we have to start now. In 20 years' time, there will be no way back. We have most of the technology, but we lack financing. We also still need a lot of political willingness to get this done."

Chris Davies has the task of gathering facts for the members of the Environment Committee, sharing knowledge and ensuring their support. He has talked to a lot of

people both outside and inside his busy Brussels office.

THE TECHNOLOGY IS HERE

"The row of lobbyists, politicians, firms, NGOs and others that have visited me to put their views forward, has been endless. I really appreciate that," he says. "That gives us an even surer foundation on which to make our decisions. I'm keen to get started. The final recommendation will be submitted to the EU Parliament this summer. The prime ministers of the countries in question have to go to their own industries and ask them to start work. Aker, Bechtel, Mitsubishi and others have the technology. Now it's up to us politicians to ensure the financial foundation and give the go-ahead. Once the quota trading starts, the enormous auction revenues that Member

States are expected to receive as from 2013 under the EU emission trading system, will provide sufficient funds for investing in the facilities we need. The total price of the test facilities is estimated to be Euro 11 billion. I will propose making the CO₂ treatment and storage mandatory for all energy production," says an impatient but optimistic Chris Davies.

Gazprom increases its environmental focus

“Introducing climate-friendly solutions is not a problem, it is an opportunity to achieve improved profitability,” says Gazprom deputy chairman, Alexander Medvedev.

TEXT: PER BUSK CHRISTIANSEN PHOTO: ELISABETH TOLLISEN



“Gazprom has started to make environmental management a priority,” says Gazprom deputy chairman Alexander Medvedev.

The place to start is to improve energy management. Russia uses 3.2 times more energy per GDP output than Europe, the Gazprom executive revealed as he addressed the Global Leadership and

Technology Exchange (GLTE), of which he is co-chairman.

GLTE is a business network, initiated, designed and facilitated by Xynteo, the Anglo-Scandinavian advisory group, and

in April top executives from leading global companies, including General Motors, Siemens, Microsoft and Indian conglomerate Tata, were gathered in Oslo to discuss growth solutions in a low carbon economy under the working title Total Energy Management.

As the world’s largest gas supplier, Gazprom has started to make environmental management a priority. Mr Medvedev, who is also in charge of Gazprom’s export activities, shared Gazprom’s three objectives for dealing with energy conservation: to reduce gas loss and consumption, optimise existing technological facilities, and introduce new energy-saving technologies.

MAKING GOOD BUSINESS SENSE

As pointed out by Gazprom deputy chairman Alexander Medvedev, 65% of all energy production globally is wasted somewhere in the process. With the oil price hitting record levels well above USD 100 a barrel, total energy management not only serves to curb CO₂ emissions – it also makes really good business sense.



DNV was well represented at the Global Leadership and Technology Exchange conference Total Energy Management in Oslo. Here is COO of DNV Energy Remi Eriksen in front of Gazprom deputy chairman Alexander Medvedev.

Gazprom has started a business programme that outlines targets for natural gas vehicles in Russia. This involves doubling the Russian fleet of CNG vehicles by 2015, replacing 2.5 million tonnes of fuel oil with gas, and reducing overall pollution by 1 million tce (tonne of coal equivalents).

In the climate change debate, gas is often mentioned as “just” a bridging solution from fossil fuel to a low carbon energy supply, but Mr Medvedev is, not surprisingly, convinced that new technology will make gas an attractive low carbon solution. And, entirely in the spirit of the Global Leadership and Technology Exchange forum, only collaborative innovation can meet the challenges of a low carbon economy, Mr Medvedev said. He pointed to several large-scale projects, such as Nordstream and Sakhalin, where Gazprom already relies on foreign expertise.

A DUAL CHALLENGE

“In the low-carbon economy, businesses face a dual problem. They will have to tackle new technology and new business models at the same time. The only way to deal with that is through collaboration,” Mr Medvedev said.

The climate change debate is heated and uncertainty prevails, especially among politicians. Interestingly, Mr Medvedev concluded by quoting his sports idol, Wayne Gretsky: “It has been proven beyond a shadow of a doubt that you miss 100% of the shots you do not take.”

! Facts about Gazprom

- The largest gas producer in the world
- Owns and operates the Unified Gas Supply System of Russia (UGSS) of approximately 155,000 km of pipelines, the world's largest
- Produces approximately 550 billion m³ of gas per year
- Supplies ca 25% of Western Europe's gas consumption
- Gazprom Group's proven gas reserves are estimated at around 29,1 trillion m³

! The Gazprom – DNV cooperation

- DNV participated in the European Bank for Reconstruction and Development sponsored analysis of the UGSS (1992-1995)
- DNV verified all phases and certified Gazprom-ENI's record breaking Blue Stream gas pipeline project across the Black Sea (1997-2002)
- Gazprom is member of DNV's pipeline committee, and uses selected DNV offshore standards as its corporate standards
- Gazprom – later Nord Stream AG – applies DNV's pipeline standard (OS F-101) Nord Stream, just as it was also for Blue Stream
- DNV is advising Gazprom and its partners on Shtokman related issues.

"The success of Gaz de France Norway will be measured by managing to operate the Gjøa field safely and efficiently from day one," says Managing Director Terje Overvik.

Facing huge challenges on Gjøa

Gaz de France Norway is about to carry out major, exciting tasks on the Norwegian continental shelf. Gjøa will more than anything else be an exponent of Integrated Operations.

TEXT: HARALD BRÅTHEN PHOTO: NINA EIRIN RANGØY

Terje Overvik took over as managing director of the French energy giant's Norwegian affiliate last year. Now he and his staff are facing huge challenges as those responsible for the operation of the Gjøa field when it comes into production in late 2010.

"Our success depends on whether we manage to operate Gjøa in a safe and efficient manner," says Mr Overvik.

ADVANCED – AND COMPLICATED

He describes the Gjøa field as an advanced and in part complicated field which will consist of Gjøa and an additional three satellite fields. Gjøa is one of the major projects to be developed in Norway after Snøhvit and Ormen Lange. It is a gas field with a thin oil rim located in the North Sea. Gaz de France Norway will take over from Statoil as operator when production starts in 2010.

As part of the cooperation with Statoil, Gaz de France Norway staff have been integrated into the project team, and their main

role is to provide operational input to the design and develop necessary systems, procedures and IT applications for the operations phase, in addition to recruiting personnel.

The export of oil is planned to take place through a new 53 km pipeline tied in to the pipeline going from the Troll C platform to the Mongstad terminal. Gas is planned to be exported through a new 130 km pipeline, ending up at the St. Fergus gas terminal in Scotland.

Mr Overvik was a key member of Statoil's staff when the project was established, and Statoil was responsible for developing the field. This is the first time Gaz de France is responsible for the operation of such a large offshore installation.

FOREFRONT OF MODERN TECHNOLOGY

Gjøa will be an exponent of integrated operations using advanced technology, efficient working processes and data management.

The Integrated Operations concept basically means that people offshore and onshore work closely together in order to make high quality decisions based on real-time data.

"The result has proven to be improved regularity and safer, more profitable operations," says Mr Overvik. He believes that more or less all the fields on the Norwegian continental shelf will invest in this way of working.

GREAT AMBITIONS

"We have ambitions to be in the driving seat for the area around Gjøa," he continues.

"Furthermore, in 2008, we will participate in approximately 5-6 exploration wells and be the operator of our first exploration well in 2009. In addition, we are in the midst of strong production growth. Norway will undoubtedly be important to us in the years to come."





OMV – towards world class safety

Within the last years a number of incidents occurred in the worldwide refinery business. International benchmarks show that OMV achieves top performance figures with regard to reliability and operational unit availability as well as occupational safety. In order to further improve this position OMV requested an independent assessment by DNV.

TEXT: **HARALD BRÄTHEN** PHOTO: **OMV**

OMV in Germany delivers fuel to 400 petrol stations that it owns – and aircraft fuel to Munich Airport, 100 km away, through a separate pipeline direct from the refinery at Burghausen.

As an integrated European oil and gas corporation, OMV has, within the past five years, become Central Europe's leading oil and natural gas corporation.

"OMV's strategy is to continue expanding our market position in the sectors of exploration and production, refining and marketing as well as gas," says Deputy Vice President Dr Dieter Tuppinger, Head of Operations at OMV's Burghausen Refinery in Germany.

"In doing so, we plan to extract half of the crude oil that we process ourselves. We will grow profitably, using our own resources and through selective acquisitions," states the OMV-veteran with a background of 16 years in the company. OMV was founded in 1956 by the Austrian State and is now Austria's largest listed company.

Dr Tuppinger: "The overall goal in 2002 was to double the safety performance results by 2008. Moreover, the goal has already been achieved in 2006. Our current ambition is to double it again by 2010."

STRIVE TO FURTHER REDUCE INCIDENTS

Within the past three years OMV has had a number of incidents at its refineries in Schwechat, Austria and Burghausen, Germany. Of 22 incidents reviewed, 11 resulted in external releases, eight of those were flammable releases, with three of them causing a fire.

"We had to discover the incidents' causes and find out which measures we could implement in order to reduce the number and severity of any future incidents. That was when we contacted DNV, as an independent and well respected worldwide company. Within the next years OMV will invest 640 million Euros in the Burghausen refinery. Our goal is to achieve world class performance in process safety before we will commission the new investments," emphasises Dr Tuppinger.

"We have always had a strong focus on occupational health and safety," he says. "Nonetheless, we have to sharpen our staff awareness of process safety, which is just as important."

GAP ANALYSES – AND A ROAD MAP

DNV examined the incidents in order to assess whether they were being caused by any systematic errors. Later, a root cause analysis was conducted at the OMV refineries in Schwechat and Burghausen. DNV interviewed a number of staff at all levels of the organisation as part of this project.

Further, DNV conducted gap analyses to create a road map to improve OMV's safety culture and tools. DNV also mapped the root causes against DNV's well-known model of management systems of excellence, called ISRS7 - which adopts 15 management processes.

"Our experience is that DNV has its finger on the pulse worldwide. The ISRS system is based on real experiences, covering thousands of incidents, and has been used throughout the world to improve ways of avoiding incidents," says Dr Tuppinger.

The results of the DNV analysis highlight business risks and risk evaluation, human resources, project management, risk control, asset management, and contractor and supplier management as areas for further improvement.

"The improvement projects we have now initiated will enable us to anticipate nearly everything. A total of 70 OMV staff have been allocated to follow up nine improvement projects."

NECESSARY CHANGES AT ALL LEVELS

"Some things have already been significantly improved. Others can be further improved quite quickly, whilst some developments may take longer. However, there is no guarantee that further incidents will not occur, as it will take time for some of the proposed changes to take effect. It is also important that the refinery staff see the desire for change, driven by senior management, and see the issues being addressed. They will also need to be encouraged to raise their levels of awareness and control whilst the changes are being implemented," Dr Tuppinger points out.

"Unfortunately, there are also weaknesses in the contractors' competencies. We have

to check both the contractors and the quality of their work. Business is also moving ahead faster and faster."

COMMUNICATION AND INVOLVEMENT

Internally, separate goals will be set for all departments. Moreover, communication and involvement will be two key words. "We must inform and involve the operators and the contractors, since we need their contribution."

It will also be important to avoid losses. There is a price to be paid for non-conformance, and we have to report what is lost and why. We will communicate our findings to all our staff as part of the work of avoiding incidents and losses. The greatest challenge will be to further strengthen OMV's safety culture, so that it is open to new ideas whilst complying with existing guidelines," says Dr Tuppinger.



DR DIETER
TUPPINGER

Deputy Vice President,
Head of Operations at OMV's
Burghausen Refinery

! Facts: OMV

- Austria's largest listed industrial company
- Leading oil and gas group in Central Europe
- Explorations and production activities in 20 countries on five continents
- 41,000 employees

Quality counts

Etisalat is one of the leading telecom operators in the Middle East. Central to its success is its focus on quality products and customer service management.

TEXT: **STUART BREWER** PHOTO: **DIGITALVISION**

Illustration photo



“Over the past few years we have received international recognition and awards both in the Middle East and North Africa. Such achievements are only possible through our commitment to providing quality products and the highest level of customer service,” says Abdulla Jaddah, Vice President of Etisalat’s corporate quality division.

Abu Dhabi-based Etisalat is renowned for the quality and number of its services, which include mobile and fixed telecommunications and internet. The corporation manages and operates a number of networks on a regional and international level and currently has 20 million mobile phone users. It is the second-largest Arab telecom company by market value.

THREE CORNERSTONES

The desire to become the ‘best combination’ in the telecommunications sector in terms of growth and profitability is based on the three cornerstones of customer service, innovation and quality products.

“Telecom customers today are more demanding than ever before,” says Mr Abdulla, “They want products, service and solutions that reflect the latest in technology, are tailored to their needs and affordably priced. Etisalat has now put in place the vision, tools and channels to address our customers’ needs,” he says.

Etisalat has taken important steps to ensure the quality of its products. For the past seven years, DNV has certified its quality management system according to the ISO 9001 standard.

“Basically, quality management is what companies practice to ensure that their procedures conform to the customer’s

requirements. Moving away from ad hoc processes gives our customers, like Etisalat, an overview that makes their internal processes easier to manage, measure, and improve. It’s the first step on a journey towards continual business improvement,” says Torger Baardseth, DNV’s country manager in the Middle East, and adds, “Etisalat is constantly looking for ways to improve its efficiency and services. Their achievements represent a hallmark which other telecom operators throughout the region are also trying to achieve.”

“We operate in several countries so it is important that our products and systems are certified according to international standards that are recognised and accepted in the markets we serve,” says Mr Abdullah.

EXPANDING OPERATIONS

Entering new and promising markets is an important ingredient of Etisalat’s expansion plans and is the driving force behind the corporation’s ambition to be among the top telecom operators in the world. A major step in this direction was taken through its success in winning the third mobile telecommunications network (GSM) license in Egypt last year. Etisalat expects to almost double the number of its mobile users to 40 million as it expands in 17 other countries, including Egypt, Pakistan, Nigeria and Saudi Arabia.

Other international investments are also showing positive signs. More than 9 million subscribers have now signed for Etisalat’s Mobily services in Saudi Arabia. This is a noteworthy achievement given that the Saudi population is only 27 million.

Atlantique telecom’s (owned by Etisalat) expansion into the Ivory Coast

has been equally successful. Almost 700,000 subscribers representing a 21% market share was achieved in the first six months of service. Significant changes are also underway in Pakistan Telecommunication Company Limited (PTCL) to streamline and modernise operations. Mr. Ahmad Bin Ali, Vice President of Etisalat’s corporate communication department, firmly believes that continued improvement and change will place this company, also owned by Etisalat, in a position to fully realise the immense potential of the telecoms market in which PTCL operates.

“We strongly believe that overseas operations such as these will boost Etisalat’s profitability, strengthen its regional and international presences and add more value for the corporation’s stakeholders,” says Mr Ahmad Bin Ali.

Etisalat’s activities are translating into record revenues and profitability. 2006 revenues totalled AED 16.3 billion, representing a 27% increase over 2005.

While emphasising the importance of quality and customer service management, Mr Ahmad Bin Ali is also quick to praise the efforts of Etisalat’s entire workforce.

“Our success would not have been possible without their hard work, dedication and loyalty,” he says and concludes, “We have seen that our tailor-made services and solutions, both in the United Arab Emirates and overseas markets, are widely appreciated by our customers and we will work hard to deserve their trust and confidence in the future.”



Quality pays dividends for Arcadia

The Greek shipowner Arcadia was named as the Greek “Tanker Company of the Year” 2007 by the shipping newspaper Lloyds List in London.

TEXT: **PER WIGGO RICHARDSEN** PHOTO: **ARCADIA**



"I want to share the award as Tanker Operator of 2007 with all of Arcadia's employees," says managing director Nikolaos I. Manias (second from left). Here he is together with his management team (from left) Dimitrios Mattheou, Haris G. Giantzikis and Takis Polyzogopoulos.

Arcadia's success is based on hard work and a clear strategic goal of being a safe and environmental friendly transporter of cargoes worldwide.

Arcadia Shipmanagement was established in 1998. At that time its main focus was on wet cargoes. Although it has not yet celebrated its 10th anniversary, the company has its roots in an old shipping family and in the Greek shipping tradition.

Today the fleet contains 14 large oil tankers and one smaller product tanker.

When DNV Forum met Arcadia's managing director, Nikolaos I. Manias, in May, he emphasised that quality and safety had been the company's main focus during these first ten years.

"I was proud when Arcadia received the award as "Tanker Company of the Year" 2007, but I'm even more proud of what lies behind this award. What all our employees – from the youngest cadets, via

the masters sailing on our ships to the top management onshore – have achieved to win such an award," he said pointing at teamwork as another key word for the company.

NO PORT STATE DETENTIONS

Arcadia has for the past five years had zero accidents, and none of the vessels have been detained by Port State authorities.

Haris G. Giantzikis, the technical manager, elaborates on the port state figures: "These figures show that 0.12 observations is the average result in the whole Arcadia fleet's port state control books. In other words – nine out of ten times when the authorities have made an unannounced inspection to one of our ships, there has been no comment at all. On the tenth inspection, there was one observation."

While some of Arcadia's competitors and newcomers in the tanker market have

increased their fleets when old vessels have come up for sale, Arcadia has contracted new vessels, mainly from Korean yards.

"To my knowledge, we had the biggest shipbuilding programme for tankers of more than 100,000 dwt last year. Six large tankers were delivered," explains Mr Manias, adding that in addition to a new and properly maintained fleet a well educated and trained crew is also of vital importance.

ENVIRONMENTAL FOCUS

A certified training centre and certified quality and environmental management systems are also in place. Arcadia has had an environmental focus the last years, which ranges from handing out free tickets for buses and the tube to its staff, to running advanced technical programmes to discover how fuel consumption and thus emissions to air can be reduced.



Frank Bird may have died last summer, but his thoughts and ideas live on. Total Petrochemicals firmly believe in his safety management principles. In fact, these principles are foundational in how Total Petrochemicals globally approaches safety and loss control today. The company is convinced these ideas are as appropriate today as they were 40 years ago when Frank Bird first launched them. **TEXT: HARALD BRÅTHEN PHOTO: LAURENT POMA**

“The reason for this is quite simple,” says Pol Hoorelbeke, the Vice President of Health, Safety and Environment in Total Petrochemicals in Brussels. “Good safety results come from doing the right things,

and doing things right. First you must know what these ‘right things’ are, and then you must concentrate on doing them. DNV’s Modern Safety Management concepts training course, and the International

Safety Rating System that measures compliance with the concepts, were developed from the thoughts and ideas of Frank Bird. These systems are very logical,” says Mr Hoorelbeke.

"The future is determined by human behaviour but is not independent of the systems. People start to see the system as a process for improvement and, instead of forcing people to work in a system, we in Total want to make it a process to improve safety – thus achieving cultural-based safety," says Pol Hoorelbeke, the Vice President of Health, Safety and Environment in Total Petrochemicals in Brussels.

15% REDUCTION EACH YEAR

"It really is very clear. When a company like Total Petrochemicals manages to reduce its number of accidents during a five-year period by 15% each year to 75 accidents last year, there is no doubt that the 'medicine' has worked. We're still not happy about 75 accidents, but we're nonetheless proud of what we've achieved.

Following a merger in 2001, Total became one of the five largest oil and gas companies in the world. Analysis showed the company's safety performance was not in line with the performance of the other major oil companies. Then senior management placed a high priority in improving the safety performance.

"Senior management challenged us to not only be among the best, but be the best in overall safety performance" says Pol Hoorelbeke. "Demonstrated senior management commitment played a large part in our success."

An important step in the improvement process was the development and implementation of an integrated management system that included the principles of ISO 14001, the Seveso legislation, the Process Safety Management regulations in the US, and Total's own, internal requirements.

CROSS-AUDITS

In addition to the external audits, Total conducts regular internal audits.

"We want to ensure our systems are effective and efficient at all times, so we monitor them closely. During these internal 'cross audits', we use internally trained auditors from other sites. This provides learning across our site boundaries, and has proven to be very useful. We have about 20 Accredited Safety Auditors within the company. These people are among our most experienced," he says.

Working in partnership with DNV and based on the ISRS/Modern Safety Management model, Pol Hoorelbeke and his team have held training courses for several thousands employees company-wide.

"Not only have we achieved great audit results, our culture has also started to change," says Mr Hoorelbeke. He particularly mentions a plant where the staff has worked for two million hours without a recordable accident, and a project on which employees have worked for 10 million hours without recordable accidents.

CHANGE OF CULTURE

"The results speak for themselves," he says. "However, if we are to improve, we must

continue to change our culture. Frank Bird's safety principles are critical. He showed that for each significant accident you have, there were 600 near misses. In order to control the major loss events, you must concentrate on the root causes for not only the major accidents, but also on the causes for the 600 incidents. When you explain this to people, it's very easy to understand" says Pol Hoorelbeke and continues; "Frank Bird was successful because he took a collection of basic principles, and brought them together. He made them simple and easy to understand. Anybody could have done it, but nobody did it before he did," says Mr Hoorelbeke. He points out that Frank Bird built a whole business around his principles at the International Loss Control Institute (ILCI). DNV saw the importance of this, and acquired ILCI in 1991. DNV continues to develop and improve these risk management principles today to meet the needs of current and future clients.

"Excellence in safety, environmental and security performance affects the bottom line. But it shows we value our employees, the environment, and our reputation as well," says Mr Hoorelbeke.



Frank Bird: 'The consummate safety professional'

Frank Bird, who died last summer, was the founder of International Loss Control Institute (ILCI), and had a unique position in the field of safety management. With nearly 40 years of experience as president of ILCI, a lecturer, author and recipient of numerous awards from international industry, Frank Bird was, according to the National Safety Management Society 'The consummate safety professional'.



Shipping's environmental shopping list – shouldn't we be watching our diet?

It's all go on the environmental front. The regulators are back with a new shopping list for shipping and they're in a hurry.

Let's start with the easy bit, what the regulators want. Ship emissions of carbon dioxide, sulphur and nitrous oxide are on the "most wanted" list along with the practice of transporting organisms in ballast water between regions; use of toxic SPC paint systems; and selling old ships to Bangladesh and Pakistan demolition yards to be dismantled in appalling safety conditions which pollute the environment. That's basically what they want at the moment.

Will it happen? With 160 maritime states, the regulatory process is driven by horse trading as well as horse power. It all takes a long time, during which time shipowners are left in limbo, wondering what they should build into their new ships. Anyway the new regulations on ship emissions, for example sulphur, are being debated at a time when the industry already has an order book of 9,000 ships representing 47% of the fleet in tonnage and worth \$500 billion. Deliveries stretch into 2011 and nearly all were ordered before emissions became a hot topic. Worse still, we don't have reliable statistics to monitor how shipping's environmental footprint is changing.

Customers are another problem. The companies who import cargo are still light years from the compromises which would allow the shipping industry to produce the major emission savings. One effective way to reduce carbon emissions would be to operate ships more slowly, but the new generation of super-container ships are

all designed for service speeds of 25 knots, absolutely at the top end of the speed range. Fast transit times and the ability to meet fixed day schedules are still the crucial competitive issues.

Another shocking solution would be to ship less cargo. Do we Europeans really need two tonnes of cargo per person every year? Maybe not, but try telling that to investors who spent \$187 billion on ordering new ships last year. Globalisation is still much higher on the agenda than the environment. The global world ships an extra 350 million tonnes of cargo a year and the consensus, whether on oil, iron ore or containers, is that it will be a lot more in future.

Then there are the suppliers. Many shipowners would love to burn low-sulphur bunkers, and would be willing to pay a reasonable price, but when will they be available? That is a matter for the bunker suppliers, more than the shipowners. The refinery investment would be massive, or so we are told. The problems faced by tanker owners over many years concerning the availability of facilities for emptying slop tanks is a small example of this sort of problem. The world is a big place, and "it takes two to tango in the regulatory dance".

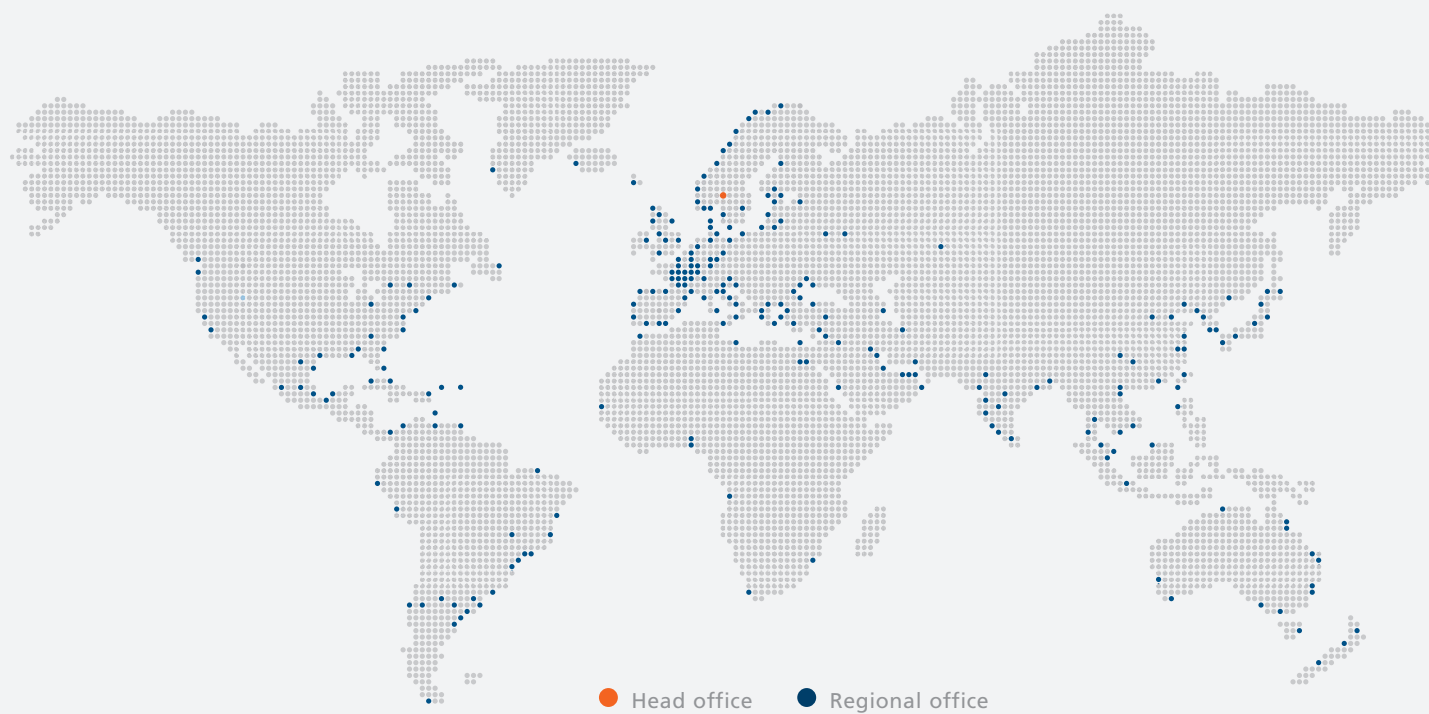
If things could be left to marine engineers and naval architects it would be easy. They would define new goals; develop new designs; and the objectives would be achieved. But unfortunately the regulators have to get 160 nations to agree on the goals, which make it a trickier because the

world still wants to have its cake and eat it. So next time you think about the new maritime regulations use the "acid (sulphuric, obviously!) test" – "Are we really making progress towards the goal?" If you think the answer is "no", then maybe your company should be defining its own goals and making its own tougher rules. We all know it makes sense.

MARTIN STOPFORD joined Clarksons in 1990 and was previously a Vice President at Chase Manhattan Bank and a Director of British Shipbuilders. He was appointed to the Board in September 2004. He is also head of Clarkson Research.



DNV worldwide



DNV IS A GLOBAL PROVIDER OF SERVICES FOR MANAGING RISK.

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EDITOR
Eva Halvorsen
Tel: +47 67 57 97 19
eva.halvorsen@dnv.com

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