

# DNV Forum

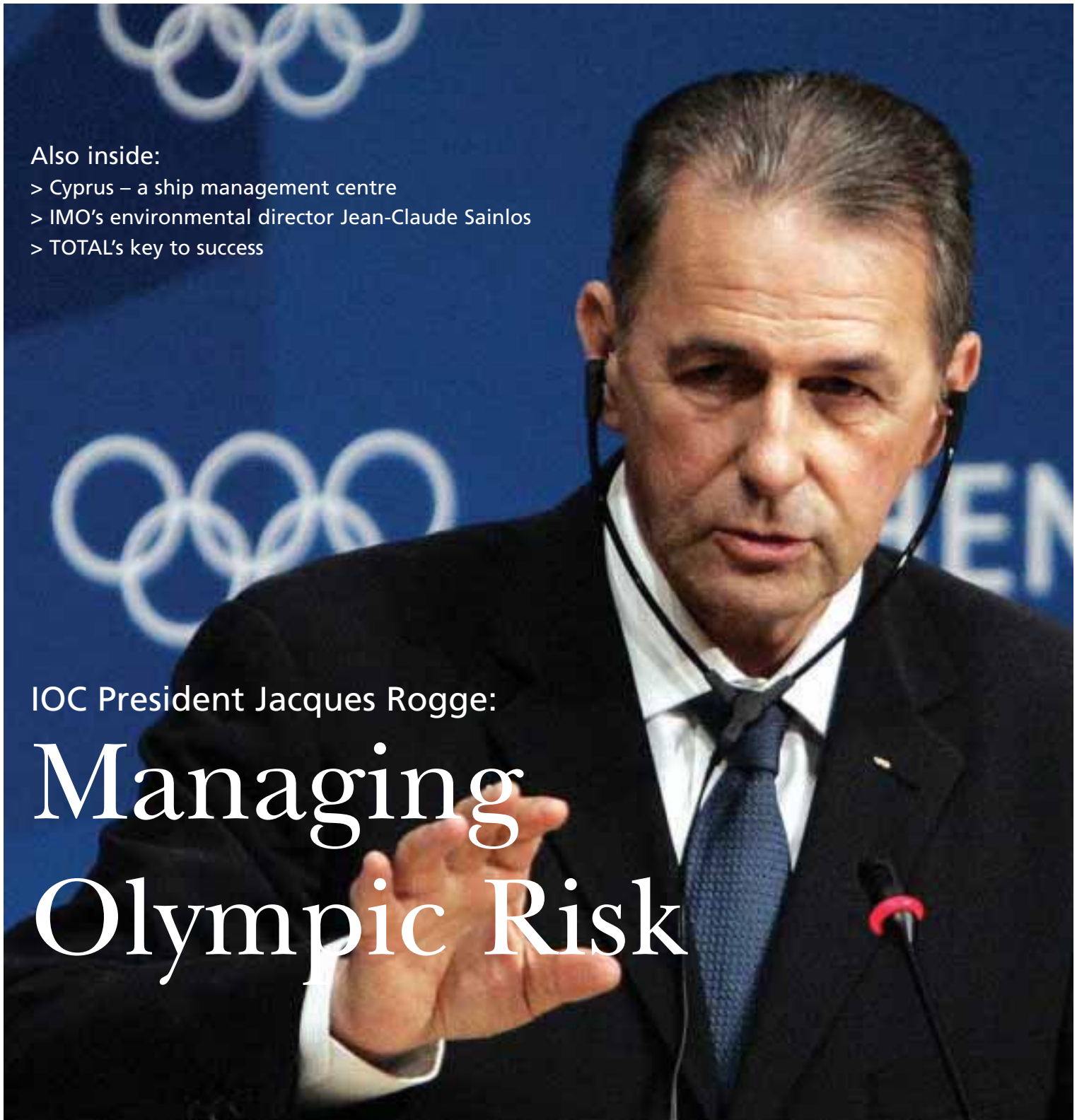
no 01 2006

Also inside:

- > Cyprus – a ship management centre
- > IMO's environmental director Jean-Claude Sainlos
- > TOTAL's key to success

IOC President Jacques Rogge:

## Managing Olympic Risk



# contents



02



14



20



32

- 01 Editorial
- 02 Jacques Rogge: Safeguarding the magic of the rings
- 08 Cyprus: Why winter is the talk of Cyprus
- 11 Cyprus: A ship management centre in the sun
- 14 Jean-Claude Sainlos: Taking the environment seriously
- 17 Embracing Green Passports
- 20 TOTAL's key to success
- 24 Nokia: Mobile quality delivered
- 26 EMAS: The EU takes the green lead
- 28 Quality is the guiding light for OSRAM
- 32 DRÄGER: Technology for life
- 34 Rotterdam Port ready for LNG
- 36 European land-based transport: Preparing for the unthinkable
- 38 Maritime research finds new applications
- 42 China: Building for the future
- 48 Last word

# The fight for talent

Competence – or rather competent people – is a prerequisite for any company or organisation with ambitions. Never before has the fight for talent been tougher than we see it today. The lack of well educated, skilled and experienced people represents a limiting factor for companies in a broad spectrum of industries.

The lack of relevant competence also represents an increased risk with regard to safety, quality and overall performance. In the maritime industry, we have been involved in competence mapping and assessments which have revealed there is a gap between documented competence and what is actually displayed in tests. This represents a risk that needs to be managed in order to improve safety and reduce operational problems.

One of DNV's goals is to "acquire, develop and share knowledge and apply it to enhance value for our customers". The value of our knowledge and experience to our customers, and society at large, depends substantially on the uniqueness and applicability of this knowledge and experience. This has been and will continue to be a main priority for DNV, based on our core competence of identifying, assessing and managing risk.

The global fight for talent will remain one of the most challenging management issues for international, competence-based companies. The demand for competent and well educated individuals seems insatiable.

DNV's position depends on our people and their competencies. Our aim is to help our customers safely and responsibly improve their business performance. This can only be achieved by managing the new risk reality in different facets of sustainable development.

**"THE DEMAND FOR COMPETENT AND WELL EDUCATED INDIVIDUALS SEEMS INSATIABLE."**



*Henrik O. Madsen*

HENRIK O. MADSEN  
President and Chief Executive Officer



“Progress has been made in the revision of the Olympic Programme and the Olympic Games Study Commission. The understanding and acceptance of both concepts clearly shows a change of mindset that is key to the future evolution of the Olympic Movement and to maintaining the magic of the Olympic Games,” says IOC President Jacques Rogge.

# Safeguarding the magic of the rings

While enforcing the zero tolerance policy against threats such as doping, unethical behaviour and corruption, Jacques Rogge must also ensure the financial stability of the Olympic Movement so that it can contribute to the development of sport worldwide.

TEXT: **EVA HALVORSEN** PHOTO: **IOC**

By profession Jacques Rogge is an orthopaedic surgeon, but he gave up those activities a long time ago to dedicate his time to the International Olympic Committee (IOC). Having been brought up in a family that took part in and loved sports, he started practising sports at an early age. He turned to sailing as they were living close to the sea, and he quickly started to take part in competitions.

“I must say I was a modest athlete,” he says, although he competed in the sport of sailing at the Olympic Games in Mexico in 1968, Munich in 1972 and Montreal in 1976 and was also a member of the Belgian national rugby team.

After Montreal, he assumed his sporting career was over but he was asked to join the administrative council of the Belgian National Olympic Committee.

“I discovered what is involved in making sport possible, finding the money, coaches, the structure, identifying talent – all this fascinated me,” he explains. He quickly became Chef de Mission of the Belgian Olympic team. In 1989, he became president of the Belgian Olympic Committee, and in 2001 he was elected IOC President.

## **OLYMPIC CONGRESS IN 2009**

*“You are the president of a global organisation with a large number of stakeholders. What is your schedule for the next few years?”*

“We will be preparing for the election of the host city for the 2014 Olympic Winter Games. This election will take place in Guatemala City in July 2007. Besides this, we will be preparing for the Olympic Congress that I have decided to stage in 2009, which is a good time to reflect on

the future of the Olympic Movement,” says Jacques Rogge.

Next year, he will monitor the implementation of the Olympic Games Study Commission’s recommendations to control the cost, size and complexity of the Games without affecting their quality. He is pleased to see that a lot of progress has been made in this area.

Needless to say, a lot of efforts are deployed to help Organising Committees during the seven years leading up to the staging of the Olympic Games. For this purpose, the IOC created the Olympic Games Department and put in place a full range of management tools, such as an efficient knowledge-transfer programme and an Olympic Games Global Impact study that looks at the legacy of the Games.

“The IOC works on an on-going basis with the Organising Committees and there

SPORT IS A UNIVERSAL LANGUAGE  
AND PLAYS THE ROLE OF A CATALYST  
FOR IMPROVING THE QUALITY OF LIFE  
AND SENSE OF WELL-BEING IN TODAY'S  
SOCIETY."

JACQUES ROGGE



are periods when we oversee the preparations of four Olympic Games simultaneously," he explains.

#### **OLYMPIC SOLIDARITY**

The IOC also carries out a series of activities that are often overshadowed by the attention given to the Games and are therefore less well known to the general public.

"An example of this is the promotion of the Olympic values through the work carried out by Olympic Solidarity and commissions such as 'Women and Sport' and 'Sport and Environment', and the

joint efforts made with the United Nations to help refugees and raise awareness of diseases like AIDS among the sporting community. This is an important part of the Olympic Movement," says Jacques Rogge.

*"The IOC is supposed to be managed with a reasonable economy but with no owners. Its decision-making body is chosen from among its interest groups and its driving force is a set of ideals. How is it possible to manage to get such a complex organisation to move in one common direction?"*

"Of course, we all share the same goal, that of staging successful Olympic Games," says Jacques Rogge. He adds: "In order to achieve this, the IOC meets all of its stakeholders on a regular basis in order to exchange ideas with those who live sports on a daily basis, to acknowledge the progress that has been made in many areas, and also to grasp the issues that need to be addressed and in which the IOC can help."

As an example he mentions the IOC Executive Board's convention this April in Seoul where a range of Olympic bodies held meetings.



Photo: Clive Rose/Getty/AllOverPress

“It was interesting to see the sense of unity that came out of these discussions with the various stakeholders of the Olympic Movement and the progress that has been made in the two defined key areas: the revision of the Olympic Programme and the Olympic Games Study Commission,” says Jacques Rogge, continuing: “The understanding and acceptance of both concepts clearly shows a change in mindset that is key to the future evolution of the Olympic Movement and to maintaining the magic of the Olympic Games.”

#### **THE ENVIRONMENT IS A THIRD DIMENSION**

*“In recent years, the IOC has focused on the environmental aspect when arranging the Olympic Games. As an example, the Games in Beijing are expected to be the most environmentally friendly Olympic Games ever. Can the IOC be a catalyst in creating positive environmental developments – even after the Games – at the places where the Games are held?”*

“The Olympic Games are above all about sports and the athletes, but they can lead to several important environmental outcomes if they are planned, managed and conducted in a way which minimises

adverse environmental impacts,” says Jacques Rogge, continuing: “The IOC is very committed to its responsibility to promote sustainable development and towards the environment as the third dimension of Olympism, alongside sport and culture. The IOC has for instance been working with the United Nations Environment Programme (UNEP) for over ten years.”

#### **‘GREEN GAMES’ A REALITY**

After Agenda 21 was created at the Earth Summit in Rio de Janeiro, the IOC decided in 1999 to establish its own Agenda 21



to encourage its members to participate actively in sustainable development. With this in mind, the IOC ensures that the Olympic Games take place in conditions that take sustainability into account and aim to put sport at the service of humanity.

The Games can also be used to provide sustainable environmental legacies, such as rehabilitated and revitalised sites, increased environmental awareness, and improved environmental policies and practices. Positive outcomes and legacies such as these are being achieved throughout the processes leading up to the Games and through IOC requirements and policies. This means that the “Green Games” concept is increasingly becoming a reality.

#### HUMANITARIAN INVOLVEMENT

*“The IOC also wants to contribute to the peace aspect. It is a global player in promoting social interaction between people. It builds strategic partnership alliances with other great global players, such as the UN and the Red Cross. What are your thoughts about this?”*

“The sports movement, which is an integral part of society, is both affected by and concerned about society’s main social and economic issues and contributes to this global effort through its main field of expertise: sport. More than ever, sport is a universal language and plays the role of a catalyst for improving the quality of life and sense of well-being in today’s society,” says Jacques Rogge.

The IOC has developed a comprehensive programme using sports development as a tool for local socio-economic development and for humanitarian assistance; it implements and supports numerous projects at field level, in cooperation with organisations that specialise in humanitarian aid and National Olympic Committees, in order to improve the lives of underprivileged communities worldwide.

#### REVIEW OF THE OLYMPIC PROGRAMME

*“How will you further develop the IOC so that it preserves the Olympic ideals while at the same time developing in line with the rest of society?”*

“The IOC acts as the guardian of the Olympic Games; this means not only ensuring the quality of the world’s greatest sporting event, but also acting as a custodian of the inspirational values the Games convey to all those they touch,” explains Jacques Rogge. In this role, the IOC follows a strategic policy to maintain and develop the excellence of the Games and to ensure they continue to inspire future generations.

A key element of this is the Olympic programme, or the menu of sports which make up the Games. The IOC has put in place a mechanism which allows the programme to be reviewed and, if necessary, changed so that it remains fresh and relevant for the youth of tomorrow.

“We reached a landmark in Singapore last year, when the Olympic programme

was reviewed and the IOC members made history by voting for change for the first time in almost 70 years,” he says.

*“In the same way as DNV, the IOC is strongly dependent on its credibility and international standing. Political and financial considerations must always be balanced against sporting considerations and the Olympic ideals. What are the greatest challenges for the IOC’s president as an international top executive in such a setting?”*

“Two of the IOC’s primary missions are to ensure the regular celebration of the Olympic Games and to oppose any political or commercial abuse of sport or athletes. Ensuring the independence of the Olympic Movement is important to us. The challenge lies in the fact that we must serve the interest of sports while understanding the world in which we live,” says Jacques Rogge, underlining that we must also not forget that the Olympic Movement needs the help and support of governments in some instances, such as for security at the Olympic Games or in the fight against doping. At the same time, the IOC relies on its commercial partners to provide the funding necessary to promote sport worldwide.

“My role is to ensure that the right balance is found and that the interests of sport and the Olympic Games are preserved,” concludes the IOC president.

“THE OLYMPIC GAMES ARE ABOVE ALL ABOUT SPORT AND THE ATHLETES, BUT THEY CAN LEAD TO SEVERAL IMPORTANT ENVIRONMENTAL OUTCOMES IF THEY ARE PLANNED, MANAGED AND CONDUCTED IN A WAY WHICH MINIMISES ADVERSE ENVIRONMENTAL IMPACTS.”

JACQUES ROGGE

## DNV ringside as Olympic Games awarded to London

DNV was responsible for the quality control of the voting system and procedures when the IOC chose London as the host for the summer Olympic Games 2012.



A DNV team appointed by the IOC was seated next to the main computer used for the exciting election process in Singapore. In the days leading up to the announcement, the technical system and procedures used by the IOC were tested by DNV's team.

British Prime Minister Tony Blair was delighted that the summer Olympic Games 2012 were awarded to London.



# Why winter is the talk of Cyprus

The Russian energy boom makes the Arctic a hot spot for shipping. Cyprus based Unicom, the wholly-owned subsidiary of Russian Sovcomflot, has a total of 11 cold-climate ships on order, and they are not the only ones gearing up for winter.

TEXT AND PHOTO: **ANDERS ØVREBERG**

The energy boom in Russia is firmly on the shipping industry's agenda. Even under the warm Cyprus sun, discussions among shipping professional's turn to winter, ice and snow, and the need for winterisation of ships, equipment and staff training for cold climates.

"We believe that in the next five to 10 years, 20% of the world's energy will come from the Arctic area. The strategy from Sovcomflot is to enter into energy shipping in the arctic, and we believe we are strategically placed for operating in that area," says Robert Thompson, fleet director and deputy managing director of Unicom.

## **BREAKING THE ICE**

And Unicom is ready to break the ice. "Currently we have in operation three Aframax, and 10 arctic class smaller tankers. In the building stage we have 11 ice class ships: two LNG carriers, two SuezMax, four medium range vessels, and three ice-breaking tankers of 70,000 dwt (dead weight tonnes) each," says Robert Thompson. In fact, there aren't enough slots for all Unicom's newbuildings at this time.

The two ice-braking tankers are able to push through 1.5 meters of ice with ease.

However, tests of the models show that the ships will be able to potentially break through 12 meter of ice ridge under certain conditions.

## **NO EASY OIL**

"There's no such thing as easy oil and the Arctic certainly offers a host of challenges for shipping. However, we at Unicom feel that we know cold very well," says Robert Thompson, and continues; "The best way to meet the concerns from the Nordic governments regarding these environmentally sensitive areas is to build proper ice-classed ships of sufficient strength, and properly train crews."

## **ANOTHER THING UNICOM WILL DO IS TO BUILD BIGGER SHIPS.**

"The main benefit of bigger ships is to reduce the number of physical transits, and still transport the same or more oil and gas. In terms of environmental danger, bigger ships are usually more robust, so the biggest risk for pollution is actually in port or during transfer of oil, not during the transit," says Robert Thompson.

Unicom co-operates with other major owners and class societies in the development of suitable ice tonnage, concentrat-

ing not just on the hull strength but the winterisation element.

"We are cooperating with Stena to develop a B-Max concept with double redundancy. The ship will carry about 200,000 tonnes and be the largest Baltic capable lifting ship in the world. Other projects are also in hand with Aker Arctic Technology in Sweden," says Robert Thompson. "And I would suggest that IACS set up an ice team, and then talk to the likes of Sovcomflot, Stena and Bergesen, to tap into their



**ROBERT THOMPSON**

Fleet director and deputy managing director of Unicom.

experience. We could all benefit from sharing.”

#### **A BOOM FOR ICE CLASS**

All these developments translate into what seems to be a worldwide boom for large ice-classed ships. Ice-class is typically divided into two levels, Baltic and Arctic Ice rules, and then into sub-categories indicating levels of structural strength.

“In building these new types of ships, we are breaking new ground and appreciate getting more help and information than we used to get from the class societies. Certainly there are more lectures, presentations and so on,” says Robert Thompson.

“We have made a concerted effort in sharing information regarding operating in ice and Arctic conditions. As per the end of October 2005 there are on order more than 200 ice-classed tankers. Of these, DNV is to class more than half,” says Jan Koren, DNV’s business director – tankers.

Robert Thompson agrees with DNV’s assessment, and sees the challenge in obtaining enough ice-trained crew for all these ships. “For us the answer is training, training and training.”

#### **HARSH WORKING CONDITIONS**

It’s not just anybody that can go outside to hack free an ice-covered hatch in 50 centigrade below zero temperatures. Add a brisk wind, and a crew member can freeze badly in a matter of minutes if not properly protected. This working environment requires skills and the right equipment. Over the next five years, Unicom believes that about 4,000 ice trained seafarers will be needed for these new ice-classed ships.

“We have a lot of experience in ice. A lot of our masters have been on icebreakers and ice-going tonnage, and at the moment we have no problems getting qualified staff. However, to meet the demand for ice-trained crews, we have started a training course for those that have already been in ice in order to update them. An in-house simulator has also been built, specifically designed for our SuezMax ships, which simulates operations in the new Russian export-port of Primorsk,” says Robert Thompson.

#### **RUSSIAN SHIP CREWS**

The ties to Russia and other former Soviet states is a clear advantage for Unicom, in

what has turned into a tough fight for qualified crew in the shipping industry.

“The Russian culture is that they prefer to work for a Russian company provided a competitive remuneration, which I believe we are offering, and our retention rate is very good. Another advantage of having a mostly Russian crew is that we have one working language, Russian,” says Robert Thompson.

#### **GROWTH IS THE TARGET**

Growth is the number one target for Unicom, which currently is number 12, both in terms of numbers of tankers and total fleet deadweight. Frontline lives up to its name at number 1 with its many large tankers, in front of oil-majors such as ExxonMobil. Unicom has set itself an ambitious target, and sees operations in the Arctic as a way towards the top.

“We are building all these ice class ships and we are training all these people to operate them. This is certainly were our boom will be in the foreseeable future. Our strategic goal is to achieve a ranking of number 3 in the world in size, or as close to it as we can,” says Robert Thompson.

Energy shipping in the Arctic is a goal for Robert Thompson fleet director and deputy managing director of Unicom. “All waters are environmentally sensitive. While the Arctic offers unique challenges, we feel we know cold very well.”





# A ship management centre in the sun

Cyprus, the third largest island in the Mediterranean, is more than an ideal spot for sun worshipping tourists. Its favorable climate, good infrastructure, and taxation laws have also attracted many ship management companies, creating one of the largest ship management centres in the world.

TEXT AND PHOTO: **ANDERS ØVREBERG**

A former British colony, Cyprus gained its independence in 1960. It's mostly known as a tourist destination, but has worked consistently since the early 1970's to establish itself as a centre for business and commerce. Its geographical position, in-between Europe, Africa and the Middle-East, has proven to be an important asset, as has favourable taxation laws and a good infrastructure.

In particular, Cyprus can claim a success with the shipping industry, as ship management and other shipping related companies

have taken to Cyprus and enjoy the political and other aspects of the its climate.

"Ship management flourishes in Singapore, Hong Kong, and Cyprus. Of these, only Cyprus is in the EU, and we are convinced that the ship management activities here are conducive to the competitiveness of the European fleet," says Serghios Serghiou, director of the department of merchant shipping in the Republic of Cyprus.

He feels that the activities of shipping must be supported, with competitive taxa-

tion and an efficient administration. "If not supported, these activities would leave and go to other places where there is fast growth and little or no taxation."

## **EU FOR BETTER OR WORSE**

On 1 May 2004, Cyprus entered into the EU. This has had both positive and negative effects on the shipping community on the island.

The family owned Reederei "Nord" Klaus E. Oldendorff, has the largest fleet flying the Cyprus flag. Says Capt. Keith



SERGHIOS SERGHIOU, director of the department of merchant shipping in the Republic of Cyprus.



CAPT. KEITH OBEYESEKERA, general manager for the family owned Reederei "Nord" Klaus E. Oldendorff.



CAPT. DIRK FRY, managing director of Columbia Ship Management.

Obeyesekera, general manager; "We are proud to fly the Cyprus flag and we do for our entire fleet, which we operate and own. However, some of the flexibility that Cyprus had outside the EU has now been lost. But as part of the EU we work actively with the Cyprus Shipping Council to influence decisions," says Capt. Obeyesekera.

**CYPRUS FLAG**

The Columbia Ship management company established base on the island in 1978, as one of the first. Capt. Dirk Fry, managing director of Columbia Ship management, is pleased with the recent progress the Cyprus flag has made.

"The flag is now out of the so-called black list, and we are confident that the Cyprus flag will continue to improve its standing and quality," says Capt. Fry.

He is, however, concerned with all the new regulations hitting the industry. "The increasing number of rules and regulations makes it difficult to keep track. Any measures to improve quality are welcomed, but these regulations should be international, and not regional or national," says Capt. Fry.

"The good thing about being a member of the EU is that now Cyprus gets a say on EU regulations. It's difficult to change the European machinery, but we believe we can make a difference. All we need are someone who dares to speak up, and the people that represent Cyprus like to do that," says Capt. Fry.

**REPRESENTING CYPRUS**

The Cyprus Shipping Council is one of the largest national shipping councils in the world. It's first and foremost responsibility is to represent the legal interests of members, which means lobbying, and representing shipping in Cyprus.

"We are doing very well and the shipping companies on the island are expanding, but not all smells of roses. After Cyprus joined the EU in May 2004, there has been an aftermath of sorts, with new regulations and requirements and an increased price level. However, we have regular meetings and a good relationship with the ministers, to lobby and influence the EU. These close-knit relations are part of the beauty of being small," says Thomas

A. Kazakos, secretary general of the Cyprus Shipping Council.

**LACK OF QUALIFIED PEOPLE**

Capt. Peter Bond, general manager for Interorient Navigation Co., has long roots in Cyprus. "We were established 27 years ago on the island, when there were very few ship management companies here. The Cyprus flag is the flag of choice for us."

Capt. Bond sees the lack of qualified people as a big challenge for shipping; "Crewing is difficult. No ship has yet had to be stopped because of lack of officers, but retaining officers is a big concern. We're seeing a spiralling of salaries and people jumping to another ship for 100 dollars."

Because of this, Interorient is pouring efforts into training. "We have established cadet programmes, and we are placing masters on ship to train crew onboard. A full mission simulator for training is being built in Riga, Latvia, and will be operational in a few months.

One burning issue for seafarers is the social insurance issue, in which seafarers in the EU have to pay to the flag country



THOMAS A. KAZAKOS, secretary general of the Cyprus Shipping Council.



CAPT. PETER BOND, general manager for Interorient Navigation Co.



ROBERT THOMPSON, fleet director and deputy managing director of Unicom.

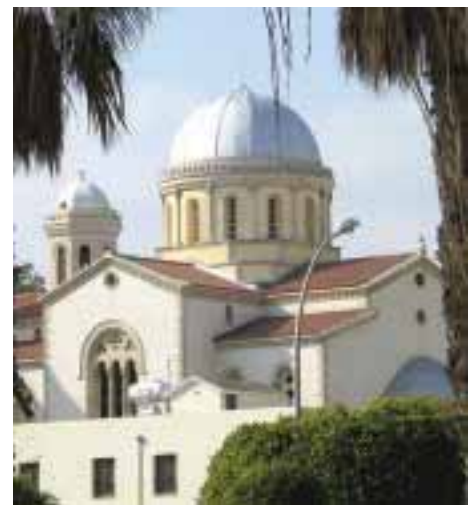
of the ship and sometimes in addition to their own respective countries. “This must be solved by Cyprus”, says Capt. Bond. “Another important issue that must be resolved is the Turkish embargo of Cypriot ships.”

**TURKISH EMBARGO**

The Turkish embargo of Cyprus ships is a unilateral policy by the Turkish government, and it’s a headache for Cyprus-based shipping companies. So also for Unicom, which established base on Cyprus in 1992. “The island has changed a lot since then,” says Robert Thompson, fleet director and deputy managing director of Unicom. He

gives praise to the island’s infrastructure, favourable taxation regime and the quality of the Cyprus flag.

“Unfortunately, the major obstacle to the Cyprus flag is Turkey. The lack of ability to trade to Turkey with a Cyprus flag is a real concern. However, Turkey is trying to join the EU, and one of the conditions of the talks is that this problem shall be lifted. But I’m not too optimistic that it will happen this year,” says Thompson.



! facts about Cyprus

- The first shipping company settled here in 1972 – the Hanseatic Shipping Company
- There are 780,000 people living on the island, which is the third largest island in the Mediterranean Sea (after Sicily and Sardinia).
- Cyprus has its own Mount Olympus, which stands 1,951 meters above the blue Mediterranean Sea. (The other one is on the Greek mainland. In Ancient Greek mythology it was believed to be the home of the Gods, and Zeus in particular.)

# Taking the environment seriously

Unless the industry implements measures that are as efficient as those we have seen in land-based industry, shipping will be the largest single air polluter in ten years' time.

"There is no doubt that this is urgent," says Jean-Claude Sainlos, Director of the IMO's Marine Environment Division. TEXT: EVA HALVORSEN PHOTO: NINA EIRIN RANGØY

Air pollution is one of the greatest operational environmental challenges facing the maritime industry.

"The maritime industry does indeed take this seriously," emphasises Jean-Claude Sainlos. "The industry has realised that it is part of the problem and should therefore be part of the solution." Mr Sainlos is Director of the Marine Environment Division of the International Maritime Organisation (IMO), the specialised UN agency responsible for issuing regulations to improve the safety and security of international shipping and to prevent marine pollution from ships.

"Air pollution has not had the same visual impact as more obvious sources of pollution, such as large oil spills, which have forced politicians and regulators to act," explains Jean-Claude Sainlos. However, the 1997 Protocol to the International Convention for the Prevention of Pollution from Ships (MAR-

POL) now contains an Annex VI covering air emissions. This came into force in May last year, but it has not yet been ratified by many countries involved in shipping. The Protocol is currently being revised.

## DIFFICULT TO IMPLEMENT

Substantial technical developments have taken place in marine diesel engines since the text was developed, so it is acknowledged that significant reductions are achievable. According to Mr Sainlos, such reductions are cost effective for both new and existing engines compared to further land-based reductions.

When Annex VI was developed, this was uncharted waters and several of the regulations have proved difficult to implement. The International Association of Classification Societies (IACS) has proposed more than 70 unified interpretations and a large number of amendments have been proposed by the parties to the

Protocol to make it more practical to implement and enforce.

"The emissions limits are very moderate in order to get the Protocol accepted and the Protocol applies to new engines only," Mr Sainlos says. On this background, the Marine Environment Protection Committee agreed to the now ongoing review of Annex VI.

"Engine manufacturers are willing to cooperate in finding solutions to air pollution problems. In fact, some of the needed technology is already available. With current technology, we'll be able to reduce NOx emissions by a further 30% by 2015," says Jean-Claude Sainlos.

## THOROUGH WORK

When asked why the maritime industry has been regarded as a 'slow starter' when it comes to environment protection, Mr Sainlos says he thinks this is related in part to the technical complexity of the problem

"The maritime industry does take pollution seriously. The industry has realised that it is part of the problem and should therefore be part of the solution," says Jean-Claude Sainlos, Director, Marine Environment Division, International Maritime Organization (IMO).



“The engine manufacturers are more interested in sustainability than the maritime industry itself. They actually have a lot of the technology in place already,” says Jean-Claude Sainlos, environmental director in the International Maritime Organization (IMO).



at hand and in part to the international nature of shipping. One factor is the strong competitive element in shipping which always requires rational and cost-effective solutions. High cost implications are involved in the upgrading of engines, in the development of new technical solutions and in the use of cleaner fuel oils.

“Due to the slow rate of ratification, shipping has not until recently been forced to implement environmental measures to prevent air pollution. Shipping is an environmentally friendly mode of transport and bunker oil is basically a residual product in the refining process. In total, this results in an energy-efficient use of crude oil. However, it entails a major environmental challenge,” says Jean-Claude Sainlos, adding that the challenge lies in some of the fuel’s components, such as sulphur.

#### **SULPHUR EMISSION CONTROL AREAS ESTABLISHED**

In addition to reducing NOx emissions, some national authorities are taking action to further limit emissions of other substances, such as sulphur oxide, and to introduce regulations covering particulate

matter and volatile organic compounds in hydrocarbon cargoes. Sulphur Emission Control Areas – SECAs – have already been established in the Baltic and the North Sea. To meet the requirements of a SECA, a ship either has to use low-sulphur fuel or install exhaust gas treatment equipment or exhaust gas scrubbers. The latter is an old land-based technology that is now showing promising results when tested on ships but has yet to fully demonstrate 100% functionality on board ships over time. Trading in SOx quotas is also being discussed for some geographical areas.

#### **LIFECYCLE THINKING**

Ship recycling is another environmental challenge to which the IMO has given high priority. Green Passports and inventories of hazardous materials are becoming established concepts in the industry. The IMO has developed a set of recycling guidelines, compliance with which has so far been voluntary. However, last year the IMO Assembly decided that a ship recycling convention was to be prepared. “The preliminary draft of this was drawn up by Norway, and the convention is expected to

be adopted in 2008-2009,” says Jean-Claude Sainlos.

#### **BALLAST WATER OPTIMIST**

A third key area is the transfer of harmful aquatic organisms in ships’ ballast water. The IMO’s International Ballast Water Management Convention was adopted in 2004 but has not yet come into force. This convention is in some ways unique as the regulations are demanding but the technical solutions to meet these regulations have not yet been developed. Problems relating to ballast water have been known for a long time but it is proving difficult to find effective solutions. The fact that the IMO prepared this convention without specific solutions being available puts pressure on the industry and promotes innovation.

“This convention is a major challenge for the industry. Although the necessary technology is not yet in place, several exciting projects are being developed. I’m sure we are about to see major progress in this direction and I’m optimistic,” concludes Jean-Claude Sainlos.

When recycling their vessels, Maersk Line, Limited wants to contribute to a good result for both the environment and the people involved.



# Embracing Green Passports

Green Passports and inventories are in the process of becoming established concepts in the maritime industry, documenting all hazardous materials on board ships.

TEXT: **EVA HALVORSEN** PHOTO: **MAERSK LINE, LIMITED**

In 1998, the Pulitzer Prize was awarded to Gary Cohn and Will Englund of the Baltimore Sun for their compelling series on the international shipbreaking industry. They revealed the dangers posed to workers and the environment when discarded ships are dismantled. The prize started the ball rolling, and last year the International

Maritime Organisation (IMO) decided to develop a ship recycling convention which is expected to be finalised and adopted in 2008-2009.

The convention relates to the growing concern for, and need to reduce the risk from environmental safety, health and welfare matters in the ship recycling industry.

At the same time a smooth withdrawal of ships that have reached the end of their operating lives must be secured.

A mandatory regime for all ships is expected from IMO in the future with regards to inventories; lists of potentially hazardous materials onboard. This is known as a Green Passports, specifying

Maersk Line, Limited has chosen to have DNV carry out inventories on three of its ships in operation. Here *Maersk Carolina*.



hazardous materials in the ship's structure and equipment. Prior to being delivered to a recycling facility, an inventory of stores and operationally generated wastes and cargo residues are to be added as well.

Several shipowners are now choosing to be at the forefront of future requirements and take the ship recycling perspective seriously, as regards both newbuildings and ships in operation.

#### STATEMENT OF COMPLIANCE

An inventory study starts off by obtaining all available documentation, following which a survey is carried out. Samples are taken and analysed in accredited laboratories. Based on these, a statement of compliance – a Green Passport – is issued describing what is found on board.

#### THREE MAERSK INVENTORIES

Maersk Line, Limited has chosen to have DNV carry out inventories on three of its ships in operation.

“This is in line with Maersk's policy of being green and environmentally friendly. In all aspects of the life cycle of our vessels, we want to contribute to a good result for both the environment and the people involved,” says naval architect Lars Bygholm in Maersk Line, Limited.

#### BASED ON OFFSHORE EXPERIENCE

DNV's experience with inventories started in 1994 with the Brent Spar loading buoy. In late 1990s, after 25 offshore inventories,

it was decided to transfer the concept to ships. Since then DNV has carried out inventories on about 15 vessels.

Explains Lars Bygholm, “The way DNV is doing this is good, both practical and pragmatic. While a Green Passport is ideal for a newbuilding, it is much tougher for ships in operation, which may be up to 20 years old. DNV has taken a solid, practical approach by combining their knowledge gained through document reviews, sampling of materials and leveraging their experience to assess the total content onboard.”

With assistance from DNV, Maersk Line, Limited is now in the process of qualifying its own designated person in order to be more flexible when it comes to doing future surveys, which could be done for instance during a docking.

“We also want to have an expert internally up to speed on current and future requirements,” says Lars Bygholm.



LARS BYGHOLM

Naval architect in Maersk Line, Limited.

## ! facts about Green Passports

Typically the following substances are looked for in an Inventory study:

- Asbestos
- Polychlorinated biphenyls
- Radioactive isotopes
- Heavy metals
- Various chemicals and gases

# Second P-MAX tanker delivered with Green Passport



Hans Norén, President of Concordia Maritime AB.

Concordia Maritime recently took delivery of the second P-MAX tanker, the Stena Provence, from the Brodosplit shipyard in Croatia. All the P-MAX tankers built have a statement of compliance – a Green Passport – issued by DNV.

With the Green Passports, which are voluntary, the Concordia Maritime is acting proactively to comply with future mandatory regulations and ship recycling recommendations. The company states that the passports are the result of close cooperation with the yard and DNV.

“For us, a Green Passport is logical as well as being completely in line with the MAX concept’s environmental and safety approach”, says Hans Norén, President of Concordia Maritime AB.

#### **THE MAX CONCEPT**

In 2003, six vessels were ordered to be built in accordance with the MAX concept. These vessels, P-MAX, are product tankers of about 49,900 dwt. The MAX concept means that the vessels are designed for maximum loading capacity in shallow waters. In addition to having mandatory double hulls, they have been designed according to a new concept for safer oil transportation, with double main engines in two completely separate engine rooms,

double rudders and steering gear, two propellers and double control systems.

“Our mission is to generate a profit by providing our customers with safe, cost-efficient tanker transportation based on innovation and performance,” says Hans Norén.



# TOTAL's key



TOTAL is heavily involved in all stages of the LNG chain. In the upstream portion of the chain, it participates in five out of the 17 liquefaction plants that exist worldwide. These five plants account for approximately 40% of the global production of LNG.

# to success

# Adapting to changes – sticking to the strategy

Life is more complex today than it was just a few decades ago for the industry and for the French energy giant TOTAL. Keeping to its strategy while adapting to the changes has been their key to success. Last year TOTAL achieved a remarkable operational and financial performance and was one of the world's fastest-growing, best-performing oil companies. TEXT: EVA HALVORSEN PHOTO: TOTAL

As France's largest corporation and the world's fourth-ranked oil and gas company, TOTAL operates in more than 130 countries across the oil industry chain, from oil and gas exploration and production to gas downstream, refining, marketing, trading and shipping operations. It is also a world-class chemicals company. TOTAL delivered remarkable results in 2004 and even managed to improve on those results last year.

"The continuation of our exploration success, the launching of Yemen LNG and the acquisition of Deer Creek in Canada, among other things, have allowed us to increase the level of proved or probable reserves to 20 billion equivalent barrels at

the end of last year, representing more than 20 years of production at the current rate," explains Jean-Marie Guillerrou, Senior Vice President of Development and Operations Techniques in TOTAL. He has worked for the company since 1975, and has been an expatriate at an impressive list of offices covering all five continents.

"The business has clearly changed over these years," Mr Guillerrou admits. "Life is more complex now. Everything has become more complicated and the competition has increased. The contractors have become busier and busier, it has become harder to get access to the drilling rigs, and the price level for equipment and rigs has increased. In addition, it has become tougher to explore for the reserves – and, of course, everything has to be delivered on time and on budget."

## MORE POWERFUL NATIONALS

Even the relationship with the national oil companies has changed. The national companies used to be interested in the whole range of services the majors could offer, including financing. "Today they are richer and less inclined to open up for new opportunities. This means fewer openings and stronger competition for companies like us. In addition, we are seeing new actors from countries such as China or

India joining in at full speed," Mr Guillerrou says.

The market conditions have also changed. Today the industry sees less contractors as a consequence of all the merges which have taken place. There are more activity and higher prices. In addition, there are also higher risk levels with increased demands relating to performance quality.

Despite this challenging development, TOTAL has managed to be at the forefront of all technological aspects – worldwide. TOTAL realised early on the importance of a bigger portfolio of projects for achieving growth throughout this period.

"10–15 years ago, we used to have three or four major projects running simultaneously. Today, we have ten – all of bigger size than before," he says. In addition, all TOTAL's projects today are of a more complex and demanding character. He mentions factors such as deep waters, heavy oils, rough conditions and large LNG plants. "We're an operator that is able to manage big projects and this is a clear competitive advantage. Here we can make a difference," he says.

During his time in TOTAL, Mr Guillerrou has experienced two major mergers through the acquisitions of Fina and Elf. There are always challenging aspects connected to such events, but he assures that



JEAN-MARIE  
GUILLERMOU

Senior Vice President Development  
and Operations Techniques, TOTAL.



10–15 years ago, TOTAL used to have three or four major projects running simultaneously. Today, they have ten – all of bigger size than before.

these processes went without a hitch and have added considerable value to TOTAL, which today truly stands out as one company.

#### CONTINUOUS INVESTMENTS

Mr Guillermou emphasises his company’s investment strategy, stating that continuous investments irrespective of oil prices or economic cycles have ensured TOTAL’s position today. Keeping to its investment strategy has been TOTAL’s key to success and has ensured the foundation for its current global operations.

Another factor that ensures growth is

research and development (R&D). TOTAL has constantly prioritised innovation, and has chosen an integrated R&D organisational model. A slim R&D unit has been established, covering the “growth projects” – as they are called – always consisting of dedicated personnel from the whole organisation and from various professional disciplines.

“When a technical challenge turns up, some “champion” will volunteer to come up with an idea for a solution. This is an ordinary start for a TOTAL R&D project,” says Mr Guillermou.

#### RESPONSIBLE CORPORATE CITIZEN

As TOTAL’s portfolio of assets is evenly distributed among the world’s leading petroleum provinces, the company operates in many different cultures. However, it has committed itself to meeting the growing energy demand while consistently acting as a responsible corporate citizen. This means that Corporate Social Responsibility is a key word.

“We have developed a strict code of ethics and take our responsibilities very seriously,” says Mr Guillermou and assures that, “Openness is in our own interest.”

## ! TOTAL – A global multi-energy provider

- The world’s fourth-largest oil and gas company and France’s largest corporation.
- Its operations span the entire oil and gas chain.
- Operates in more than 130 countries with over 111,000 employees.
- Produced 2.59 million barrels of oil equivalent a day and had proved reserves of 11.1 billion barrels of oil equivalent in 2004.

# Mobile quality delivered

Finnish mobile phone giant Nokia believed in telecommunications and mobility before anybody else. Their faith has carried Nokia to the top of a fiercely competitive industry, but the real reason behind the success is an unflinching commitment to innovation and quality. TEXT: **ANDERS ØVREBERG** PHOTO: **NOKIA**

Nokia's success can be ascribed to a leap of faith in the early 90s. They were then known mostly as a rubber boot company, but had also many other businesses. In fact, the history of Nokia has roots deep in the Finnish forests, as the story began in 1865 with the Nokia wood-pulp mill. But back to that leap of faith.

"There were two bold visions that changed Nokia. One was about technology, and the belief that GSM would be the standard, and the other a belief that the voice would go mobile. And this was when it was almost ridiculous to say that out loud because telephony was all about wires back then," says Kati Hagros, Vice Quality President, Nokia.

As the other businesses Nokia operated were sold, an equally bold vision was created: The Nokia brand was to go from what was essentially a rubber boot brand to one of the world's most recognised consumer electronic brands. No points for guessing how that turned out.



KATI HAGROS

Vice Quality President, Nokia.

## QUALITY IS INTEGRATED

Nokia is today the world's largest manufacturer of mobile devices and the world's sixth most valued brand. They have a total of 14 production facilities in eight countries, the most recent being a factory in India which opened in March of this year.

"Quality is an integral part of every-day management. It's part of business, and it's part of the way we think. We don't have a separate quality system and management system. It's just one system, and it's how we run and implement the global processes of this large company," says Kati Hagros.

With such a global system in place, having a certification partner with a global presence was a key factor in selecting DNV. The company-wide agreement makes DNV the preferred supplier of auditing and certification services within management system certification both on the quality and environmental side.

Explains Kati Hagros: "With DNV we now have in place one single audit plan for all our facilities around the world. This helps us combine and operate the audits efficiently and consistently."

## CUSTOMERS DECIDE QUALITY

With many competitors and a constant push for innovation, the mobile phone market is very competitive. New trends and technologies must be met and mastered, and the time from development to finished product is short. What constitutes good quality is in the end up to the Nokia's demanding customers around the world.

"We closely monitor failure trends of our products from customers. This is a key quality measure for us. Our quality definition – in everything we do – has the customer right in the centre," asserts Kati Hagros.

## GROWTH AND RENEWING

Nokia's values, with growth and renewing at the core, have been driving factors for the company.

"We build on our values of growth and renewing, which is why we have been able to lead the mobile phone market. Nokia has heavy investments in research and developments to enable new technologies. Now we are moving to 3G, third generation of mobile networks, and our products are enabling the convergence of mobile technology and the Internet. Now it's not only voice that will go mobile but emails and media services as well," says Kati Hagros.

## DEVELOPING COUNTRIES GO MOBILE

Nokia has especially pursued growth in the emerging and fast-growth markets of China, India and various Middle East and African countries. Kati Hagros believes local presence is crucial to succeed.

"It's really critical in the mobile phone market to be truly global. We have to be very close to the markets and the customers to understand their communications' needs in-depth. I'm a very avid speaker for this as I have spent several years in Asia, and it opened my eyes," says Kati Hagros.



She explains how the company is using special Nokia trucks to sell their products in rural areas so that the population there can have access to mobile phone technology. In these areas, customers will never experience old-fashioned wire-and-pole telephony.

“Their first phone will be a mobile phone. The phone represents a considerable investment, and because of this the phone must be of the very best quality. Nokia is committed to making high-quality low-cost phones for this market that can withstand the conditions. Communicating via robust networks and phones can significantly improve their quality of life,” says Kati Hagros, who is proud of Nokia’s position in these emerging markets.

“Nokia’s success is a story about what we like to call very human technology,” smiles Kati Hagros.

One of Nokia's latest models is the E61, which is optimised for the business professional. It has full email functionality, including viewing attachments, and built in WLAN connectivity. And yes, you can even use it to make phone calls.

## ! facts about Nokia:

- Head office in Finland
- 58,874 employees of 128 nationalities
- Net sales of EUR 34.2 billion, and operating profit of EUR 4.6 billion
- Production facilities in eight countries and R&D centres in 11 countries

### Preferred supplier:

The company-wide agreement with Nokia makes DNV the preferred supplier of auditing and certification services for:

- The quality management system standard ISO 9001
- The environmental management system standard ISO 14001

- The international automotive quality system standard ISO/TS 16949, relevant to automotive production and service part organisations (carried out when required)
- The Radio and Telecommunications Terminal Equipment (R&TTE) directive

# The EU takes the green lead

The European Commission is setting an example to other European organisations. By having four of its departments registered under the Eco Management and Audit Scheme (EMAS), the Commission has proven it has made its daily activities more environmentally friendly in a systematic fashion. Environmental and financial benefits have already been achieved. **TEXT: SVEIN INGE LEIRGULEN PHOTO: NINA EIRIN RANGØY**

“By opting for EMAS to cover four pilot departments in seven main buildings that house 3,500 employees, we’ve managed to focus on ten significant areas where environmental protection was clearly at stake,” says Jorge Díaz del Castillo, the EMAS officer at the Environment Directorate-General.

“The most important benefit from the pilot phase is that we managed to kick-start environmental thinking at all levels, thus prompting innovation and staff involvement. At the end of the day, EMAS is a way of living – it educates us all on how to preserve the environment even after we switch off the office lights and return home. It all boils down to our commitment to a better future in a healthier environment for us and our little ones,” concludes Jorge Díaz del Castillo.

## SETTING AN EXAMPLE

EMAS used to be a voluntary scheme designed for private companies but in 2001 the EMAS regulation was revised, extending its scope to public organisations. Simultaneously, the European Commission, which plays an important role in issuing European legislation,

decided to practise what it preached and provided the necessary support to start an EMAS application.

Jorge Díaz del Castillo explains: “The aim was clear from the outset – not only should we set an example, we should also encourage environmentally responsible management in our own headquarters. Public authorities are ultimately responsible for the well-being of the people they serve. EMAS can help authorities to make the right decisions by taking better account of all considerations, including the environment.”

He continues: “Our positive results are achieved simply because EMAS is based on three solid cornerstones. The first one is related to high performance. It provides for full compliance with environmental and health and safety legislation and ensures that the management system works to meet annual objectives and targets. Second, transparency is accomplished through the publishing of our environmental statement designed for the general public. This shows how we are doing every year. Finally, we use DNV as an external and independent verifier to support our credibility,” says Jorge Díaz del Castillo.

## STAFF CONTRIBUTION

Jorge Díaz del Castillo can provide a long list of success stories in areas where the staff have contributed. For example, the energy consumption in the seven pilot buildings is decreasing, resulting in CO<sub>2</sub> emissions dropping by 4% between 2003 and 2004. Water consumption also shows a slight downward trend.

The introduction of duplex printing as a default setting on the printers and efforts by staff to reduce printing have resulted in a 12% reduction in paper sheets in one year. The office paper used is also fully recycled and chlorine-free.

Green procurement practices have ensured that 80% of their 700 stationery articles are recyclable. Environmental criteria are included in calls for tenders for ICT equipment and environmental specifications are stipulated in the contracts for 14 canteens and 34 cafeterias.

A survey shows that the use of private cars to commute to work decreased from 50% in 1998 to 44% in 2004, while the use of public transport rose from 32% to 38%. Also, thanks to the promotion of video conferences, the number of business trips has been significantly reduced.



A survey shows that the use of private cars to commute to work decreased from 50% in 1998 to 44% in 2004.

While the volume of waste generated has increased slightly - by 1.3% - along with the rising number of staff, recycling has been maximised and disposal optimised accordingly. For example, the share of non-separated waste was reduced from 51% in 2003 to 46% in 2004.

“Aside from these environmental gains, EMAS has brought in important financial savings. For example, in 2004 approximately 500,000 was saved on toner and paper alone, emphasises Jorge Díaz del Castillo.

#### A FIVE-STEP APPROACH

“My personal advice to other organisations wanting to start EMAS is to practise the ‘low hanging fruit approach’. This means

that you should focus on tasks in which staff involvement reveals crucial and quick gains that become visible to all those involved straight away. Don’t start out thinking you can solve everything at once. Seek top management support at an early stage and work gradually in the tempo you feel the organisation can manage. Finally, show everyone that an EMAS implementation is not something one has to look upon as additional work. It’s just a matter of doing simple things in a better way,” concludes Jorge Díaz del Castillo.



JORGE DÍAZ  
DEL CASTILLO

The EMAS officer at the Environment Directorate-General, the European Commission.

## ! facts about The European Commission’s pilot project:

The European Commission (EC) has around 20,000 employees located in 65 different buildings in Brussels.

DNV Certification Benelux undertook the first EMAS verification for the EC in Brussels

in 2005. The EMAS verification started off as a pilot project involving seven buildings and four departments: the Secretariat General, the Environment Directorate-General, the Personnel and Administration Directorate-

General, and the Office for Infrastructure and Logistics in Brussels. An additional department, the Informatics Directorate General, will soon also be EMAS-registered.

# Quality is the guiding light for OSRAM

OSRAM is one of the two leading lighting manufacturers in the world. With 49 production plants in 19 countries, stringent quality requirements have been implemented. Combining the certification process with their own quality management assessments is just one of the ways they get maximum return on their efforts.

TEXT: **ANDERS ØVREBERG** PHOTO: **OSRAM**

A worldwide leader in automotive lighting, OSRAM has probably made the lamps in your car. If you drive to the movies, chances are that OSRAM made the projection lamps. From stage lamps, the light in copy machines, the lights in your house, to perhaps even the light for backlighting your cell phone; the lighting products could all come from this company.

“Innovation is one key success factor of OSRAM. In fact, 40% of our turnover comes from products that are less than five years old. Today, classic light bulbs account

for only about 3% of worldwide sales. And the stylised light bulb in our logo is a symbol not only for light, but also for good ideas – and our passion for intelligent light,” says Detlev Plath, Head of Organisational Support, Internal Audit and Quality Management.

One particular area of innovation and growth now is LED, or light-emitting diodes. Step by step, they will substitute more of the conventional lighting over time, and already that has started with interior lighting in cars.

## INSPIRATION

OSRAM is an original equipment supplier to the important car manufacturers in the world. As the automotive industry is perhaps second only to the aerospace industry in demanding mandatory certification and quality assurance schemes, being a first-tier supplier entails some work.

“We saw that the certification process improved the way we worked, as well as our internal processes in the automotive division, and were inspired. We are continuously getting all the different aspects of certification into an overall concept,” says Plath.

## SARBANES-OXLEY ACT

What OSRAM is hoping to achieve is a process where they can use the requirements and work done for the certification schemes to also satisfy other needs and requirements put forth by internal quality assessments and audits, as well as the Sarbanes-Oxley Act (SOX).

The Sarbanes-Oxley Act came as a result of the Enron and WorldCom scandals in the US, and was signed into law by President Bush in July 2002. It introduced stringent new rules with the stated objective, according to President Bush, to “deter and punish corporate and accounting fraud and corruption, ensure justice for wrongdoers, and protect the interests of workers and shareholders.”

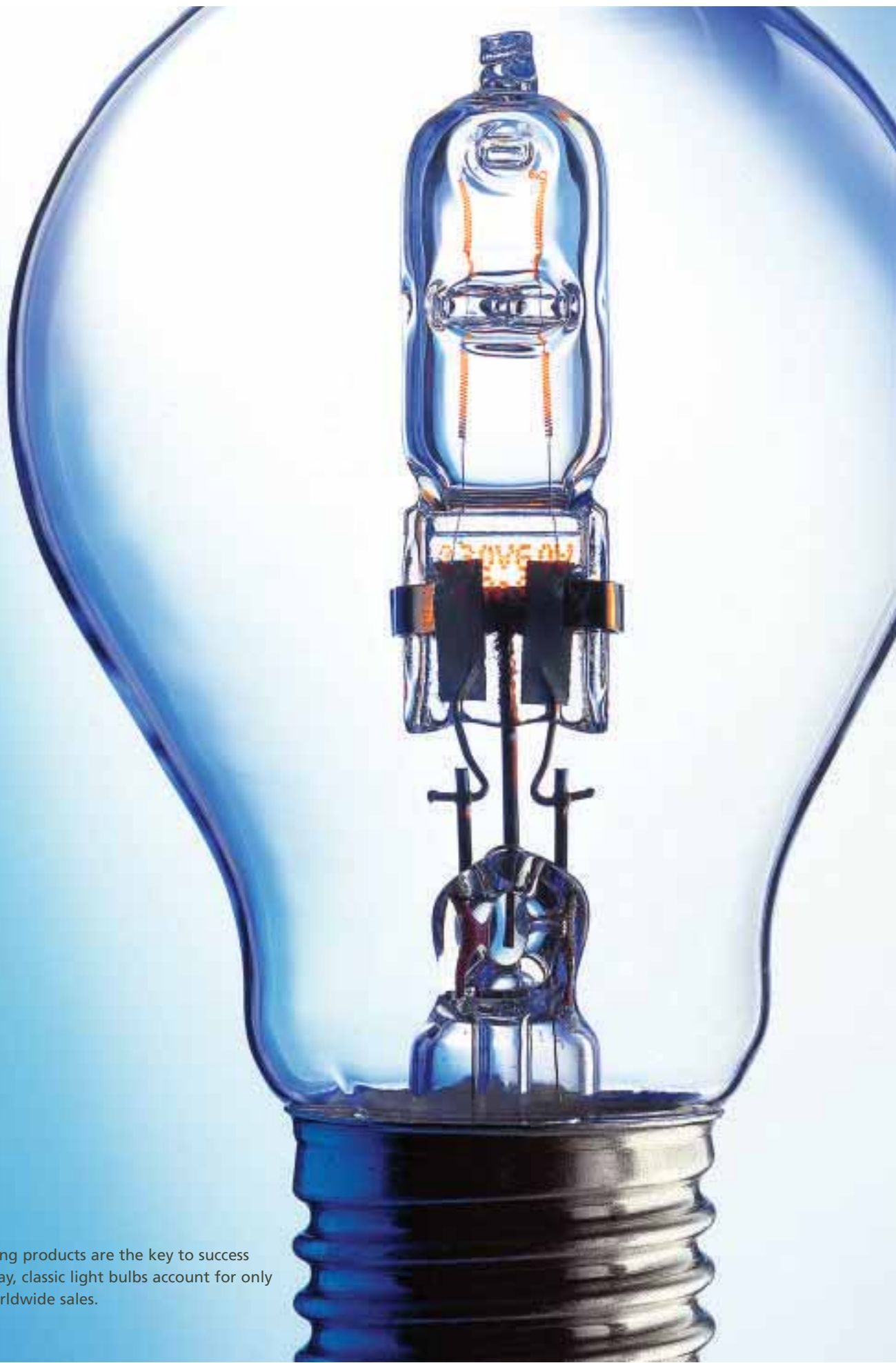
## GREAT DEAL OF OVERLAP

“The Sarbanes-Oxley Act requires the companies listed on the NYSE, where OSRAM’s shareholder Siemens is listed, to fulfil a certain degree of description of their processes and a certain degree of internal controls. The same is true for the certification/ISO requirements. They both require documentation of the process steps, an ownership of the processes, and they do



DETLEV PLATH

Head of Organisational Support, Internal Audits and Quality Management at OSRAM.



Innovative lighting products are the key to success for OSRAM. Today, classic light bulbs account for only about 3% of worldwide sales.

## 100 years of OSRAM

The OSRAM brand name was registered way back in 1906 and is one of the oldest trade names still recognised throughout the world. On July 1, 1919 AEG, Siemens & Halske AG and Deutsche Gasglühlicht AG (Auer Gesellschaft) merged their light bulb production activities. Today, Siemens AG is the sole shareholder in OSRAM GmbH.

## OSRAM supplies customers in about 150 countries

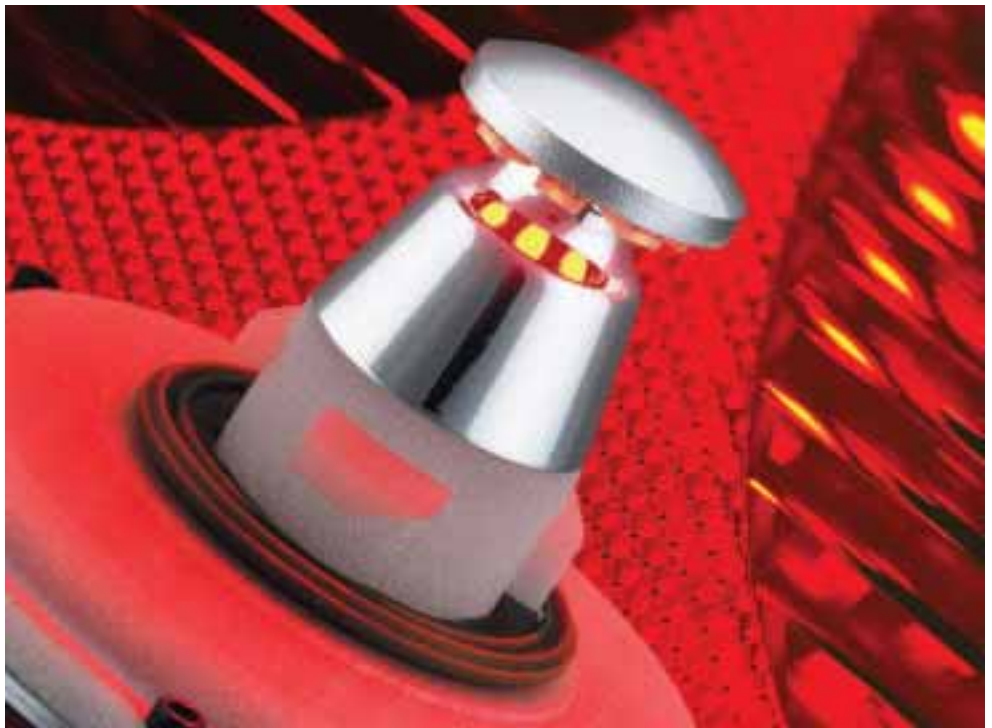
- Headquarters in Munich, Germany
- 65 subsidiaries and sales offices for 100 countries
- 49 production plants in 19 countries
- More than 38,000 employees worldwide
- World sales in the 2005 fiscal year totalled Euro 4.3 billion
- OSRAM is a global player, generating 88% of sales outside of Germany.
- The growth in 2005 was mainly driven by increases in auto motive lighting and electronic

## Benefits of using LED – Light Emitting Diodes

- Long life time
- Small size
- Low power consumption
- Shock proof
- Intense colours
- Very short reaction times

## Read more here:

[www.osram.com](http://www.osram.com)  
[www.osram-os.com](http://www.osram-os.com)



LED (light-emitting diodes) will step-by-step take over conventional lighting. Already that has started with lighting products in the automotive industry.

require a certain interval for internal controls. There is a great deal of overlap here, and therefore I think there are great synergies between the ISO concept and the Sarbanes-Oxley requirements,” says Plath.

He believes that this will become more and more important the more companies are forced to have an internal control system with a complete coverage. “And if you have a well-working ISO process management, then there is not so much more you have to do to comply for instance with SOX as well,” he explains.

A difference between the two is that the SOX requirements focus on processes that have an impact on the profit and loss, or balance sheet. The certification schemes to ISO standards require descriptions of all processes, except those that are purely financial.

### INTERNAL REVISIONS AND AUDITS

OSRAM also sees great benefit in using the certification process as a tool to improve their internal audits and quality management processes. In the audit process, they use an integrated questionnaire assessed through qualified DNV EFQM and Automotive Auditors.

“We have combined the quality management and the internal audits in one department because we experienced that quality management and internal audits

conducted similar audits and assessments on similar subjects. In order to make the organisation more effective, we combined those assessments and now we only ask the questions we need answers to once,” says Plath.

### MINIMIZING COST

“I appreciated very much that DNV has a comprehensive approach to certification and is open-minded to new ideas. This has enabled us to establish an intelligent combination of the different requirements, and we are now able to limit the number of audits and the people that are involved in the organisation. With this system in place we can balance out the costs for the entire certification process, while still getting the same or perhaps even better results out of the audits,” says Plath.

OSRAM has consistently expanded its global presence through acquisitions and joint ventures since the late 80s. It truly changed from a regional player to a worldwide market leader in 1993 with the acquisition of Sylvania North American Lighting. Proving that they have their lights set on the future, in 2004 OSRAM acquired Russian SVET, a fluorescent production facility. It was the first investment in Russia with a production site by one of the big three international lighting manufacturers.

## Major contract with Keppel



Keppel Offshore & Marine, one of the worlds largest offshore and marine groups, has chosen DNV's SESAM GeniE software to aid their calculations on offshore-related projects.

The software will be implemented by yards under the group, as well as the Engineering offices located in Bulgaria, China and India.

The primary focus area of GeniE is aimed at engineering of frame structures employing concept modelling techniques. It is closely interacting with all relevant modules in SESAM, which is the market leading software for design of floating offshore installations. GeniE has been recently updated to include modelling of complex curved structures like semi-submersibles and ships.

"Keppel chose the SESAM GeniE software for its user friendliness, technical reliability as well as cost-effectiveness," said Paul Liang, section manager for the engineering division at Keppel O&M.

## Breakfast with finance and aviation risk management professionals

In Frankfurt on 30th March 2006, DNV invited several high ranking risk management professionals from finance and aviation to a business breakfast.

These two industries traditionally don't communicate together on the common and very industry-relevant topic Risk Management. The subject is extremely important to both, but often evaluated from different perspectives.

DNV's Matthias Hinze, chairman of the meeting, comments: "This was an experiment, to understand if there is interest in learning from each other's experience. Further, if the different methodologies and approaches to risk management in such different industries can be transferred".

Many points of interest were raised by several participants and a list of specific themes and questions was drawn as a basis for a future discussion with experts on the specific topics.

## DNV buys IT & KM specialist CIBIT

DNV has bought the Dutch consulting and education company CIBIT, strengthening DNV with 66 IT, Information Management and Knowledge Management (KM) specialists.

CIBIT is today a recognised brand in its home market and the acquisition of CIBIT is part of DNV's IT Risk Management growth strategy. DNV is building up its IT risk management consulting activities through acquisition and organic growth.

## DNV's new management team

**Henrik O. Madsen 8 May formally took over as the tenth president and CEO of DNV.**

"We will build on DNV's many strengths when we adjust our strategy to grow with the increasing demand for our services," he says.

The main priorities of the strategy are:

1. To continue to grow the business area Maritime within classification and services beyond classification
2. To establish and significantly grow a business area Energy into a

global activity within classification, verification and consulting based on the company's strengths in former DNV Technology Services and DNV Consulting

3. To continue to grow DNV's activities in business area Industry based on the company's global position in former DNV Certification and its core competences in enterprise risk management.
4. To establish and significantly grow a global Business Area within IT Risk Management



CEO Henrik O. Madsen



COO DNV Maritime Tor E. Svensen



COO DNV Energy Remi Eriksen



COO DNV Industry Peter Bjerager



COO DNV IT Risk Management Annie Combelles



CFO Jostein Furnes



Head of HR, Competence and SHE, Cecilie B. Heuch

# Technology for life

Ever since Dräger was formed as a skilled craftsmanship business in Lübeck in 1889, the company has been very true to its traditions and principal motivation, 'technology for life'. To be able to save lives within dangerous environments involving gas, fire and water, the company's worldwide offices must rely on the ICT system being available and the risk of failure minimised. TEXT: **SVEIN INGE LEIRGULEN** PHOTO: **DRÄGER**

Dräger has a tradition of creating innovative 'technology for life', a strategy that has given the company an impressive long life and several prizes for innovation. Today, the company's products are well known to those who strive daily to save lives as their profession.

## **PROTECTION FROM GASES, FIRE AND WATER**

If you worked in a mine 100 years ago, you were probably very happy about one of Dräger's inventions. "Back then, we developed the first mechanical breathing apparatus for the mining industry. It could be operated for up to two hours, an innovation that proved invaluable in improving the safety of miners worldwide. In the United States, the men who wore this equipment were called 'Draegermen' and, ever since, the Dräger name has been synonymous with safe breathing," explains Stefan Ihlow, who is Dräger Safety's manager for IT and process management.

"Dräger has also developed a variety of products and services which warn about and protect people from airborne pollutants and enable people to breathe reliably even in extreme situations. It is all about early warning of dangerous substances in the environment, and this also applies to the company's new invention, the Dräger Interlock. This instrument measures alcohol in a person's breath together with a vehicle 'immobiliser' that actually prevents a driver from starting the car if his or her alcohol level is too high. It may also be linked to secure databases, controlled by national authorities in case the driver has

been convicted of driving under the influence of alcohol," says Stefan Ihlow.

## **A LIVE ICT INFRASTRUCTURE**

Today, Dräger Safety has 3,620 employees working for 40 subsidiaries located in over 100 countries. Obviously, the nature of Dräger's worldwide business creates several challenges for the company's IT strategy.

"Since our products' mission is to prevent the loss of lives, we can't accept our ICT system acting as a bottle-neck for innovation or operations, or at all as a risk for failure. The company is in continuous evolution, and hence there has been and will be a constant need for change and the consolidation of diverse systems," states Stefan Ihlow.

He adds: "There are also national regulations that put demands on the technical logistics and security. For example, an oil company may use Dräger as a one-stop-shop for all safety-related products and services. Here we can organise a shut-down of the plant if a technical revision is to be carried out, and provide all the necessary equipment, project management and manpower.

"Technicians who have been involved in the management of global and complex ICT systems know that the best way of making system changes is to predict risks and implement the necessary changes in small controlled steps.

With the project management run by Tireno – a DNV-owned IT service management company – we have established an IT infrastructure strategy that aims for a stable

and flexible basic infrastructure to ensure 100% safe processes, reliable data and availability. It is named COIN (common infrastructure), and will be run to suit our global need for flexibility and scalability, both with regard to adaptation to new environments, regulations and business growth. To be able to do so, we must focus on regionally centralising all the systems' physical locations and management. Only in this way can we minimise the risk and have full transparency and security regarding every detail of this complex system.

Our products live in a risky world, just like the nature of our own organisation. To enhance our own principle of creating innovative technology for life, we must survive and evolve with constant change," concludes Stefan Ihlow.



**STEFAN IHLOW**

Safety manager for IT and process management, Dräger.



When a fire breaks out in skyscrapers or subways, anywhere in the world, the Dräger Safety logo is very often on the firemen's helmets and breathing apparatus as they storm towards the deadly flames.

This is where the new LNG terminal will be located. Maasvlakte is ready for a one-year planning period – and then a three-year construction period.



# Rotterdam Port – ready for LNG

Rotterdam Port – one of the world's biggest and busiest ports – has turned to DNV for assistance with its LNG decision-making process: Go/No Go. An investment of Euro 100 million by the Port of Rotterdam and a lot of construction work remain before the first LNG ship moors at the quay, an event which is expected to take place in 2010.

TEXT: HARALD BRÅTHEN PHOTO: NINA EIRIN RANGØY

“We absolutely define ourselves as an energy port and, if we are to continue to do so, we have to make the port suitable for LNG,” says Roland van Assche, the head of the Port of Rotterdam’s LNG project. Rotterdam City owns 75% of the port, while the remaining 25% is owned by the Dutch government.

“We’re aware of our position and the responsibilities this involves, so it has been important for us to make thorough preparations and carry out extensive surveys before coming too far in our planning work. We’ve now been discussing LNG plans for two-three years,” he says.

#### IDENTIFIED POSSIBLE SHOW STOPPERS

The study comprised a three-step approach. Firstly, it was vital to build knowledge and get access to state-of-the-art LNG information before proceeding. An inventory was made of the local situation, including terminal plans, expected LNG carrier movements, waterways and the surrounding areas.

“Based on this, we were able to identify possible ‘show stoppers’. The preliminary feasibility study made a “Go” decision possible,” explains Roland van Assche.

Secondly, DNV carried out a feasibility study to assess the safety regime for LNG shipping worldwide. Focus was given to navigational safety within the port and terminal area. This involved investigating LNG shipping regimes in other countries, their rationale and best practices. As a result of DNV being currently involved in many LNG initiatives (both in Europe and elsewhere in the world) DNV was able to provide the port with the actual and detailed information on LNG shipping.

Finally, the identified risks were assessed in a one-day HAZID (Hazard Identification) session attended by the Port of Rotterdam’s nautical risk experts, the pilots’ organisation and DNV staff. The workshop attendees

evaluated how to manage these risks and whether additional maritime safety measures should be implemented.

“With this knowledge, we will be able to define our own safety regime for LNG shipping within the Port of Rotterdam,” Roland van Assche states.

#### POLITICAL PRESSURE

“It was important for us to obtain an overview of all the factors that affect the facilities’ safety,” says Programme Manager Willem Hoebee at the Port of Rotterdam. “This study enabled us to focus on the most important factors. Most significantly; the study confirmed that there was nothing that made the port development impossible. There were no show stoppers from a risk and safety perspective. The study of how other ports handle LNG and safety also showed us that many of the limitations several of the other ports operate under were implemented more as a result of political and commercial pressure rather than for real safety reasons. We have taken the consequences of this and held seven extensive public hearings where we have presented all our development plans and action plans intended to ensure safe development and operation.”

#### 100 VESSELS AND 400 BARGES A DAY

The most important challenge is naturally the huge volume of ship traffic in Rotterdam, which has 100 seagoing vessels leaving each day – and 100 entering. In addition, 400 barges sail in this busy area. Another issue is that limited space is available for the LNG terminals, given the densely populated areas where the terminals are to be located.

The port owns the area and is responsible for the port traffic, while the various terminals are operated by different companies. Two LNG terminals are currently proposed in the western part of the Rotterdam harbour: the so-called GATE terminal will be run by Gasunie/ VOPAK while the Lion Gas terminal will be run by Petroplus.

While the Port of Rotterdam is preparing the basic infrastructure itself, it is the various terminal operators that are investing in the necessary onshore equipment – such as regasification equipment and large tanks.

“The tanks that are to be built are huge,” says Willem Hoebee. “After a one-year planning period a three-year construction period will follow. The pipeline network is already prepared for bringing the gas further to The Netherlands, Germany, Austria – and maybe other countries as well.”



“There are no show stoppers from a risk and safety perspective,” states Roland van Assche (left), the head of the Port of Rotterdam’s LNG project, and Programme Manager Willem Hoebee, both pointing at the Maasvlake-area of the port.

## ! DNV work

The Port of Rotterdam wanted to explore the impacts of nautical manoeuvring and external safety before a decision about building LNG

terminals could be made. The port asked DNV to perform a feasibility study in order to provide required input to the decision-making

process. DNV created a team composed of people with different expertise: safety consultants, nautical-risk experts and LNG experts.

# Preparing for the unthinkable

Security is a priority issue throughout the world today. The European Commission is proposing steps to implement supply chain security measures that is seen as a necessity to keep European transport systems safe in the face of an unrelenting threat; Terrorism.

TEXT: EVA HALVORSEN PHOTO: WWW.INMAGINE.COM



FRANS  
HOUBEN

Principal DNV consultant. Has a background in Civil Engineering and Supply Chain Management. As a risk professional he is dealing with high risk projects in rail, aviation and inter-modal transport. As a result of the Madrid attack in 2004 he became involved in anti-terrorism studies in the area of critical infrastructure and the vulnerability of transportation in Europe.

The attacks in New York and Madrid are two examples from a long list of terrorist acts over the past few years. Following the 9/11 attacks, the US implemented a series of unilateral measures to improve the security of its imports which to a large extent have set the standard for the security of international trade. The vulnerability of transport systems and infrastructure was highlighted in the summer of 2005 with the terrorist atrocities perpetrated on the London Underground and bus network.

Such terrorist attacks have caused governments to put pressure on the maritime industry to introduce technological and operational security developments. This resulted in the implementation of the International Ship and Port Facility Security (ISPS) Code on 1 July 2004.

Similar to the 9/11 attacks, the Madrid train bombing has had wide-reaching consequences. Security has become a major concern for the European Commission, which has been developing a number of

initiatives to increase security in Europe. Building on the experiences gained from the maritime security measures, the EC is preparing to implement supply chain security legislation for its European land-based supply chain.

## IMPACT STUDY

With its recognised risk-management competence, DNV rapidly acted on multiple fronts to help ensure safe and secure supply chains. The EC consequently approached DNV to perform an impact study of the EC's planned supply chain security measures.

"The objective of the EC's transport security policy is to counter any terrorist threat," says DNV's Peter Mackenbach, who was responsible for the security aspects in the study.

"This task was somewhat different from the traditional DNV risk-based approach," adds Frans Houben, who was project manager for the impact study. He continues



Building on the experiences from security measures in the maritime industry, the EC is now preparing for the implementation of a risk based security management system throughout its land based supply chain.

“Terrorists follow their own, often unpredictable, rationale. When assessing the risks of accidents, the most severe events usually have the lowest probability of occurrence.

The use of likelihood is therefore not applicable to the definition of a security risk,” explains Houben, “which turns traditional risk-based methodology on its head.”

The DNV team developed a systematic assessment of the transport security risk, based on the identification and assessment of a full range of foreseeable possible terrorist intervention scenarios.

#### READY FOR THE NEXT LEVEL

The impact study addressed the consequences of possible European legislation to improve the security of transportation by rail, road and inland waterways. Based on the DNV report, the EC decided in February to take the transport security efforts to the next level. New legislation has been developed and proposed for land based transportation security. An extensive co-decision process with the European Parliament, the member states and the industry will begin, according to Houben and Mackenbach.

#### COSTLY SECURITY MEASURES?

The implementation of transport security management measures sounds like a costly affair for the European member countries. However, Houben and Mackenbach emphasise that a great many of the measures that are suggested already have been implemented throughout most of Europe.

“Multinationals and other major companies are implementing a wide range of security measures on their own initiative, but still such an extensive implementation cannot happen without considerable investments,” Mackenbach underlines.

The DNV team also looked into the investment scenario in its study. In the event that the full range of recommendations is implemented, an investment approaching 60 billion Euros affecting 4.7 million companies will be required.

“Positive side effects of such a large investment in security measures should be highlighted. These include reduced theft, efficiency improvements – ultimately delivering operating cost reductions – and market benefits related to reputation and consumer confidence,” the two risk management professionals conclude.



PETER  
MACKENBACH

Principal DNV consultant. Following the 9/11 attacks he has been active in putting security of the non-maritime part of the supply chain on the global agenda. He is co-convenor of the working group which is developing the ISO/PAS 28000 series on supply chain security management systems.



Bulk carrier research: The phenomenon of bulk-carrier hull cracking due to the effect of waves on their blunt bows is one example of projects carried out at the Centre for Ships and Ocean Structures, CeSOS, in Trondheim.

# Maritime research finds new applications

Founded in 2002 as one of the Norwegian Research Council's 'Centres of Excellence', the Centre for Ships and Ocean Structures, CeSOS, in Trondheim undertakes fundamental research into the design of ships and offshore structures. Sponsored by DNV and other Norwegian organisations, it has already made some notable contributions towards maritime safety and environmental protection. **TEXT: R. KEITH EVANS PHOTO: CESOS**

The Centre is organised as a faculty of the Norwegian University of Science and Technology (NTNU). Its offices and laboratories are located at NTNU's Marine Technology Centre, as are its extensive testing facilities – including a 260m towing tank, 80 x 50m ocean basin and marine cybernetics laboratory.

Director of CeSOS is professor Torgeir Moan. "The Centre's goal", he explains, "is fundamental research to take account of the increasing size, speed and complexity of ships, and the trend to deepwater exploration and production of oil and gas. Realisation of the Centre's research projects, and feedback from them, is assisted through our sponsoring companies: DNV, Norsk Hydro, Statoil and the Norwegian Shipowners' Association. They help ensure that proposed new research work has practical application and meets the needs of the market."

#### **DNV-SPONSORED WORK ON WAVE LOADING**

One example is a project being undertaken by DNV engineer Gaute Storhaug, currently a post-doctoral researcher at CeSOS studying the phenomenon of bulk-carrier

hull cracking due to the effect of waves on their blunt bows. The problem can also affect tankers and large container carriers – whenever a ship hull's resonant frequency matches wave frequency – and is of concern to both shipbuilders and operators. Storhaug is modelling the effect of wave loading on a variety of hull bow forms, using the Centre's test tank and computer facilities, while DNV is carrying out full-scale instrumented tests on a large bulk carrier and a 4,000TEU container ship.

The CeSOS organisational structure comprises three departments, Hydrodynamics, Structural Mechanics and Cybernetics or Automatic Control. Dr Carl Arne Carlsen, head of DNV Research and a member of the CeSOS Board of Directors, explains the practical applications of such research: "In DNV, we carry out extensive R&D as a basis for generating new services for our clients. In doing this, we build upon fundamental research – we highly value the work of CeSOS, which aligns well with our own needs in hydrodynamics, structures and cybernetics."

#### **HYDRODYNAMIC RESEARCH**

Professor Odd Faltinsen, head of the hydrodynamics research programme at CeSOS, worked with DNV for seven years and was closely involved in the Moss Rosenberg design of LNG tankers.

Liquid sloshing in ships' tanks continues to be a significant factor in tanker and LNG carrier design, especially as modern tank interiors are relatively "clean" (without internal baffles or structural members). Impacts can thus be severe. CeSOS research here links theoretical work on tank shape and proportions with model testing in the laboratory and test tanks.

A similar approach – mathematical modelling supplemented by tank testing – also applies in research into slamming, the effect of wave impact on vessel hulls. "This can be a problem with the aft hull on passenger ships", Faltinsen explains, "and beneath the decks of multi-hull vessels."

#### **STRUCTURAL MECHANICS**

Main objective of CeSOS activities in structural mechanics is to develop new means to predict wave-induced load effects on ships and marine structures. A recent proj-



DNV is carrying out full-scale wave loading tests on a variety of instrumented vessel hulls, while the same effects are being modelled and analysed in the CeSOS testing tanks in Trondheim.



CARL ARNE CARLSEN

**CARL ARNE CARLSEN** is head of DNV Research, and a member of the CeSOS board of directors. "The work of CeSOS aligns well with DNV's own goals in hydrodynamics, structures and cybernetics", he believes.

ect has been to study bow-flare slamming pressures and response in a 20kt, 120m car carrier. A new mathematical model to determine slamming velocity and pressure is now being investigated.

In the area of offshore structures, the Centre's research currently focuses on slender marine structures in Norwegian waters, such as pipelines and platform risers. All three research disciplines are involved, since the marine environment in the northern North Sea is unique and calls for new technology to cope with deep water, an uneven seabed and unpredictable waves and currents. Particular attention is being given to vortex-induced vibrations (VIV), both in free-spanning pipelines and in risers linking platforms to the seabed.

#### CYBERNETICS AND SOFTWARE

Ship manoeuvring and station-keeping is a prime application for the cybernetics and automatic-control projects under way at the Centre. In offshore work, a notable application of the department's research programme is in manipulating loads between a platform and its supply vessel. Traditional heave-compensation devices are being refined to achieve greater positioning accuracy, and to minimise damage to craft or equipment.

A research project being developed by a separate CeSOS group is a unified theoretical model integrating all aspects of ship manoeuvring and dynamic positioning. The goal is to reduce or eliminate software errors. The team plans to make software available to DNV and other classification societies, introducing a class notation HIL – "hardware in the loop" – so that a ship surveyor can take a laptop simulator on board and test a ship's automatic control systems. The software can also be used for type approval, and factory assessment testing at a vendor's plant.

#### A GLOBAL RESOURCE

Research facilities available to CeSOS are among the world's best. Laboratories and extensive computer networks supplement three test tanks and a large cavitation tunnel, with a wide range of test and measuring equipment, instrumentation and model-making facilities.

DNV's Carl Arne Carlsen sums up the important relationship between the work of CeSOS and DNV's expertise in its practical application. "CeSOS helps bridge the analytical approach, numerical simulation and laboratory testing. It is a global resource, and applying all these aspects of its work is vital in helping enhance ship and offshore safety."



TORGEIR MOAN

CeSOS director **TORGEIR MOAN**: "We must integrate theoretical and experimental research to better understand the behaviour of ships and ocean structures."

## DNV opens Academy in Shanghai

DNV has opened its Maritime Academy in Shanghai, which is the third in China. It is dedicated to improving technological competence for industry practitioners.

Bjørn K. Haugland, DNV Maritime's regional manager for Greater China, says: "The opening of the DNV Academy is a reflection of the need for a dedicated shipping technical curriculum for industry practitioners."

The Academy is an integral part of DNV Maritime's Service Centre and will provide the maritime industry with technical expertise running regular courses for shipbuilders, designers and owner's site teams. It offers training courses including both standard and customised programmes.

"Essentially, it is all about imparting knowledge and expertise to our customers on DNV's accumulated experience, research and development," says Bjørn K. Haugland.



DNV Maritime's chief operating officer Tor E Svensen (left) and Bjørn K Haugland, DNV Maritime's regional manager for Greater China, launching the DNV Academy in Shanghai.

## EDF means business with environmental certification



DNV's CEO Henrik O. Madsen and EDF's vice president Jean-Louis Mathias.

In one of the biggest certification contracts ever, the EDF group (Electricité de France) has been certified by DNV to the ISO 14001 standard for environmental management systems.

The certificate covers all 276 production plants in 21 countries and is part of the energy giant's continuous efforts to demonstrate environmental leadership.

EDF is among the key European players within electricity generation, distribution and supply. Managing a generation mix with a capacity of 122.6 giga watts, it provides energy and services to 42.1 million customers throughout the world, including 36.2 million in Europe.

Within a period of three years DNV will certify EDF plants according to the quality management system standard ISO 9001, the environmental management system standard ISO 14001, the occupational health and safety management system standard OHSAS 18001, and EDF's own management system for health and safety, SM2S. The comprehensive certification to ISO 14001 was just the first step for EDF.

## DNV to study hurricane damage to pipelines

The Minerals Management Service (MMS) in the USA has awarded DNV a contract to conduct a study that will discover the effects on the Gulf of Mexico pipeline infrastructure of the hurricanes Katrina and Rita, and how to be better prepared in the future to reduce hurricane damage in the Gulf of Mexico.

The USA is increasingly dependent on the steady supply of energy from offshore oil and gas reserves. Because of this, the MMS remains attentive to the destructive forces of hurricanes and the extensive challenges to protect pipelines in advance of, and to re-start pipeline production following, these catastrophic natural events.

The scope of work is similar to DNV's recently completed study of pipeline damage caused by Hurricane Ivan. These results and the new work on Katrina and Rita will enhance the current understanding of pipeline responses to hurricane forces. Moreover, this work will identify best practices and potential changes to codes to better protect pipelines during subsequent major hurricane events.



China:

# Building for the future

The China State Shipbuilding Corporation (CSSC) and China Shipbuilding Industry Corp (CSIC), the conglomerates in charge of most of the country's shipyards, plan to reach the summit of world shipbuilding by 2015 through shipyard modernisation and increased efficiency and rationalisation. **TEXT: STUART BREWER**

China's leaders are confident that the country can overtake Asian shipbuilding rivals Korea and Japan by 2015. Indicating the explosive growth of Chinese shipbuilding, its overall share in the world shipbuilding market has jumped almost three-fold at 16.5% compared to just 5.2% in 2003. Chinese-built vessels are today sold to 40 countries on all five continents, and include some of the world's most prestigious shipping companies.

Already impressive, such growth may be dwarfed in coming years as China has declared its goal of becoming lead shipbuilding nation by 2015. China's two main shipyard groups (CSSC and CSIC) have adopted different growth strategies in their efforts to add large containerhips, VLCCs, ro-ro vessels, FPSOs and more recently, LNGs to their portfolios.

The southerly CSSC's ambitious plan has been to expand its current 4m dwt capacity to over 14m dwt by 2015. Its most modern and advanced yard, the Shanghai Waigaoqiao Shipbuilding (SWS) finished its first ship in summer 2003, delivered just over 1.2m dwt in 2004, growing to an annual output of 2.2m dwt by 2006 and 2.6m dwt by 2008.

"We are currently concentrating on three

vessel types: capesize bulkers, 105,000dwt Aframax tankers and FPSOs of 105,000dwt to 300,000dwt," says Qi Ya Xian, deputy director of SWS' sales and marketing department. "The next step will be to build VLCCs and containerhips."

## World's biggest shipyard

Along with other major developments, the CSSC group is scheduled to build the world's biggest single yard at Chanxing Island, allowing it to become the world's number one shipbuilder by 2015.

"The first phase will involve the relocation of Jiangnan shipyard in 2007, when the new development and the 7.5km tunnel linking it to Shanghai will be completed," says Hu Keyi, technical director at Jiangnan. "The second phase will involve the development of a new shipyard in the Guangzhou area plus the expansion of other CSSC shipyards, and total capacity is intended to reach 12m dwt." Jiangnan, presently limited by its site to the production of panamax bulk carriers, LPG and chemical carriers, will move into larger deadweight vessels at its new premises.

Meanwhile, the CSIC has a two-fold plan to raise capacity to 6m dwt and output to 5m dwt by 2010; and to around 9m

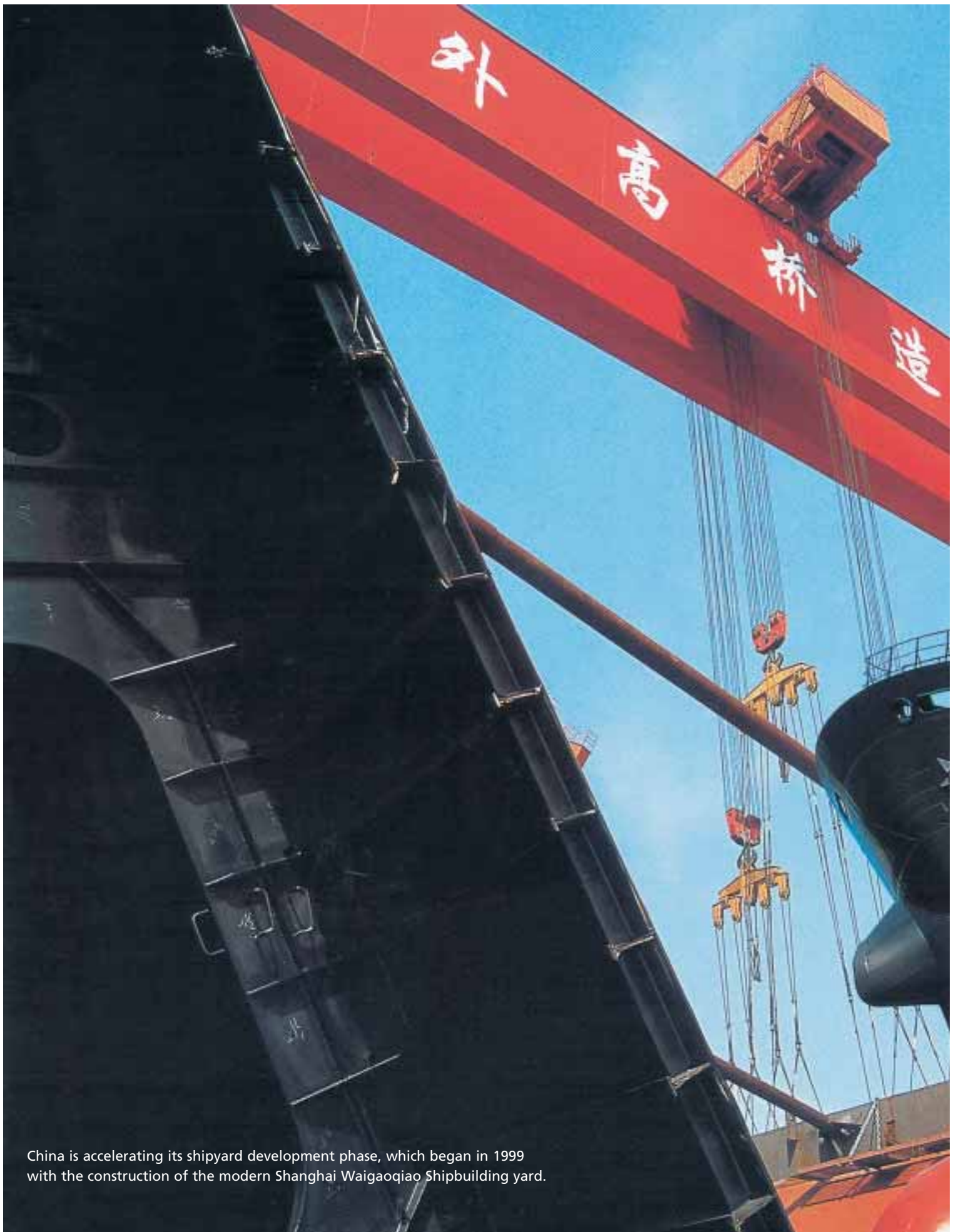
dwt and 8m dwt by 2015. This will be achieved by additional drydocks at Dalian, Dalian New (ULCC size) and Bohai, and completion of the new yard in Qingdao with a projected four VLCC docks and output of 2m dwt.

## Internationally competitive

"Over the past few years, important milestones have been passed with completion of the country's first ever VLCCs built here at Dalian New Shipbuilding (DNS) for NITC," says DNS president Paul Sun Bo. "These vessels, together with deliveries at other state-of-the-art yards, show that Chinese-built vessels are becoming internationally competitive in terms of quality, performance, build time, as well as cost."

At DNS, quality is being encouraged by linking salary payments to satisfactory completion of each block construction. Mr Sun Bo sees it as a way of encouraging productivity; "it's difficult to control the workers if they get paid whether they work or not," he says. He has also divided the slipway and drydocks workers into two competing teams, which has helped speed up construction.

This use of a bonus system indicates how far and how fast the market economy is developing, but Mr Sun Bo is quick to



China is accelerating its shipyard development phase, which began in 1999 with the construction of the modern Shanghai Waigaoqiao Shipbuilding yard.



point out that if China is to succeed in specialist market sectors and become a dominant force in world shipbuilding, management systems, R&D capability, quality assurance through skilled workers and software must be developed to maximise opportunities created by expanded yards.

#### **Purple patch for owners**

Thanks to the Chinese economic growth, shipping companies in China are also experiencing a purple patch. Cosco Container Lines (COSCON) currently has a fleet of about 120 modern container vessels totalling over 300,000teu. Buoyed by the healthy market, the Shanghai-based company now plans to expand. "Over the next two years, our fleet capacity will grow to 450,000teu, which will involve European and American trunk services deployed with 5,400 and 9,500teu vessels," says Hou Liping, deputy general manager of

COSCON's safety and technology management division. The company will take delivery of the world's first 10,000teu vessel from Hyundai in 2007.

15 other mega ships are scheduled for delivery in the years to come.

Cosco Dalian Ocean Shipping is also enjoying good times. The tanker arm of Cosco currently owns 32 vessels and recently took delivery of six newbuildings. "China is going to be having a major requirement for the import of crude in the coming years," says Li Jun Bao, manager of the technical department at Dalian Ocean Shipping. "So we want to get a stronger position in the Chinese market." And while China's crude oil imports continue to rise, the most recent newbuildings demonstrate the company's ability to meet market demands and clients' needs, he feels.

The China Shipping Group is one of

the country's largest maritime players with nearly 11.5m dwt of owned tonnage, comprising around 400 vessels. The fleet covers vessel types from tankers, tramps, passenger ships, container vessels and special cargo ships. Over the past few years, the company has made rapid strides in container shipping, which currently comprises over 100 vessels with a capacity of nearly 300,000teu.

"The China Shipping Group, founded in July 1997, is one of the state-owned enterprises under the direct administration of the Central Government. It is a super-large shipping conglomerate that operates across different regions, sectors and countries," explains Chen Jian, deputy managing director of China Shipping Development, the tanker arm of the group.

Commonly known as China Shipping Tankers, the Shanghai-based company

“WITH THE BOOMING ECONOMY, INCREASED DEMAND FOR RAW MATERIALS AND A FOCUS ON INCREASING ITS SHIPBUILDING CAPACITY, CHINA IS TRULY EMERGING AS A KEY MARITIME NATION.”

DNV has a substantial presence in China and is working with all the major yards. Here, a DNV-classed aframax tanker being built for Stena at Dalian shipyard.

owns and operates a fleet of 88 tankers totalling 3.5m dwt. “Along with the rapid development of the national economy and the requirements of the state strategy concerning oil storage, the company is adjusting its fleet structure on a large scale to meet its objective of becoming a world-class tanker fleet by 2010,” says Chen Jian – further proof, if any were needed, is that mainland owners are anything but inactive right now on the fleet expansion front.

Hong Kong-based independent ship-owners are also on the expansion trail. The Parakou Group expects to further expand its fleet over the next three years. The company has reported healthy profits again this year, thanks mainly to its long-term investment strategy and time charter contracts with ‘first class’ charterers.

Chairman and chief executive officer C.C. Liu expects a generally favourable

trend to continue, despite the likelihood of a moderate correction. “The expanded fleet number will include both tankers and bulkers. Currently our fleet has an average age of about five years, and with approximately two-thirds on long-term charters our business is very safe.”

#### **Bullish on China**

Long term, Mr Liu maintains that China and India have fundamentally redrawn the shipping equation, while there still remains considerable room to expand the US economy. He dismissed fears of a ‘hard landing’ in China, insisting that its hunger for raw materials will continue, thus propping up shipping fortunes for the foreseeable future.

Sinotrans Shipping Ltd, which currently operates a fleet of about 40 ships, totalling over 2m dwt, also has plans to expand its fleet. “Like many in the maritime sector,

we recognise that rapid economic growth in China will have a long-term effect on the shipping industry, particularly in terms of demand for vessels,” says Tian Zhong Shan, managing director of Sinotrans Shipping Ltd. “As long as China continues on its current path, the country will provide a solid underpinning for the market,” he believes.

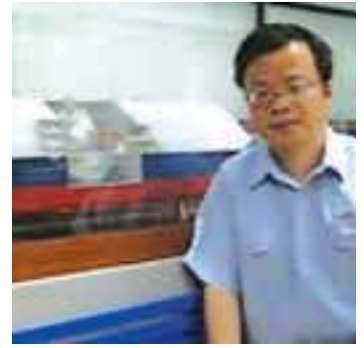
With the booming economy, increased demand for raw materials and a focus on increasing its shipbuilding capacity, China is truly emerging as a key maritime nation.



**PAUL SUN BO,**  
President of Dalian New  
Shipbuilding



**QI YA XIAN,** Deputy director  
of SWS' sales and marketing  
department



**HU KEYI,** Technical director at  
Jiangnan shipyard



**LI JUN BAO,** Manager,  
technical department, Cosco  
Dalian Ocean Shipping  
(COSCO Group)



**CHEN JIAN,**  
Deputy managing director,  
China Shipping Development



**C.C. LIU,** Chairman and chief  
executive officer of the  
Parakou Group



**TIAN ZHONG SHAN,**  
Managing director of  
Sinotrans Shipping Ltd

## China's fast forward

Due to the Chinese economy's important role in the world economy and the huge demand in the shipping market, the big state-owned shipyards and major middle-sized shipyards are rapidly increasing their capacity, and many small, private yards are mushrooming.

Furthermore, today the words 'ahead of schedule' are very often heard in Chinese shipyards instead of 'delay'. The main reasons for this are gradual improvements in management; the fact that yards build series of vessels using an existing design instead of building different types of new-design vessels; and the fact that owners are encouraged by the hot market to accept delivery of ships with satisfactory quality earlier on.

However, today's good unit contracts which are subject to productivity limitations need to

be balanced by the large number of low-price contracts signed two years ago. Consequently, Chinese shipyards are still under financial pressure.

Looking ahead, the main challenges facing the Chinese shipbuilding industry are to increase its productivity more quickly than its labour costs; to develop high-level standard designs; and to set up and develop ancillary support.

When the market declines, some of the Chinese shipyards will have problems or difficulties, and may even close down altogether, but the elite will cope with the challenges and improve their management, quality and marketing and then manage their activities better.

The Chinese shipbuilding industry will in any case develop quickly and healthily, and it needs

support and assistance. By supporting, cooperating with and assisting the Chinese shipbuilding industry, companies will benefit from the industry, from the Chinese shipping market and from the world shipping market, which is deeply influenced by the China factor.



**ZHAO JIALIN,** client support coordinator at  
DNV's maritime service centre in Shanghai

## Global Compact agreement with Cosco



DNV's CEO Henrik O. Madsen presents Cosco's Captain Wei with DNV's special Certificate of Recognition. Captain Wei was upbeat about Cosco's relationship with DNV. "We share common goals and values, and I think we can say Cosco and DNV suit one another perfectly," he said.

DNV has signed an agreement with Cosco, the world's largest shipowner. Under their Memorandum of Understanding (MOU), DNV will provide services to support Cosco's sustainable business developments under the United Nations Global Compact.

The programme will cover the ten core principles of the United Nations Global Compact initiative which was established by UN Secretary-General Kofi Annan in 2000. The Global Compact is supported by over a thousand companies and international labour and civil society organisations around the world.

"This work will equip both Cosco and DNV with a shared understanding of the Cosco risk picture," said DNV's CEO Henrik O. Madsen.

The agreement was signed after Henrik O. Madsen granted three certificates, recognising Cosco's modern enterprise management systems; and certification to the ISO 9001 quality standard, the ISO 14001 environmental standard and the OHSAS 18001 occupational health and safety standard.

## The cruise industry climbing to new heights

"The Freedom series are breaking new barriers," says Karl Morten Wiklund, business director passenger ships in DNV.

"It's not only the attractions on board that are spectacular; all the safety aspects are based on the latest knowledge and the best available technology."

The Freedom of the Seas is 339 metres long, 158,000 grt, and will carry 3,600 passengers. This ship is the first of three ships in the new Freedom series. All three vessels are to be classed by DNV.

"The Freedom of the Seas is a novel design concept beyond traditional industry practice, a hallmark of DNV classed cruise vessels," says Karl Morten Wiklund.



Royal Caribbean's Freedom of the Seas.

## Largest customer certified to OHSAS 18001

With 100 manufacturing sites all over the world, SKF is both the world's first major bearing manufacturer and the largest company to have its occupational health and safety management system certified by DNV.

The OHSAS 18001 standard is applicable to companies of any size, but is especially relevant to companies with a large work force, manual and heavy work tasks and high risk work environments. This certificate covers 81 units in 24 countries.

The Sweden-based SKF Group is a leading global supplier within rolling bearings, seals, mechatronics and lubrication systems. SKF's main objective with the certification is to assist its units in their drive to achieve zero accidents on work-related injuries and illness, through effective health and safety management systems.



Tom Johnstone, SKF's CEO, receives the DNV certificate from CEO of DNV Henrik O. Madsen.



## IT Risk Management:

# Shaping an emerging market

Poorly managed development of IT systems and software may result in catastrophic events, loss of lives or severe financial damage to businesses. Today, software is a key factor for efficiency in most disciplines. It assists people in critical tasks and increases the human ability to provide data for decision-making purposes.

Most international regulations today have a dedicated section covering IT: for example Sarbanes-Oxley has one for financial business, food and drug administration regulation, avionics and the automotive industry. Companies are extremely careful about the principles applied by their suppliers when software dependent systems are involved.

The IT engineering environment has become increasingly complex. Efforts involving more people than ever – and crossing corporation boundaries – must adhere to continually tougher implementation schedules to meet customer needs and heightened expectations. The way in which engineering work is performed has evolved. Cross-disciplinary teams, concurrent engineering, highly automated processes and international standards have all affected engineering practice.

### STRIKING THE RIGHT BALANCE

DNV possesses the expertise which the international community requires to identify, assess and manage risk and thereby help companies to safely and responsibly improve their business performance. That is why DNV has established a new business area – IT Risk Management – which will give high priority to the integrity and reliability of business and safety critical IT systems and software. The objective is to achieve international recognition through IT-centred services delivered by professionals. We take pride in our ability to strike the right balance between risk and profit and between quality and cost, and to optimize overall IT efficiency.

We will combine DNV's high professional skills in risk management, the IT-recognised experience of Q-Labs and other DNV acquisitions. Q-Labs currently has operations in France, Sweden, Germany, the US and UK. The next office to be opened will be in China. With the acquisitions of CIBIT in the Netherlands and Tireno in Germany, DNV IT Risk Management will take a leading position in Europe, and has similar ambitions for Asia and the USA.

The service portfolio covers the following four dimensions:

- The organisation: IT governance and IT strategy
- The processes and tools: effectiveness, security, lean processes
- The applications, products and services delivered: meeting quality, safety, cost and time targets
- The people and teams: load versus capacity, skills management, knowledge management.

DNV IT Risk Management consultants provide a complete offering including assessments using different de facto standards – such as CMMI, SPICE – followed by recommendations and action plans, process solutions, safety analysis, independent verification and validation, as well as software acquisition and outsourcing support. In all cases the improvement of business efficiency and the decrease of risk level are highly measurable.

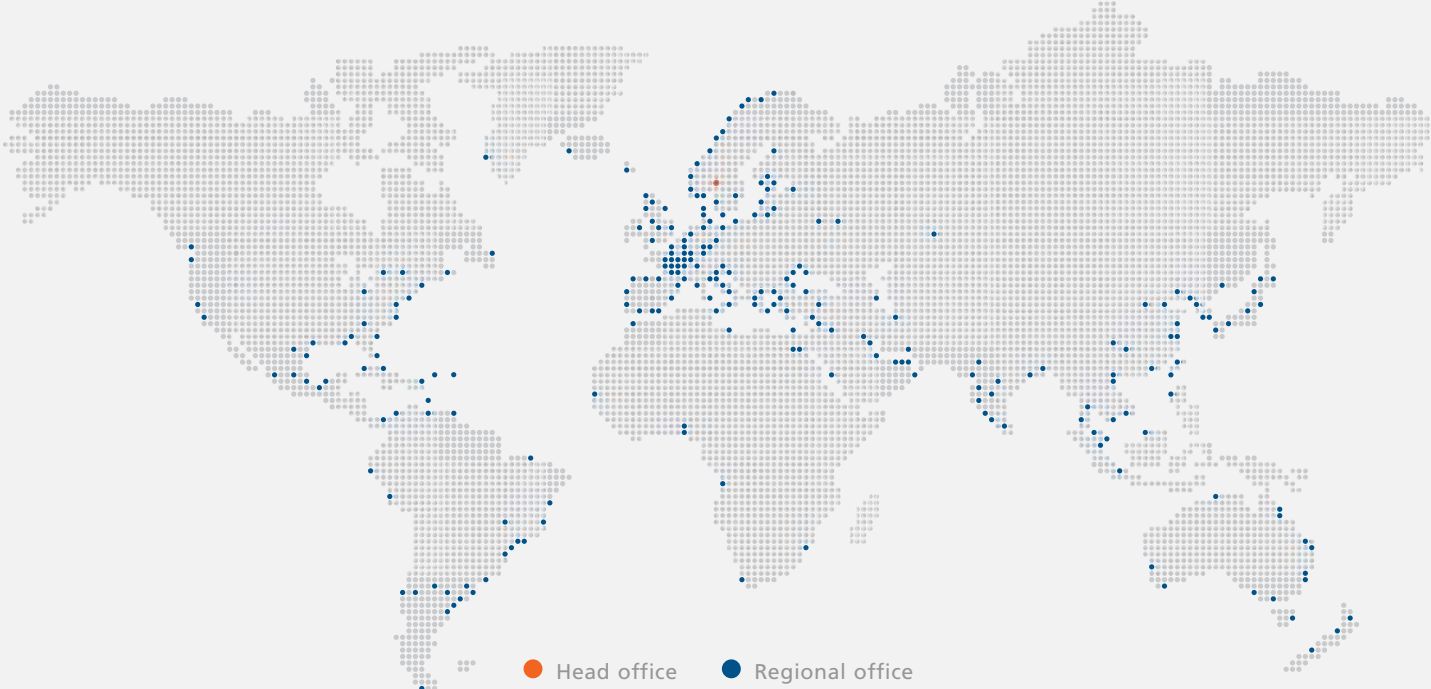
Concentrating our efforts on the safety and reliability of systems and software, information security and efficient

IT service management, our differentiation lies in our risk-based approach. By combining our forces we have a good chance of actually shaping this emerging market.

ANNIE COMBELLES is Chief Operating Officer for DNV's newly established business area – IT Risk Management.



# DNV worldwide



# DNV Forum

corporate magazine

PUBLISHED BY  
DNV Corporate Communications  
NO-1322 Høvik, Norway  
Tel: +47 67 57 99 00  
Fax: +47 67 57 91 60

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

DESIGN  
Coo Graphic Communications  
graphic.services@dnv.com

PRINT  
GAN Grafisk, Oslo

COVER PHOTO  
© Scanpix

© Det Norske Veritas 2006

DNV is a global provider of services for managing risk. Established in 1864, DNV is an independent foundation with the objective of safeguarding life, property and the environment. DNV comprises 300 offices in 100 countries, with 6,100 employees.

[WWW.DNV.COM](http://WWW.DNV.COM)